



Analytical Report Number : 17-41236

Project / Site name: Southall

* 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 *
709470	TP1 + TP2 + TP3	None Supplied	0.60-3.50	Brown loam and sand with gravel and vegetation.
709472	TP3	None Supplied	1.50	Brown loam and sand with gravel and vegetation.
709474	TP2B + TP3B + TP4B	None Supplied	0.20-2.70	Brown loam and sand with gravel and vegetation.

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Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance"	L046-UK	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
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
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated WAC-17 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	NONE
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
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	MCERTS

Iss No 17-41236-1 Southall CGN-3732D

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The results included within the report are representative of the samples submitted for analysis.

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Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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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.



Clark Smith Partnership

Western Access, Southall
*Earthworks Material Acceptability
and Waste Characterisation
(Western Access Site)*

May, 2017



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Reference	CGN/03732E	Revision	0
		Issue Date	May 2017

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Appendix A – Trial pit logs

Appendix B – Geotechnical test results

Appendix C – Lime trial test results

Appendix D – Chemical test results

Appendix E – WAC test results

1. INTRODUCTION

Card Geotechnics Limited (CGL) has been instructed by Clark Smith Partnership (CSP) to undertake additional trial pitting and laboratory testing across the wider area of the Western Access site, in order to provide a preliminary assessment of material suitability for the direct transfer off-site or reuse on-site under the Materials Management Plan (MMP). The area of this investigation includes:

- the main Western Access road alignment;
- the Minet Tip Lagoon (referred to as 'Lagoon Bund' henceforth); and
- the area along the course of the River Crane towards the Flood Compensation Area.

Additionally, CGL have summarised the results of testing, undertaken by Beach Ground Engineering, of on-site won material which has been treated with lime and cement (for stabilisation) to identify the optimum treatment required to improve the suitability of these site won materials in reuse on site.

An overall site location plan is presented as Figure 1 and a trial pit location plan showing the site areas relevant to this report is presented as Figure 2.

This phase of trial pitting was completed between the 23rd and 27th March 2017. This report specifically details the findings from this recent investigation comprising the area shown in Figure 2, and will be referred to as 'the site' henceforth. This report aims to expand upon the findings of the Preliminary Geotechnical Design Report (PGDR) issued in December 2016¹ and the two earthworks material acceptability and waste characterisation reports previously issued^{2,3}.

¹ CGL (2016). *CGN/03732 Southall, Pump Lane Western Access*. Preliminary Geotechnical Design Report. Rev1. December 2016.

² CGL (2017). *CGN/03732C Southall advanced works*. Earthworks material acceptability and waste characterisation - Pump Lane Bund. Rev1. May 2017.

³ CGL (2017). *CGN/03732D Southall advanced works*. Earthworks material acceptability and waste characterisation – Bridge Bund and Lagoon Bund. Rev1. May 2017.

2. SITE DESCRIPTION

The Western Access area as a whole covers approximately 7.66Ha. The area encompassing all three permanent earthworks is centred approximately on National Grid Reference (NGR) 511254, 179810.

The site works have covered four main areas lying between the three main watercourses cutting the site; the River Crane, Yeading Brook and the Grand Union Canal.

- Area 1 - The largest area follows the course of the River Crane, oriented roughly south to north east and located east of Pump Lane, towards the Flood Compensation Area. The southernmost portion of this area relates to the proposed western road embankment, located between the River Crane and the Yeading Brook.
- Area 2 - The second area of investigation was along the proposed route for the western access road alignment, orientated west to east along the southern area of the site between the Yeading Brook and Grand Union canal. This area relates to the location of the proposed central road embankment.
- Area 3 - The Lagoon Bund is located on the north-eastern boundary of the site, and is located just west of the Grand Union Canal (oriented south west to north east). The Lagoon Bund comprises a roughly circular area of some 83m², and is understood to have been used as a dumping area for dredged materials from the Grand Union Canal.
- Area 4 - The area of the proposed road alignment located to the east of the Grand Union Canal, comprising a small area that lies adjacent to the main Southall Waterside development site, was not investigated during the same period as the above areas due to access constraints. The area was excavated to a depth of approximately 1m below ground level by the Contractor for the main development site. This was subsequently logged by CGL on 27th April 2017 as part of a separate investigation. No samples were taken and no results are presented within this report for this area.

For the purposes of this latest trial pit investigation the site areas detailed above have been delineated into a grid system, as shown in Figure 2, in order to provide a basis for earthworks verification activities at a later date.

3. INTRUSIVE INVESTIGATION

3.1 Summary of works

A total of 33nr. trial pits were excavated across the site within the Made Ground and underlying natural strata between the dates of 23rd March and 27th March 2017.

Representative samples were taken from each trial pit location for the purposes of geotechnical and chemical testing, which is shown on the trial pit logs presented as Appendix A. In-situ hand shear vane testing was undertaken within seven of the trial pits (where suitable strata was identified), to assist in the characterisation of the material for reuse on site. The results of these tests are summarised in Section 4.

3.2 Ground conditions

3.2.1 Area 1 – River Crane

A total of 22nr. trial pits were excavated within this area. For ease of analysis, the trial pits along the course of the River Crane have been divided into three sections, the southern, central and northern sections. These locations were undertaken to identify the strata at the proposed formation level of the road embankment, and to determine if the material from the northern section would be suitable for re-use elsewhere within the site.

3.2.1.1 Southern section (Western Embankment)

The trial pits taken along the southern stretch of the River Crane (TP1C to TP04C and TP10C) which comprised variable surface soils of Topsoil (TP2C and TP3C) or Made Ground (TP1C and TP4C) to a maximum depth of 0.9mbgl (TP1C), although depths of approximately 0.5m were more commonplace. Foreign materials of ceramic, clinker and plastic were identified within the granular components of the Made Ground.

River Terrace Deposits, predominately comprising a cohesive layer of sandy or silty sandy CLAY over a granular layer of clayey or silty GRAVEL were identified to be underlying the Topsoil and Made Ground layers. This cohesive layer was identified within TP2C, TP3C, TP4C, while TP1C comprised predominately granular materials beneath the Topsoil/Made Ground layer. The western most trial pit (TP10C) was excavated to a total depth of 1.4mbgl [25.28mOD] and comprised River Terrace Deposits consisting of orange brown very clayey GRAVEL. The three northern most trial pits (TP5C to TP7C) each terminated within the London Clay Formation, at depths ranging between 1.6mbgl (TP7C) and 2.3mbgl (TP5C).

3.2.1.2 Central section

The central section of the River Crane comprised nine trial pit locations, TP5C to TP9C and TP13C to TP16C. The surface material comprised Made Ground to a maximum depth of 2.3mbgl (TP9C), with no Topsoil material identified in any of the trial pits. The Made Ground layer predominately comprised of a predominately granular layer of clayey sandy gravel at surface (with the exception of TP9, which comprised a sandy clay layer at surface). Foreign materials of brick, concrete, metal, rubber, fabric and glass were identified within the granular components of the Made Ground. The locations TP9C and TP16C terminated within the Made Ground to avoid breaching the groundwater table.

River Terrace Deposits, predominately comprising of a granular layer of clayey or silty sandy GRAVEL was identified to be underlying the Made Ground layers. Four trial pits (TP5C to TP7C and TP14C) each terminated within the London Clay Formation, at depths ranging between 1.0mbgl (TP14C) and 2.3mbgl (TP5C).

3.2.1.3 Northern section (Flood Alleviation Area)

The northern section of the River Crane comprised eight trial pit locations, TP11C to TP12C, TP17C to TP18C and TP30C to TP33C. The surface material comprised Made Ground to a maximum depth of 1.5mbgl (TP32C), however Topsoil was identified as the surface material in two locations (TP30C and TP33C), and comprised layers of thickness in the order of 0.4m and 0.5m respectively. The Made Ground comprised a predominately granular layer at surface level consisting of a clayey sandy gravel or clayey gravelly sand, the one exception was TP18C where a predominately cohesive layer of Made Ground was identified. Foreign materials of brick, concrete, plastic, rubber, glass and asbestos containing material (TP31C only) were identified within the granular components of the Made Ground.

River Terrace Deposits were identified to underlie the Topsoil/Made Ground layer in each of the northern section trial pit locations. The River Terrace Deposits predominately comprised of a granular layer of clayey or silty sandy GRAVEL which were identified to be underlying the Made Ground layers. Only two of the trial pit locations (TP31C and TP33C) were underlain by predominately cohesive (gravelly clay) River Terrace Deposits, which were both also underlain by predominately granular deposits. Four of the trial pits (TP11C to TP12C, TP30C and TP33C), all to the east of the River Crane proved the London Clay Formation, at depths ranging between 0.7mbgl (TP11C) and 2.1m (TP30C and TP33C).

3.2.2 Area 2 - Central Embankment

A total of 5nr. trial pits were undertaken within this area (& TP19C to TP23C). These locations were undertaken to identify the strata at the proposed formation level of the road embankment, and to provide geotechnical data on the underlying soils.

The surface soils in this area comprised a layer of slightly sandy clayey silt (TP19C to TP23C) topsoil in each of the five trial pit locations. The thickness of the Topsoil varied in thickness to depths of between 0.3mbgl (TP22C) and 0.7mbgl (TP19C).

The five trial pits located to the east of the River Crane (TP19C to TP23C) were recorded to comprise River Terrace Deposits, consisting of a layer of firm to stiff dark brown to grey brown silty CLAY to depths of between 0.8mbgl (TP22C) and 2.1mbgl (TP21C).

Differential horizons were identified beneath the surface layer of the River Terrace Deposits in three of the trial pits (TP19C, TP22C and TP23C). These comprised a layer of orange brown silty sandy GRAVEL at a depth of 1.2mbgl and 2.2mbgl in TP19C, and a layer of firm orange brown gravelly CLAY at a depth of 0.8mbgl to 2.1mbgl in TP22C. The London Clay Formation was identified within TP23C at a depth of 1.2mbgl [26.67mOD], and consisted of a stiff brown to grey brown silty CLAY, becoming brown in colour with depth, suggesting this is the weathered horizon of the formation. The London Clay Formation was proven to a depth of 2.1mbgl [25.77mOD], however the base of the formation was not identified.

3.2.3 Area 3 - Lagoon Bund

A total of 6nr. trial pits were undertaken within this area (TP24C to TP29C). These were undertaken to determine the moisture content and organic matter content of the Lagoon Bund soils, and were predominately sampled to assess the potential for reuse of the material on other areas of the site.

The Lagoon Bund comprised Made Ground to a proven depth of 3.5mbgl (26.86m Ordnance Datum) [mOD] in TP26C, however natural ground was not encountered in the Lagoon Tip area. A surface layer of predominately granular Made Ground was identified in each of the six trial pit locations, which generally comprised a dark brown slightly gravelly clayey sand to depths of between 1.1mbgl (TP29C) and 2.3mbgl (TP25C). The gravel component of this layer comprised foreign materials including brick, concrete, ceramic, glass and tiles with occasional metal. A single piece of asbestos containing materials (ACMs) was identified at a depth of 0.5mbgl [21.34mOD] within TP25C.

A second layer of predominately cohesive Made Ground was identified in three of the trial pits (TP26C to TP28C) from depths of between 1.7mbgl (TP26C and TP28C) to 2.0mbgl (TP27C), and generally comprised a stiff black sandy gravelly clay with strong hydrocarbon odours. The gravel component of this layer comprised foreign materials including ceramic and glass. A predominately cohesive layer of Made Ground was also identified within TP29C from a depth of 1.1mbgl [29.2mOD], which comprised a soft black silty clay with lenses of blue silty sand and a very strong hydrocarbon and 'cyanide' odour. Spent oxide (Blue Billy) material was identified between 1.3mbgl and 1.35mbgl [29.0mOD and 28.95mOD].

It should be noted that the location of TP24C is also within the footprint of the proposed central embankment. However due to the higher existing ground level of the Lagoon Bund above that of the proposed formation, the materials encountered are not considered to be representative of the embankment formation.

3.3 Visual and olfactory indicators of contamination

Visual indicators of contamination were recorded within TP25C, in the form of a fragment of potentially asbestos containing material at a depth of 0.5mbgl. Additionally, a 50mm thick layer of spent oxide ('Blue Billy') was identified within TP29C at a depth of 1.3mbgl [29.0mOD], within a layer of hydrocarbon impacted blue silty sand. No other visual indicators of contamination were identified within the remaining trial pits (the presence of foreign material, such as brick and concrete is not considered as 'contamination' for the purpose of this assessment).

Olfactory indicators of potential contamination were recorded within four trial pit locations (TP26C to TP29C), and comprised a strong hydrocarbon odour in each location, with an additional 'cyanide' odour in TP29C.

No visual or olfactory indicators of contamination were identified within the trial pits along the proposed route of the western access road or within the trial pits along the course of the River Crane.

3.4 Environmental laboratory testing

A total of 53nr. soil samples and 8nr. leachate samples were sent for chemical testing. Of these samples, seven samples were retrieved from the Lagoon Bund and eight samples were taken from the proposed route of the western access road. The samples were scheduled for testing against a range of contaminants, including; heavy metals, polycyclic

aromatic hydrocarbons (PAH), total petroleum hydrocarbons (TPH), BTEX and asbestos identification. In addition to this testing, seven Waste Acceptance Criteria (WAC) tests were undertaken to assess the suitability of the material if disposal offsite to landfill is required.

3.5 Geotechnical laboratory testing

A number of samples were sent for geotechnical testing. Of these samples, 6nr. were from Area 3, a further 5nr. were taken from Area 2, with the remainder taken from Area 1. The samples were scheduled for a ranging of testing, including; Atterberg Limits, particle size distribution, moisture content, MCV, MCV/mc relationship, mc/MDD relationship, unconsolidated undrained triaxial and pH and sulphates.

4. MATERIAL CHARACTERISATION

CGL have compared the results of the geotechnical and chemical tests to the limiting criteria detailed in the Earthworks Specification contained within the PDGR¹ and have assessed each of the locations under each of the three headings below:

- *Material acceptability – compared against criteria within Appendix 6/1⁴.*

This indicates whether the material is acceptable for use in the earthworks based upon geotechnical properties. If the in-situ material is considered to be unacceptable, then the suitability for lime or cement stabilisation has been assessed;

- *Contamination concentrations – compared against limiting values within Appendix 6/14 and 6/15⁴.*

This indicates whether the material is acceptable for use in the earthworks based upon concentrations of contamination recorded within the in-situ materials. Where exceedances are noted, the material may be classified as Class U1B or U2 unacceptable material. However the risk to receptors from soil and leachate contaminants may be reduced following stabilisation of materials, subject to further testing to confirm;

- *Waste characterisation – compared against criteria outlined within WM3⁵.*

This indicates, for material that may be designated for direct transfer off-site, whether disposal at an inert, non-hazardous or hazardous waste facility would be required.

In order to assess the likely requirements for re-use and/or disposal off-site, CGL has reviewed the Morgan Tucker drawings (A720-E05-IW-MTU-EW-DR-0610 and A720-E05-IW-MTU-EW-DR-0600), which detail the proposed earthworks cut and fill volumes. Based upon a net cut of approximately 76,000m³ and a net fill of 80,400m³ across the development area, a deficit of approximately 4,300m³ of fill exists. The drawings indicate smaller zones of material balance across the site, however as these zones still generally cover larger areas than that sampled within this investigation, the volumes stated cannot be applied to these results.

⁴ Highways Agency Manual of Contract Documents for Highway Works (March 1998 with all current amendments to November 2009), *Volume 1: Specification for Highway Works*.

⁵ WM3 (2015). *Waste Classification: Guidance on the classification and assessment of waste* (1st Edition 2015).

4.1 Earthworks classification and acceptability testing

4.1.1 Sulfates

Testing was undertaken to TRL 477⁶ methods 1, 2 & 4 to determine the Total Potential Sulfate (TPS) within the 29 samples taken from the three different areas of investigation. The mean value of the two highest results has been reported in accordance with MCHW 1. The results are presented below in Table 1.

Table 1 - Summary of sulfate test results

Location	Total Potential Sulfate (%SO ₄) ¹	Acid Soluble Sulfate (%SO ₄) ²
Area 3 - Lagoon Bund	11.702	10.0
Area 2 - Central Embankment	0.149	0.12
Area 1 - River Crane	1.614	0.29
¹ Average of two highest recorded values		
² Maximum value across all samples		

The results indicate that Total Potential Sulfates (TPS) exceed the recommended limiting value of 0.25%⁷ for suitability for lime improvement and stabilisation in the Lagoon Bund and along the course of the River Crane. The tests from these two areas also exceed the upper boundary limit of 1.00%, which could result in a high risk of expansion of lime treated material. However, the average of the samples from along the course of the River Crane generally fall above the recommended limiting value of 0.25%, but are less than the upper boundary limit of 1.00%. The samples tested from within the proposed route of the western access road indicate that the material from this area are suitable for lime improvement and stabilisation treatment.

The risk of expansion will be related to the percentage addition of lime required to achieved the necessary properties and has been further assessed by undertaking trials on lime treated material.

4.1.2 Atterberg Limit & Moisture Content

A total of 12 samples were sent for Atterberg limits testing to establish the plasticity index and volume change potential of the underlying cohesive soils. Three samples from the central embankment (Area 2) were tested, as well as one sample from the Lagoon Bund (Area 3) and eight samples from along the course of the River Crane (Area 1). The testing was carried out in accordance with BS 1377 (1990), Part 2, Clause 5.3. Full laboratory

⁶ TRL Limited (2001). *Sulfate specification for structural backfills*. TRL Report TRL447.

⁷ Britpave (2005). *Stabilisation of sulfate-bearing soils- Technical Guidelines*. Britpave: Camberley.

testing data is provided in Appendix B, and a summary of the Plastic and Liquid Limits for the site won materials is set out below in Table 2.

Table 2 - Summary of Atterberg Limit test results

Atterberg Limits							
Sample Location	No. of tests	Moisture content (%)	Liquid Limit (%)	Plastic Limit (%)	% material <425µm	I _p ²	Volume change potential
Area 3 - Lagoon Bund	1	65	89	47	99	42	High
Area 2 - Central Embankment	3	26 – 44	58 – 68	23 – 32	68 – 99	35 – 36	Medium
Area 1 - River Crane	8	18 – 32	45 – 83	20 – 29	70 – 100	25 – 55	Medium to High

The majority of the samples taken from the site have a natural moisture content of over 25%. This is likely to be above the upper acceptability limit for the material, based upon a limit of Optimum Moisture Content + 2%. However, drying or lime modification may be employed to reduce the natural moisture content to within acceptable limits, further to an assessment of suitability for lime improvement.

The materials in the Lagoon Bund and within the central embankment area classify as a clay of intermediate plasticity. The material from the course of the River Crane generally classifies as a material of low to intermediate plasticity, with three cases of high plasticity materials in TP6C at 1.85mbgl, TP11C at 1.5mbgl and TP14C at 1.2mbgl respectively.

4.1.3 Particle Size Distribution testing

A total of 25 samples from the three areas were tested for Particle Size Distribution (PSD) testing in accordance BS 1377:1990 Part 2:9.2. Full geotechnical laboratory testing data is provided in Appendix B. A summary of the testing results is presented in Table 3.

Table 3 - Summary of Particle Size Distribution testing results

Atterberg Limits				
Sample Location	No. of tests	Class 1B	Class 2A/B	Class 2C
Area 3 - Lagoon Bund	4	0	1	3
			TP27C – 2.5mbgl	TP24C – 1.0mbgl TP25C – 1.5mbgl TP27C – 0.5mbgl
Area 2 - Central Embankment	4	0	3	1
			TP20C – 1.4mbgl TP21C – 0.7mbgl TP23C – 0.4mbgl	TP22C – 0.4mbgl

Sample Location	No. of tests	Class 1B	Class 2A/B	Class 2C
Area 1 - River Crane	17	6	6	5
		TP3C – 1.7mbgl TP8C – 0.8mbgl TP12C – 0.5mbgl TP13C – 1.4mbgl TP30C – 1.0mbgl TP32C – 2.0mbgl	TP3C – 1.0mbgl TP4C – 0.4mbgl TP5C – 0.5mbgl TP6C – 0.5mbgl TP8C – 0.45mbgl TP16C – 1.5mbgl	TP1C – 1.0mbgl TP4C – 2.0mbgl TP6C – 0.4mbgl TP13C – 0.3mbgl TP32C – 1.0mbgl

Lagoon Bund

The results from the Lagoon Bund indicates that three the four samples tested all conform to Class 2C (stoney cohesive) material, with one sample conforming to Class 2A/B (TP27C at 2.5mbgl).

Central Embankment

The results from the proposed route of the western access road indicate that three of the four samples tested (TP20C at 1.4mbgl, TP21C at 0.7mbgl and TP23C 0.4mbgl) conform to Class 2A/B (dry/wet cohesive) material, while one sample (TP22C at 0.4mbgl) conforms to Class 2C (stoney cohesive) material.

River Crane

The results from the course of the River Crane indicate that six of the samples conform to Class 2A/B (dry/wet cohesive) material, five of the samples conform to Class 2C (stoney cohesive) material and six of the samples conform to Class 1B (uniformly graded granular) material.

4.1.4 Maximum dry density/moisture content relationship

A total of ten samples from the three areas were sampled and tested to determine the optimum moisture contents and maximum dry density of the soils in accordance with BS 1377 (1990), Part 4, Clause 3.3 using a 2.5kg proctor mould. Full laboratory testing data is provided in Appendix B, and a summary of the maximum dry densities for the site won materials is set out below in Table 4.

Table 4 - Summary of compaction test results (2.5kg hammer method)

Material	Number of tests	Maximum dry density for method compaction (Mg/m ³)	Optimum moisture content range (%)
Area 3 - Lagoon Bund	2	1.15 – 1.48	24 – 41
Area 2 – Central Embankment	2	1.61 – 1.67	20 – 22
Area 1 - River Crane	6	1.52 – 1.97	11 – 27

In Area 1, the material shows a wide range with regards to both the Moisture Content (MC) and Optimum Moisture Content (OMC), which suggest that the material may be close to OMC. However, careful site controls would be required to place this material in accordance with the specification. These controls would include segregation of similar materials and immediate placement to avoid wetting.

In Area 2 the material showed a wide variability for MC but a narrow range for OMC, which would therefore require preparation of the material on-site prior to re-use. An example of such preparation would be; mixing with coarse material (sand) to modify the MC, or mixing and drying on site. Careful controls would be required to ensure that the resulting material fell within the OMC range.

In Area 3 the Moisture Content is consistently high and wet of OMC, which would require mixing or stabilisation in order to be re-used.

4.1.5 Moisture Condition Value (MCV) and MCV/mc relationship

Six samples from across the three areas were tested to determine a single point Moisture Condition Value in accordance with BS 1377 (1990), Part 4. Full laboratory testing data is provided in Appendix B, and a summary of the undrained shear strength for the tested materials is set out below in Table 5.

Table 5 - Summary of MCV test results

Material	Material Class	Number of tests	Single point Moisture Condition Value (MCV)	Typical MCV Range
Area 3 - Lagoon Bund	2A	1	6.5	8 – 14
Area 2 – Central Embankment	2A	2	9.8 – 10.1	8 – 14
	2C	1	10.1	8 – 16
Area 1 - River Crane	1B	4	11.8 – 15.1	10 – 18
	2A	3	8 – 12.5	8 – 14
	2C	1	11.2	8 – 16

The Moisture Condition Value can provide a simple controlling value for a given soil to obtain near-full compaction. The results have been separated within the site areas into

further groups based upon their grading classification. In Area 1 the results show that the 3nr. samples graded as a Class 2A material have Moisture Condition Values within a range expected for that class. The single Class 2C sample also sits within the expected range. The 4nr. samples considered to be Class 1B material show higher MCV, which would be expected for this class. However PSD results are not available for the exact samples with MCV results, but rather grading has been extrapolated based on proximity to other Class 1B samples. Relationships of MCV/MC for those extrapolated Class 1B materials indicate that for a MCV range of 10 – 18, moisture content would need to be limited to between 15% to 30%, which is a broad range. It may however be preferable to control granular materials using MC rather than MCV, based upon +/- 2% of OMC. This has been shown in Section 4.1.4 to be achievable, providing good site controls are adopted to segregate similar materials.

In Area 2 the results show that the Class 2A and Class 2C samples are within the ranges expected. The MCV results for Area 1 and Area 2 samples indicate that the materials would be suitable for use, providing that strict site controls were employed to separate the classes of material encountered within each area. Additionally, as the MCV results are towards the lower end of the range, some may be considered to be wet of OMC and therefore would require drying on site.

In Area 3 the results show that the Class 2A sample is below the range expected, which correlates with the high Moisture Content values noted for samples within this area. This further shows that the material would require stabilisation to bring it within acceptable limits prior to placement and compaction.

4.1.6 Undrained Shear Strength

A total of six samples from the site were tested to determine the undrained shear strength in accordance with BS 1377 (1990), Part 7. Full laboratory testing data is provided in Appendix B, and a summary of the undrained shear strength for the tested materials is set out below in Table 6.

Table 6 - Summary of unconsolidated undrained triaxial test results

Material	Number of tests	Undrained Shear Strength (kN/m ²)
<i>Area 3 - Lagoon Bund</i>	1	31
<i>Area 2 – Central Embankment</i>	3	47 – 57
<i>Area 1 - River Crane</i>	2	47 – 77

The results indicate that each of the samples tested within Area 1 and Area 2 exceed the value of undrained shear strength that has been assumed within the PGDR¹ (40kN/m² for the cohesive River Terrace Deposits). One sample (TP27C at 2.5mbgl) relating to the Lagoon Bund material recorded an undrained shear strength of 31kN/m², which is below the minimum design value, therefore material from this area will require stabilisation to improve its strength, so that it might become reusable on other areas of the site.

4.1.7 Lime and cement stabilisation testing

As part of this summary report CGL has reviewed testing undertaken by Beach Ground Engineering, acting on behalf of FM Conway, to determine the optimum lime concentrations for material improvement. A total of eighteen samples were taken from across the Lagoon Bund and were submitted to M & H Testing Limited for treatment testing. The testing comprised mixing the samples with different concentrations of lime (CaO) and Ground Granulated Blast Furnace Slag (GGBS) to attempt to increase the quality of the site won soils for reuse across other parts of the site.

The initial eighteen tests were unable to provide sufficient quality results, as discussed below, when mixed with combinations of lime and GGBS in quantities of up to 5%. Only three of the tests were able to obtain a California Bearing Ratio (CBR) of above 2.5% (the minimum specified value for the proposed embankments as outlined in the PGDR¹). The highest recorded bearing capacity after treatment was recorded as a CBR value of 2.9%, with two values of 2.6% recorded. The first value of 2.6% was recorded using 1% lime and 2% GGBS, while the second was recorded without using any treatment. The CBR value of 2.9% was recorded using 1.5% lime and 3% GGBS in the treatment. These are considered to be poor results for a material treated with these proportions of binder.

M & H Testing Ltd reported that the main suspected reason for the generally high failure across the samples was due to the high natural moisture content and organic matter values of the underlying soils. The results indicate that these typical concentrations of lime and GGBS are insufficient in improving material with these properties. Additional testing on a composite sample that comprises 60% materials from the Lagoon Bund and 40% materials from within the embankment alignment was proposed. These samples were mixed with 3% lime and 5% GGBS and were cured for three days, and produced a CBR value of 14% when tested. However, it is considered that this approach is not the most economical approach in terms of cost or availability of higher quality site won soils to mix with the Lagoon Bund soils. Further testing is currently being undertaken to determine if

more efficient soil mixtures produced the required strength characteristics. All the results from the lime stabilisation testing (to date) are presented in Appendix C.

4.2 Contamination assessment - Risks to human health

A total of 15 chemical testing results from the topsoil/Made Ground horizons have been compared against the limiting values within Appendix 6/15 of the PGDR¹, which are based on Generic Assessment Criteria (GAC) for a “commercial” land-use based on Contaminated Land Exposure Assessment (CLEA) Soil Guideline Values (SGVs), published Category 4 Screening Levels and values derived in-house by CGL using the CLEA software. The values used are considered to be conservative, based on the proposed land use (an access roadway) and the data screen, therefore, provides a conservative assessment. A summary of the contamination assessment is outlined below, while the full laboratory testing results and assessment tables are presented in Appendix D.

Based on the initial screen, there were no exceedances recorded of the GAC for the contaminants analysed. Asbestos was positively identified within the Made Ground strata in three of the trial pit locations, TP23C at 0.2mbgl, TP25C at 1.0mbgl and TP33C at 0.3mbgl (grid references A5, B6 and K4 respectively). Each of the asbestos identifications related to fugitive Chrysotile fibres. Additionally, two samples recorded abnormal pH levels, TP29C at 1.3mbgl (pH of 2.7) and TP16C at 1.5mbgl (pH of 10.2), which will need to be considered carefully in terms of potential suitability for re-use and/or stabilisation. The sample taken from TP29C at 1.3mbgl relates to a layer of spent oxide (Blue Billy), which is the likely reason for the high pH level), and will likely require further treatment prior to reuse on other areas of the site.

From review of the spatial distribution of the contamination, the samples with the most elevated concentrations (though not exceeding the ‘commercial’ GAC criteria) were identified within the Lagoon Bund area (grid refs B5 to B7 and C5 to C7), with one sample from the topsoil horizon of the Central Embankment (TP23C at 0.2mbgl, grid reference A5) also having elevated concentrations of contaminants.

4.3 Contamination assessment – Risks to controlled waters

The leachate results have been compared against the limiting values within Appendix 6/14 of the PGDR¹, which are based on the Freshwater Environmental Quality Standards (EQS) and Drinking Water Values (DWV). Given the primary receptor of concern is the Yeading Brook, located directly west of the Lagoon Bund, the preferential screening values are the

EQS values. Of the eight samples tested, one sample was tested from the central alignment of the River Crane, three samples were tested from the central embankment close to the Lagoon Bund, and the remaining four samples were tested from the Lagoon Bund. All the samples were tested from the topsoil/Made Ground horizons. The testing fell within the grid references F4 for the sample from the River Crane, A4, A5 and B5 for the central embankment samples and B6, C6 and C7 for the Lagoon Bund samples.

Exceedances of the GAC were recorded within each of the eight samples tested. Three ecotoxic metals, copper, nickel and zinc were assessed against their bioavailable concentrations, as opposed to total concentrations present within the leachate. A summary of the contamination assessment is outlined below, while the full laboratory testing results and assessment tables are presented in Appendix D.

The exceedances of GAC from the four samples taken within the Lagoon Tip included sulfates, total phenols, metals, PAHs (TP28C at 1.8mbgl only) and pH (TP29C at 1.3mbgl only). A total of fourteen different contaminants exceeded the freshwater EQS criteria (considered to be the more applicable given the potential receptor of the Yeading Brook), while six metals / metalloids (arsenic, cadmium, chromium III, lead, nickel and zinc) and one PAH (anthracene) also failed against the DWV criteria. Generally, the highest concentrations were recorded within the leachate sample from TP29C, located within a layer of spent oxide material within the Lagoon Bund (grid reference C6).

The exceedances within the three samples taken from the proposed route of the western access road included sulfate, total phenols, and metals. A total of eight different contaminants exceeded the freshwater EQS criteria, while two metals (cadmium and lead) failed both the EQS and DWS criteria. Of these locations, TP20C (located the furthest from the Lagoon Tip) had the lowest overall concentrations of contamination (lead and total phenols), while TP23C, located close to the boundary of the Lagoon Tip was identified as having the most contaminated leachate.

From the single sample taken from the course of the River Crane (TP9C at 0.3mbgl), a single contaminant, lead failed against both the EQS and DWS criteria.

4.4 Waste characterisation

Waste characterisation of the sampled material was undertaken in accordance with the waste classification guidance document, WM3⁵ to determine its characterisation and

hazardous properties. The full laboratory results of the waste acceptance criteria (WAC) testing are presented in Appendix E.

It should be noted that in May/June 2012, HMR&C issued Briefs 15/12 and 18/12 clarifying how construction spoil and excess soils will be assessed for landfill tax purposes. Detailed accurate descriptions of waste are required for all wastes to support the landfill tax assessment. Uncontaminated naturally occurring soils will remain inert by default and eligible for the lower rate of landfill tax. Similarly, 'reworked soils' and demolition 'stone' comprising ONLY materials listed in the Schedule of the Landfill Tax (Qualifying Material) Order 2011 (SI 2011/1017) will also be eligible for the lower rate of landfill tax. However, Made Ground containing soil and foreign objects such as timber, plastic, rubber, metal, paper, plasterboard, asbestos etc., regardless of the results of chemical analysis for waste classification purposes, will be eligible for the standard (higher) rate of landfill tax. Therefore, to maximise eligibility for lower rate landfill tax on waste construction spoil/reworked ground, careful waste segregation and controls are necessary, and Made Ground recorded onsite will need sorting to remove foreign objects.

Two samples from the Lagoon Bund were tested, and the results indicate that the underlying soils are not suitable for disposal at a landfill that accepts hazardous waste, based on the loss on ignition exceeding the hazardous criteria of 10%. Therefore, the soils would require pre-treatment either on site or off-site to pass this criteria prior to disposal at a landfill that accepts hazardous waste. It is anticipated that the high organic contents causing the loss on ignition exceedance relate to the dredged material within the Lagoon Bund. Additionally, zinc and total organic carbon (TOC) exceeded the stable non-reactive waste criteria. Eight other contaminants, including mineral oil, antimony, cadmium, chromium (total), copper, nickel, sulfate and total dissolved solids (TDS) exceeded the inert waste criteria.

One sample from the Area 2 – central embankment was tested, and the results indicate that the underlying soils are also not suitable for disposal at a landfill that accepts hazardous waste based on the loss on ignition exceeding the hazardous criteria of 10%, unless the soils undergo pre-treatment to reduce its organic content. Four other contaminants, including; TOC, mineral oil, antimony and total PAH exceeded the inert landfill waste criteria.

The four WAC tests from the Western Embankment and Flood Alleviation Area indicate that the soils are suitable for disposal to a landfill that accepts inert landfill waste. As such soils from around these areas should be suitable for reuse across other areas of the site.

A summary of the WAC testing indicates that the soils from along the course of the River Crane are generally considered to be suitable for landfills that accept inert waste, and given the generally low results from the testing, may be suitable for reuse across other areas of the site. The results of the soils from the Lagoon Tip indicate that the materials are suitable for disposal at a landfill that accepts hazardous waste, and is therefore not considered suitable for reuse across other areas of the site without undertaking treatment first.

The soils tested from the eastern area of the proposed route of the western access road indicate that the materials are not suitable for disposal at a landfill that accepts hazardous waste based on the results of the loss of ignition testing (14%), and that pre-treatment to lower the organic content of these samples will be required. It is recommended that further WAC testing is undertaken along the Central Embankment area to confirm whether the organic content (i.e. loss on ignition %) is characteristic of the soils near the Lagoon Bund, or if the organic content is high across the proposed route as a whole. Additionally, early discussions with potential landfill operators may allow the acceptance of this material to a stable non-reactive waste accepting landfill with a hazardous waste cell, as the only exceedance was loss of ignition by a 4% threshold.

4.5 Groundwater and formation considerations

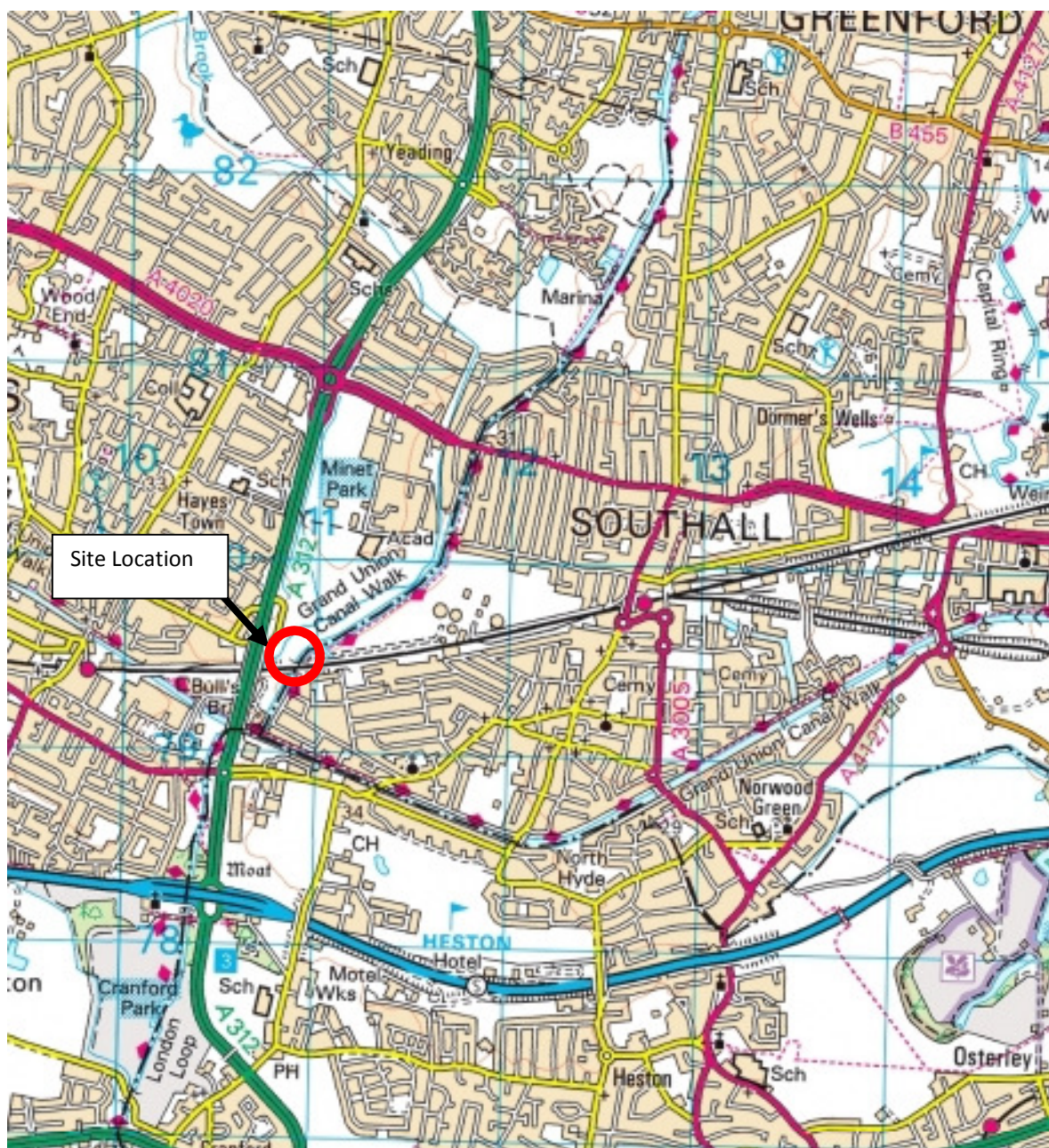
Groundwater was not identified within any of the 33 trial pits undertaken as part of this phase of investigation. The deepest trial pit excavation was to a depth of 3.6mbgl, and groundwater was not identified. The trial pits were deliberately terminated at shallow depths in a competent stratum to avoid breaching the groundwater table and risking potential cross contamination on the site.

Based on observations made during the site works that care will have to be given during strip and construction works to protect the formation level from softening and weakening the cohesive upper formation strata during site works and trafficking.

5. SUMMARY

This report provides the results of the final round of trial pitting and subsequent laboratory testing undertaken as part of the advanced works phase of the Western Access scheme. The results confirm the results of the previous investigations, that show material from the Lagoon Bund area to have large variability in its geotechnical properties and as a result may benefit from treatment with lime to stabilise the material. Additionally, natural material from other areas of the site have now been tested, which show more consistency in their geotechnical properties. Lime trials have been undertaken with the results indicating that stabilisation of the Lagoon Bund (Area 3) material alone, does not produce acceptable results. Further testing is ongoing to determine an efficient blend of site won materials from across the site, for subsequent stabilisation to achieve the required strength characteristics.

FIGURES



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Client	Project	Job No
CSP Limited	Southall Advanced Works	CGN/3732E
	Title	
	Site location plan	Figure 1



KEY

- Completed trial pits (CGL 24th Feb 2017)
- Completed trial pits (CGL 27th March 2017)
- Western Access Site boundary
- Western Access Road Alignment
- Indicative embankment extents
- Extent of existing Lagoon Bund
- 'Bridge Bund' relating to investigation undertaken 24th February 2017
- Area 1 - River Crane incorporating Western Embankment & Flood Alleviation Zone
- Area 2 - Central Embankment
- Area 3 - 'Lagoon Bund'
- Area 4 - Eastern Embankment

Drawing produced from: A724-E05-PA-VEC-HW-DR-0001

0	15/05/17	
Rev	Date	Comments
 Card Geotechnics Ltd 4 Godalming Business Centre Woolsack Way Godalming Surrey GU7 1XW T: 01483 310600		
Project Southall Western Access Advanced Works		
Client FM Conway Limited		
Drawing title Figure 2 - Site Layout & Exploratory Hole Location Plan		
Scale(s) NTS		Job No. CGN/03732E
Drawn TSB	15/05/17	Dwg No. A720-E05-IW-CGL-GEO-DR-0001
Checked		Rev. 0
Approved		

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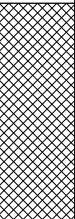
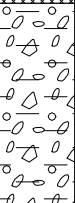
APPENDIX A

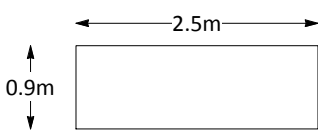
Trial Pit Logs

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP01C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 26.47	Co-Ordinates (m) E 510,733.7 N 179,479.4	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.50	ES1/D1			25.57		MADE GROUND. Bark over firm light brown mottled brown sandy gravelly clay with occasional roots. Gravel is angular to rounded, fine to coarse of flint, brick and ceramic.
1.00	B1					Orangish brown mottled brown clayey GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
1.70	D2			24.67		
						(Pit terminated at 1.8m)

Plan  Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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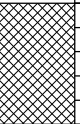
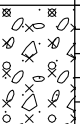
Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
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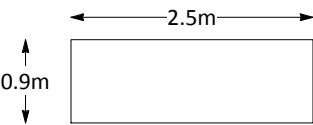
CGL TP LOG CGN3732D TRIAL PIT SOUTHALL GPJ GINT STD AGS 3.1 GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP02C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 26.40	Co-Ordinates (m) E 510,775.8 N 179,484.3	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.40	ES1/D1			25.90		TOPSOIL. Dark brown clayey sand with frequent roots and rootlets. 0.30 Large tree roots.
1.20	D2			25.00		Firm brown slightly sandy silty CLAY with occasional roots and rootlets. [RIVER TERRACE DEPOSITS]
1.60	B1			24.50		Greyish brown slightly silty sandy GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
						(Pit terminated at 1.9m)

Plan  Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP03C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 26.50	Co-Ordinates (m) E 510,785.5 N 179,516.6	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.40	ES1/D1	47,45,43		26.00		TOPSOIL. Dark brown clayey sand with occasional roots and frequent rootlets. (0.50)
0.70 0.70 1.00	D2 HSV B1			25.20		Firm brown slightly sandy silty CLAY with occasional roots and rootlets. [RIVER TERRACE DEPOSITS] (0.80)
1.70	B2			24.40		Orangish brown mottled brown clayey GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS] 1.70 Occasional grey layers. (0.80)
						(Pit terminated at 2.1m)

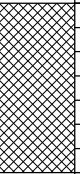
Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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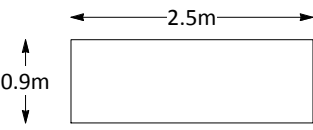
Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP04C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 26.54	Co-Ordinates (m) E 510,790.5 N 179,544.3	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.40	ES1/D1/B1			25.84		MADE GROUND. Dark brown clayey gravelly sand with occasional roots and frequent rootlets. Gravel is subangular to rounded, fine to coarse of clinker, ceramics and plastic.
0.80	HSV	60,62,58				Firm brown CLAY. [RIVER TERRACE DEPOSITS]
1.00	D2					
1.00	HSV	60,55,661				
1.40	HSV	60,60,61		24.84		
2.00	B2			24.24		Greyish brown slightly silty sandy GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
2.30	D3					(Pit terminated at 2.3m)

Plan  Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP05C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 26.56	Co-Ordinates (m) E 510,812.4 N 179,569.3	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA			
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	Depth (m) (Thickness)	DESCRIPTION
0.30	ES1/D1/B1	90,92,91		26.16		0.40	MADE GROUND. Dark brown clayey gravelly SAND with occasional roots and frequent rootlets. Gravel is subangular to rounded, fine to coarse of clinker, ceramics and plastic.
0.50 0.60	B2 D2					(0.70)	MADE GROUND. Firm brown slightly gravelly silty clay. Gravel is subangular to rounded, fine to medium of brick and ceramic.
				25.46		1.10	
1.20	D3					(0.65)	Brown to orangish brown clayey sandy GRAVEL. Gravel is subrounded to wellrounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
1.50	B3			24.81		1.75	
						(0.35)	Brownish grey very clayey GRAVEL with occasional pockets of clay. Gravel is subrounded to wellrounded, fine to coarse of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
2.00 2.00	D4 HSV			24.46		2.10	
				24.26		2.30	Very stiff brown to greyish brown CLAY. [LONDON CLAY FORMATION] (Pit terminated at 2.3m)

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP06C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 26.52	Co-Ordinates (m) E 510,807.6 N 179,590.3	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.50	B1	50,52,660		26.07		MADE GROUND. Dark brown clayey gravelly SAND with occasional roots and frequent rootlets. Gravel is subangular to rounded, fine to coarse of clinker, ceramics and plastic.
0.80	HSV			25.47		Firm to stiff brown sandy CLAY with occasional roots and rootlets. [RIVER TERRACE DEPOSITS]
1.30	B2			24.72		Grey clayey sandy GRAVEL. Gravel is well rounded to rounded, fine to coarse of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
1.80	B3/D1			24.62		Very stiff brown CLAY. [LONDON CLAY FORMATION]
1.85	D2					(Pit terminated at 1.9m)

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP07C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 26.41	Co-Ordinates (m) E 510,777.1 N 179,591.6	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.20	ES1/D1			26.11		MADE GROUND. Dark brown clayey gravelly SAND with occasional roots and frequent rootlets. Gravel is subangular to rounded, fine to coarse of clinker, ceramics and plastic.
0.40	BB1					Grey clayey sandy GRAVEL. Gravel is well rounded to rounded, fine to coarse of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
1.30	DD2			25.01		
1.60	DD3			24.81		Very stiff brown CLAY. [LONDON CLAY FORMATION] (Pit terminated at 1.6m)

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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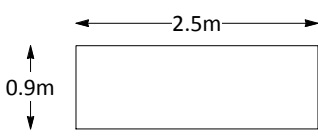
CGL TP LOG CGN3732D TRIAL PIT SOUTHALL GPJ GINT STD AGS 3.1 GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP08C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 28.10	Co-Ordinates (m) E 510,811.8 N 179,654.0	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.30	ES1/D1/B1			27.60	(0.50)	MADE GROUND. Dark brown clayey gravelly SAND with occasional roots and frequent rootlets. Gravel is subangular to rounded, fine to coarse of clinker, ceramics and fabric.
0.45	B2					
0.80	B3				(1.00)	Orangish brown to brown silty sandy GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears dense. [RIVER TERRACE DEPOSITS]
1.50	D2			26.60	1.50	(Pit terminated at 1.5m)

Plan  Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

CCGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3 1.GDT 17/5/17

CCGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3 1.GDT 17/5/17

CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3 1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP10C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 26.68	Co-Ordinates (m) E 510,757.1 N 179,524.1	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.20	B1			26.28		TOPSOIL. Brown clayey gravelly sand. Gravel is well rounded to subrounded, fine to medium of flint.
0.60	D1					Orangish brown very clayey GRAVEL. Gravel is rounded to well rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
1.30	B2			25.28		
						(Pit terminated at 1.4m)

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
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TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP11C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 25.56	Co-Ordinates (m) E 510,822.8 N 179,793.9	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.20	ES1/D1/B1			25.26		MADE GROUND. Dark brown clayey gravelly sand with occasional roots and frequent rootlets. Gravel is subangular to rounded, fine to coarse of clinker, ceramics and plastic.
0.40	B2			24.86		Orangish brown to brown silty sandy GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
0.90	D2					Very stiff grey to brown CLAY. [LONDON CLAY FORMATION]
1.50	B3			23.86		
1.60	HSV	80,82,78				
						(Pit terminated at 1.7m)

Plan	General Remarks
Stability: Stable	1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.

Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
Tracked Excavator			

CGL TP LOG CGN3732D TRIAL PIT SOUTHALL GPJ GINT STD AGS 3.1 GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP12C
Job No CGN/03732E	Date 23-03-17	Ground Level (m) 26.05	Co-Ordinates (m) E 510,793.7 N 179,842.2	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.20	ES1/D1/B1	80,82,80		25.75		MADE GROUND. Dark brown clayey gravelly sand with occasional roots and frequent rootlets. Gravel is subangular to rounded, fine to coarse of clinker, ceramics and plastic.
0.50	B1					Orangish brown to brown silty sandy GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
1.00	D2			24.95		Very stiff grey to brown CLAY. [LONDON CLAY FORMATION]
1.40	D3					
1.70				24.25		
						(Pit terminated at 1.8m)

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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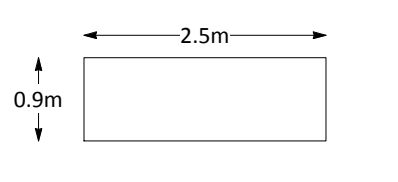
Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP13C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 25.90	Co-Ordinates (m) E 510,769.8 N 179,605.3	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.30	ES1/D1/B1			25.50	(0.40)	MADE GROUND. Dark brown clayey sandy gravel. Gravel is angular to subangular, fine to coarse of frequent metal, brick, concrete with rare rubber and glass.
0.50	B2				(1.10)	Orangish brown to brown silty sandy GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
1.40	B3			24.40	1.50	(Pit terminated at 1.5m)

Plan  Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP14C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 25.49	Co-Ordinates (m) E 510,779.2 N 179,626.9	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.30 0.40	ES1/D1 B1			25.29		MADE GROUND. Dark brown clayey sandy gravel. Gravel is angular to subangular, fine to coarse of frequent metal, brick, concrete with rare rubber and glass.
						Dark grey to blueish grey silty sandy GRAVEL with frequent rootlets. Gravel is well rounded to rounded, fine to medium of flint. [RIVER TERRACE DEPOSITS]
				24.59		
				24.49		
1.10 1.20	HSV D2	65,60,62				Orangish brown to brown silty sandy GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
						Stiff brownish grey CLAY. [LONDON CLAY FORMATION]
				23.99		
						(Pit terminated at 1.5m)

Plan	General Remarks
Stability: Stable	- Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. - No visual or olfactory evidence of contamination observed. - Pit sides were stable. - No groundwater encountered during excavation. - Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. - Trial pit backfilled with arisings upon completion. - Trial pit logged in accordance with BS5930:2015.

Method/ Plant Used	Field Crew	Logged By	Checked By
Tracked Excavator		ARA	DRAFT

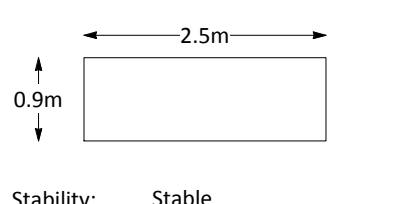
CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP15C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 28.36	Co-Ordinates (m) E 510,790.6 N 179,676.1	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.20	B1			28.06	(0.30) 0.30	MADE GROUND. Brown to dark brown clayey sandy gravel.
0.50 0.60	B2 ES1/D1			26.96	(1.10) 1.40	MADE GROUND. Dark orangish brown to grey silty sandy gravel with occasional roots and rootlets. Gravel is well rounded to rounded, fine to medium of flint. Appears loose.
2.00	B3			25.86	(1.10) 2.50	Orangish brown to brown silty SAND and GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
						(Pit terminated at 2.5m)

Plan 	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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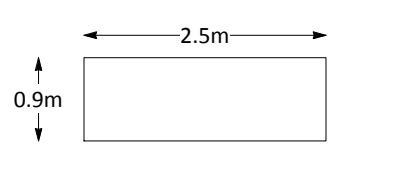
Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP16C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 32.20	Co-Ordinates (m) E 510,795.3 N 179,717.9	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.50	ES1/D1			31.70		MADE GROUND. Brown to dark brown clayey sandy gravel. Gravel is angular to subangular, fine to coarse of brick, plastic and concrete. Appears loose.
						(0.50)
						0.50
						MADE GROUND. Soft brown to dark grey sandy gravelly clay. Gravel is of rare fragments of plastic, brick, concrete and metal. Appears medium dense.
						(1.00)
						1.00
1.50	B1			30.70		1.50
1.50	ES2/D2					(Pit terminated at 1.5m)

Plan  Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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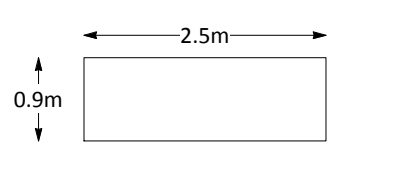
Method/ Plant Used	Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP17C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 30.58	Co-Ordinates (m) E 510,794.6 N 179,785.9	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.30	B1					MADE GROUND. Dark brown clayey gravelly sand with occasional roots. Gravel is angular to rounded, fine to coarse of flint with rare plastic.
0.50	ES1/ D1			29.88		
0.80	B2					MADE GROUND. Dark brown to orangish brown sand and gravel with occasional roots and rootlets. Gravel is well rounded to rounded, fine to medium of flint.
1.50	ES2/D2			28.48		
2.20	B3			27.58		Orangish brown silty sandy GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears dense. [RIVER TERRACE DEPOSITS]
						(Pit terminated at 3m)

Plan  Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used	Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

CCGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3 1.GDT 17/5/17CCGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3 1.GDT 17/5/17CCGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3 1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP19C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 26.27	Co-Ordinates (m) E 510,824.7 N 179,515.7	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.40	ES1/D1/B1			25.57		TOPSOIL. Soft dark brown slightly sandy clayey SILT with occasional roots and rootlets.
1.00	HSV	44,47,42		25.07		Soft to firm brown to greyish brown CLAY with rare roots and rootlets. [RIVER TERRACE DEPOSITS]
				24.07		Orangish brown silty sandy GRAVEL. Gravel is well rounded to rounded, fine to medium of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
						(Pit terminated at 2.2m)

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
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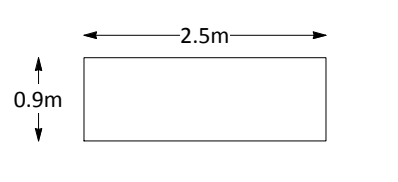
CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP20C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 26.12	Co-Ordinates (m) E 510,810.4 N 179,487.1	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.40	ES1/D1/B1			25.52	(0.60)	TOPSOIL. Soft dark brown slightly sandy clayey SILT with occasional roots and rootlets.
1.00	HSV	44,48,45			(1.60)	Firm becoming stiff dark brown to greyish brown silty CLAY. [RIVER TERRACE DEPOSITS]
1.40	B2					1.40 Occasional layers of gravel.
1.50	HSV	70,72,74				
1.60	D2					
2.00	HSV	80,75,80		23.92	2.20	(Pit terminated at 2.2m)

Plan  Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP21C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 26.42	Co-Ordinates (m) E 510,830.0 N 179,538.0	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
				26.02	(0.40)	TOPSOIL. Soft dark brown slightly sandy clayey SILT with occasional roots and rootlets.
1.00	HSV	40,45,52			(1.70)	Firm becoming stiff dark brown to greyish brown silty CLAY. [RIVER TERRACE DEPOSITS]
1.50	HSV	60,62,65		24.32	2.10	(Pit terminated at 2.1m)

Plan	General Remarks
Stability: Stable	1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.

Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
Tracked Excavator			

CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP22C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 26.40	Co-Ordinates (m) E 510,859.7 N 179,529.8	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.40	ES1/D1/B1			26.10		TOPSOIL. Soft dark brown slightly sandy clayey SILT with occasional roots and rootlets.
						Firm becoming stiff dark brown to greyish brown silty CLAY with occasional roots and rootlets. [RIVER TERRACE DEPOSITS]
				25.60		Firm orangish brown gravelly CLAY. Gravel is well rounded to rounded, fine to coarse of flint. [RIVER TERRACE DEPOSITS]
1.20 1.30	HSV D2	60,55,60				
1.70	B2					
2.00	HSV	80,80,82		24.30		
						(Pit terminated at 2.1m)

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP23C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 27.87	Co-Ordinates (m) E 510,866.4 N 179,492.1	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.20	ES1/D1			27.47		TOPSOIL. Soft dark brown slightly sandy clayey SILT with occasional roots and rootlets.
0.40	B1					Firm becoming stiff dark brown to greyish brown silty CLAY with occasional roots and rootlets. [RIVER TERRACE DEPOSITS]
0.80	ES2/D2					
1.00	HSV	35,40,40		26.67		
1.30	HSV	40,40,45				Stiff brown to greyish brown silty CLAY. [LONDON CLAY FORMATION]
1.50	B2					
1.50	HSV	60,65		26.07		
2.00	HSV	80,82,80		25.77		Stiff brown silty CLAY. [LONDON CLAY FORMATION]
						(Pit terminated at 2.1m)

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP24C
Job No CGN/03732E	Date 24-03-17	Ground Level (m) 32.22	Co-Ordinates (m) E 510,904.3 N 179,508.6	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.70	ES1/D1					MADE GROUND. Dark brown slightly gravelly clayey sand. Gravel is angular to subangular, fine to coarse of metal, concrete glass and brick. Appears loose.
1.00	B1					
				30.72	1.50	(Pit terminated at 1.5m)

Plan	General Remarks
Stability: Stable	1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.

Method/ Plant Used	Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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CGI TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP25C
Job No CGN/03732E	Date 27-03-17	Ground Level (m) 32.84	Co-Ordinates (m) E 510,924.6 N 179,523.5	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
1.00	ES1/D1					MADE GROUND. Dark brown slightly gravelly clayey sand. Gravel is angular to subangular, fine to coarse of metal, glass, plastic and concrete with rare hard-cement type asbestos containing material and tins. Appears loose. 0.50 Single ACM fragment identified.
1.50	B1					
				30.54	2.30	
						(Pit terminated at 2.3m)

Plan	General Remarks
Stability: Stable	1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.

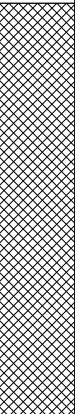
Method/ Plant Used	Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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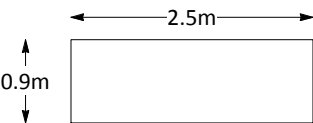
CGI TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP26C
Job No CGN/03732E	Date 27-03-17	Ground Level (m) 30.36	Co-Ordinates (m) E 510,908.6 N 179,546.7	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
2.50	ES1/D1			28.66		MADE GROUND. Dark brown slightly gravelly clayey sand. Gravel is angular to subangular, fine to coarse of some glass and occasional brick, metal and ceramic. Appears loose.
				26.86		MADE GROUND. Stiff black sandy gravelly clay. Gravel is angular to subangular, fine to coarse of ceramic and glass. Strong hydrocarbon odour.
						(Pit terminated at 3.5m)

Plan  Stability: Unstable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
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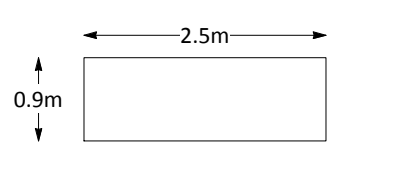
CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP27C
Job No CGN/03732E	Date 27-03-17	Ground Level (m) 29.93	Co-Ordinates (m) E 510,906.2 N 179,566.9	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
2.50	ES1/D1/B1			27.93	(2.00)	MADE GROUND. Dark brown slightly gravelly clayey sand. Gravel is angular to subangular, fine to coarse of brick, concrete, ceramic, glass and tile. Appears loose.
					(1.60)	MADE GROUND. Stiff black sandy gravelly clay. Gravel is angular to subangular, fine to coarse of ceramic and glass. Very strong hydrocarbon odour.
				26.33	3.60	(Pit terminated at 3.6m)

Plan  Stability: Unstable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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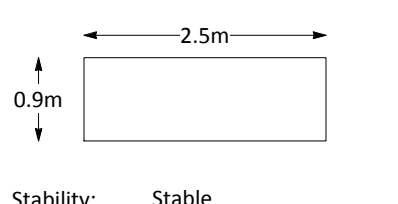
CGL TP LOG CGN3732D TRIAL PIT SOUTHALL GPJ GINT STD AGS 3.1 GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP28C
Job No CGN/03732E	Date 27-03-17	Ground Level (m) 29.24	Co-Ordinates (m) E 510,955.3 N 179,560.0	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.50	B1					MADE GROUND. Dark brown slightly gravelly clayey sand. Gravel is angular to subangular, fine to coarse of brick, concrete, ceramic, glass and tile. Appears loose.
1.80	ES1/D1			27.54		MADE GROUND. Stiff black sandy gravelly clay. Gravel is angular to subangular, fine to coarse of ceramic and glass. Very strong hydrocarbon odour.
				26.24		(Pit terminated at 3m)

Plan 	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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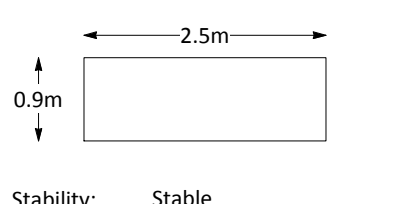
CGL TP LOG CGN3732D TRIAL PIT SOUTHALL GPJ GINT STD AGS 3.1 GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP29C
Job No CGN/03732E	Date 27-03-17	Ground Level (m) 30.30	Co-Ordinates (m) E 510,941.9 N 17,592.4	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
1.30	ES1/D1			29.20	(1.10)	MADE GROUND. Dark brown slightly gravelly clayey sand. Gravel is angular to subangular, fine to coarse of brick, concrete, ceramic, glass and tile. Appears loose.
					(1.10)	Soft black silty clay with lenses and pockets of blue silty sand. Very strong hydrocarbon and cyanide-type odour. 1.30 - 1.35 Layer of blue billy.
				28.10	2.20	(Pit terminated at 2.2m)

Plan 	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP30C
Job No CGN/03732E	Date 27-03-17	Ground Level (m) 26.28	Co-Ordinates (m) E 510,794.1 N 179,873.9	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.50	ES1/D1			25.88		TOPSOIL. Brown clayey gravelly sand. Gravel is well rounded to subrounded, fine to medium of flint.
				24.88		Orangish brown SAND & GRAVEL. Gravel is well rounded to rounded, fine to coarse of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
1.60	B1					Very stiff dark grey CLAY. [LONDON CLAY FORMATION]
1.80	B2					
1.90	D2			24.18		
(Pit terminated at 2.1m)						

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP31C
Job No CGN/03732E	Date 27-03-17	Ground Level (m) 29.74	Co-Ordinates (m) E 510,815.2 N 179,878.2	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.40	ES1/D1			29.14		MADE GROUND. Brown clayey gravelly sand. Gravel is angular to well rounded, fine to coarse of flint with frequent brick, concrete and asbestos containing material.
0.80	D2			28.74		Soft brown very gravelly CLAY with occasional roots and rootlets. Gravel is well rounded to rounded, fine to coarse of flint. [RIVER TERRACE DEPOSITS]
1.40	B1			27.74		Orangish brown mottled grey clayey sandy GRAVEL. Gravel is well rounded to rounded, fine to coarse of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
(Pit terminated at 2m)						

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
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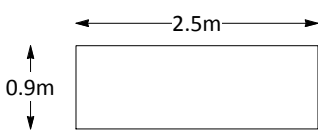
CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP32C
Job No CGN/03732E	Date 27-03-17	Ground Level (m) 29.08	Co-Ordinates (m) E 510,826.2 N 179,930.9	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA			
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	Depth (m) (Thickness)	DESCRIPTION
0.50	ES1/D1			28.68		0.40	MADE GROUND. Brown clayey gravelly sand. Gravel is angular to well rounded, fine to coarse of flint with frequent brick and concrete.
1.00	B1			27.58		1.10	MADE GROUND. Brown very clayey gravel with occasional roots and rootlets. Gravel is subangular to rounded, fine to coarse of flint and rare brick. Appears loose.
2.00	B2			26.88		0.70	Pale greyish brown SAND & GRAVEL. Gravel is well rounded to rounded, fine to coarse of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
							(Pit terminated at 2.2m)

Plan  Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used	Field Crew	Logged By ARA	Checked By DRAFT
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CGL TP LOG CGN3732D TRIAL PIT SOUTHALL.GPJ GINT STD AGS 3.1.GDT 17/5/17

TRIAL PIT LOG



Project Southall Western Access Advanced Works				TRIAL PIT No TP33C
Job No CGN/03732E	Date 27-03-17	Ground Level (m) 28.85	Co-Ordinates (m) E 510,837.0 N 179,972.9	
Client CSPL				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA		
Depth (m)	Type No	Test Result (N/kPa/ppm)		Reduced Level	Legend	DESCRIPTION
0.30	ES1/D1			28.35		TOPSOIL. Brown clayey gravelly sand. Gravel is well rounded to subrounded, fine to medium of flint.
				28.05		Soft to firm orangish brown gravelly dessicated CLAY with frequent roots and rootlets. Gravel is well rounded to subrounded, fine to coarse of flint. [RIVER TERRACE DEPOSITS]
				27.25		Greyish brown SAND & GRAVEL. Gravel is well rounded to subrounded, fine to coarse of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
1.70	B1			26.75		Orangish brown to pale greyish brown SAND & GRAVEL. Gravel is well rounded to subrounded, fine to coarse of flint. Appears medium dense. [RIVER TERRACE DEPOSITS]
2.00	D2			26.45		Stiff brown to orangish brown silty CLAY. [LONDON CLAY FORMATION]
2.20	B2					
2.30	D3					(Pit terminated at 2.4m)

Plan Stability: Stable	General Remarks 1. Samples: B - Bulk, D - Disturbed, ES - Environmental Sample. 2. No visual or olfactory evidence of contamination observed. 3. Pit sides were stable. 4. No groundwater encountered during excavation. 5. Pit terminated as a competent stratum was reached and to avoid breaching groundwater table. 6. Trial pit backfilled with arisings upon completion. 7. Trial pit logged in accordance with BS5930:2015.
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Method/ Plant Used Tracked Excavator	Field Crew	Logged By ARA	Checked By DRAFT
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APPENDIX B

Geotechnical Test Results



TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
729302	3	TP11C	1.5	Not Given	B	Brownish grey CLAY	31
729303	1	TP12C	0.5	Not Given	B	Brown slightly clayey very sandy GRAVEL	5.0
729304	3	TP12C	1.4	Not Given	B	Grey slightly gravelly slightly sandy CLAY	29
729305	1	TP13C	0.3	Not Given	D	Greyish brown slightly sandy silty CLAY	22
729306	3	TP13C	1.4	Not Given	B	Yellowish brown clayey very sandy GRAVEL	7.6
729307	2	TP14C	1.2	Not Given	D	Brown slightly gravelly CLAY	32
729308	1	TP16C	1.5	Not Given	B	Brown slightly gravelly slightly sandy CLAY	30
729290	1	TP1C	1	Not Given	B	Yellowish brown clayey sandy GRAVEL	14
729309	2	TP20C	1.4	Not Given	B	Yellowish brown slightly gravelly slightly sandy CLAY	44
729320	Not Given	TP21C	0.7	Not Given	B	Brown slightly sandy CLAY	29

Remarks

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."



TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
729310	1	TP22C	0.4	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY	26
729311	1	TP23C	0.4	Not Given	B	Brown slightly gravelly slightly sandy CLAY	37
729312	1	TP24C	1	Not Given	B	Brownish grey slightly gravelly slightly sandy CLAY	29
729313	1	TP25C	1.5	Not Given	B	Dark brown slightly gravelly slightly sandy CLAY	38
729321	Not Given	TP27	0.5	Not Given	B	Dark brown clayey very gravelly SAND	43 *
729314	1	TP27C	2.5	Not Given	D	Dark brown slightly gravelly organic CLAY	65
729315	1	TP30C	1	Not Given	B	Brown slightly clayey sandy GRAVEL	4.1
729316	1	TP31C	1.4	Not Given	B	Brown sandy clayey GRAVEL	12
729317	1	TP32C	1	Not Given	B	Yellowish brown slightly sandy gravelly CLAY	17
729318	2	TP32C	2	Not Given	B	Brown clayey very sandy GRAVEL	6.5

Remarks * - sample is very wet

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04 - 11/04/2017
Sampled By: Not Given

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
729319	2	TP33C	2.2	Not Given	B	Brown slightly sandy CLAY	21
729291	1	TP3C	1	Not Given	B	Yellowish brown slightly gravelly slightly sandy CLAY	28
729292	2	TP3C	1.7	Not Given	B	Brown sandy clayey GRAVEL	11
729293	1	TP4C	0.4	Not Given	D	Dark brown sandy clayey SILT	29
729294	2	TP4C	2	Not Given	B	Grey slightly sandy clayey GRAVEL	9.4
729295	2	TP5C	0.5	Not Given	B	Brown slightly sandy silty CLAY	22
729298	1	TP6C	0.4	Not Given	B	Grey slightly sandy clayey GRAVEL	9.8
729296	1	TP6C	0.5	Not Given	B	Brown gravelly silty CLAY	18
729297	2	TP6C	1.85	Not Given	D	Brown slightly gravelly CLAY	28
729299	3	TP7C	1.6	Not Given	D	Brown CLAY	23

Remarks

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
729300	2	TP8C	0.45	Not Given	B	Dark brown sandy silty CLAY	22
729301	3	TP8C	0.8	Not Given	B	Brown clayey very sandy GRAVEL	6.8

Remarks

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

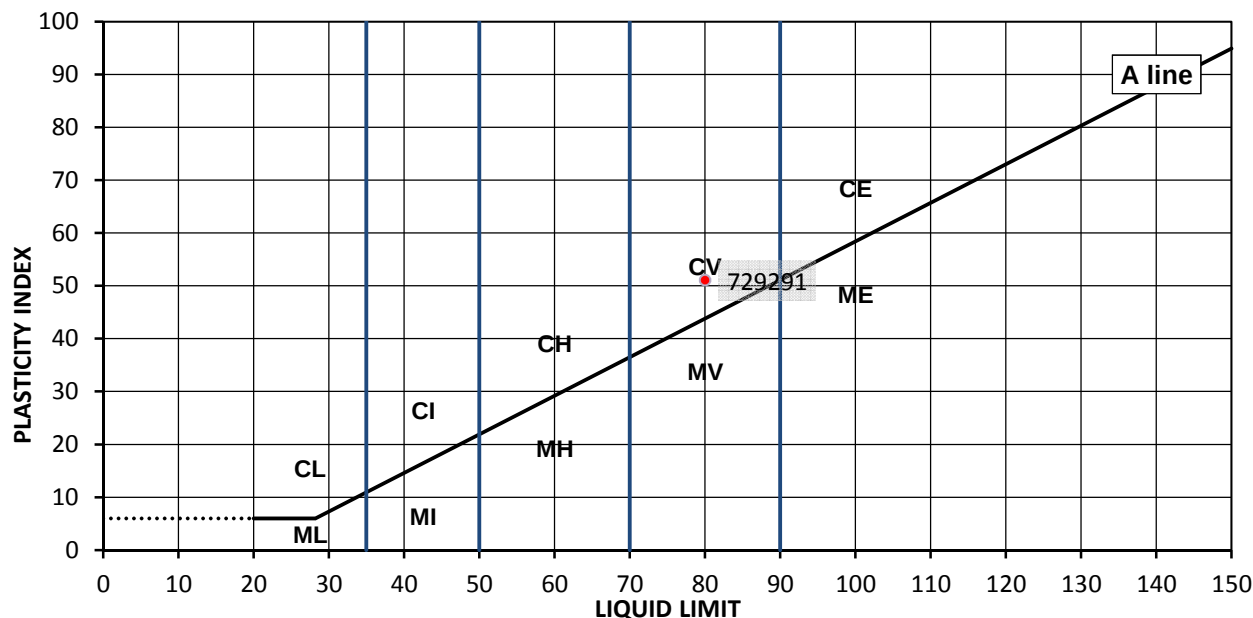
TEST RESULTS

Laboratory Reference: 729291
Sample Reference: 1

Description: Yellowish brown slightly gravelly slightly sandy CLAY
Location: TP3C
Sample Preparation: Tested after >425um removed by hand

Sample Type: B
Depth Top [m]: 1
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
28	80	29	51	70



Legend, based on BS 5930:2015 Code of practice for site investigations

	Plasticity	Liquid Limit
C	Clay	below 35
M	Silt	35 to 50
	L	Low
	I	Medium
	H	High
	V	Very high
	E	Extremely high
	O	append to classification for organic material (eg CHO)
	Organic	

Remarks

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

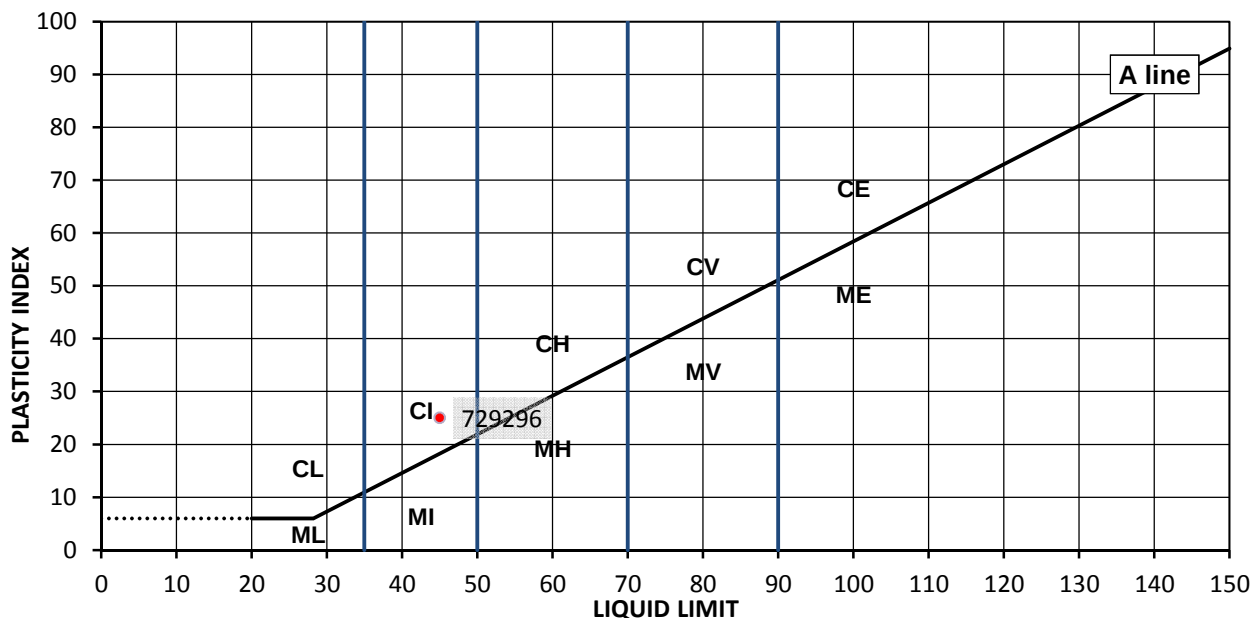
TEST RESULTS

Laboratory Reference: 729296
Sample Reference: 1

Description: Brown gravelly silty CLAY
Location: TP6C
Sample Preparation: Tested after >425um removed by hand

Sample Type: B
Depth Top [m]: 0.5
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
18	45	20	25	71



Legend, based on BS 5930:2015 Code of practice for site investigations

	Plasticity	Liquid Limit
C	Clay	below 35
M	Silt	35 to 50
	L Low	50 to 70
	I Medium	70 to 90
	H High	exceeding 90
	V Very high	
	E Extremely high	
Organic	O	append to classification for organic material (eg CHO)

Remarks

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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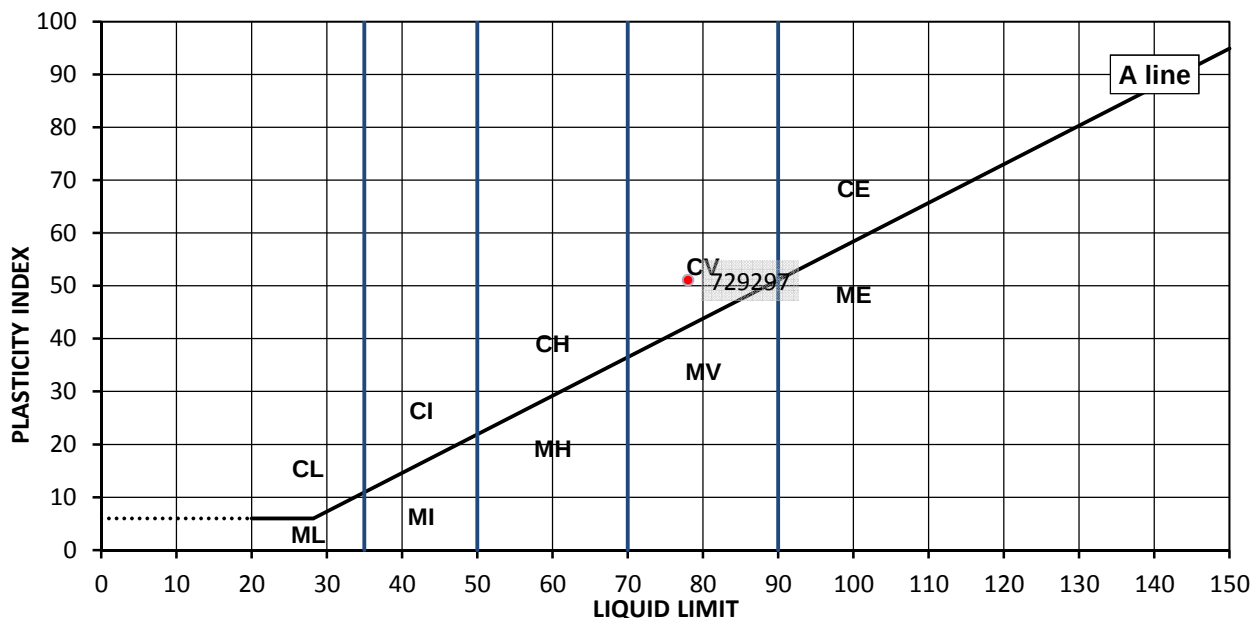
TEST RESULTS

Laboratory Reference: 729297
Sample Reference: 2

Description: Brown slightly gravelly CLAY
Location: TP6C
Sample Preparation: Tested after >425um removed by hand

Sample Type: D
Depth Top [m]: 1.85
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
28	78	27	51	98



Legend, based on BS 5930:2015 Code of practice for site investigations

	Plasticity	Liquid Limit
C	Clay	below 35
M	Silt	35 to 50
	L	Low
	I	Medium
	H	High
	V	Very high
	E	Extremely high
	O	append to classification for organic material (eg CHO)
	Organic	

Remarks

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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Sampled By: Not Given

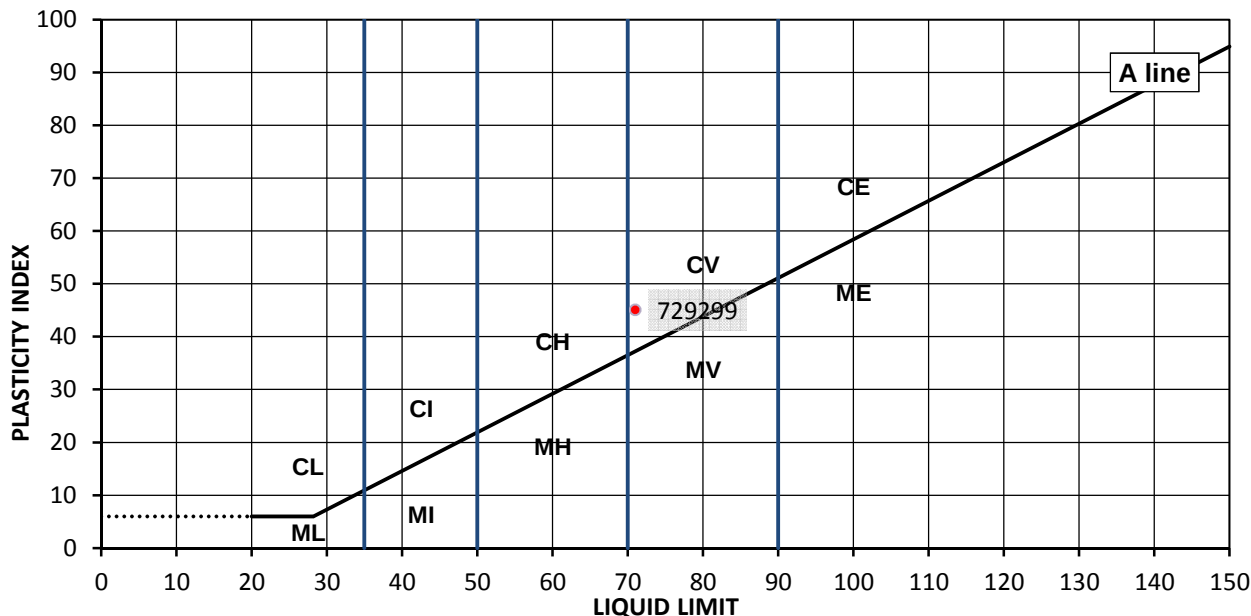
TEST RESULTS

Laboratory Reference: 729299
Sample Reference: 3

Description: Brown CLAY
Location: TP7C
Sample Preparation: Tested in natural condition

Sample Type: D
Depth Top [m]: 1.6
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
23	71	26	45	100



Remarks

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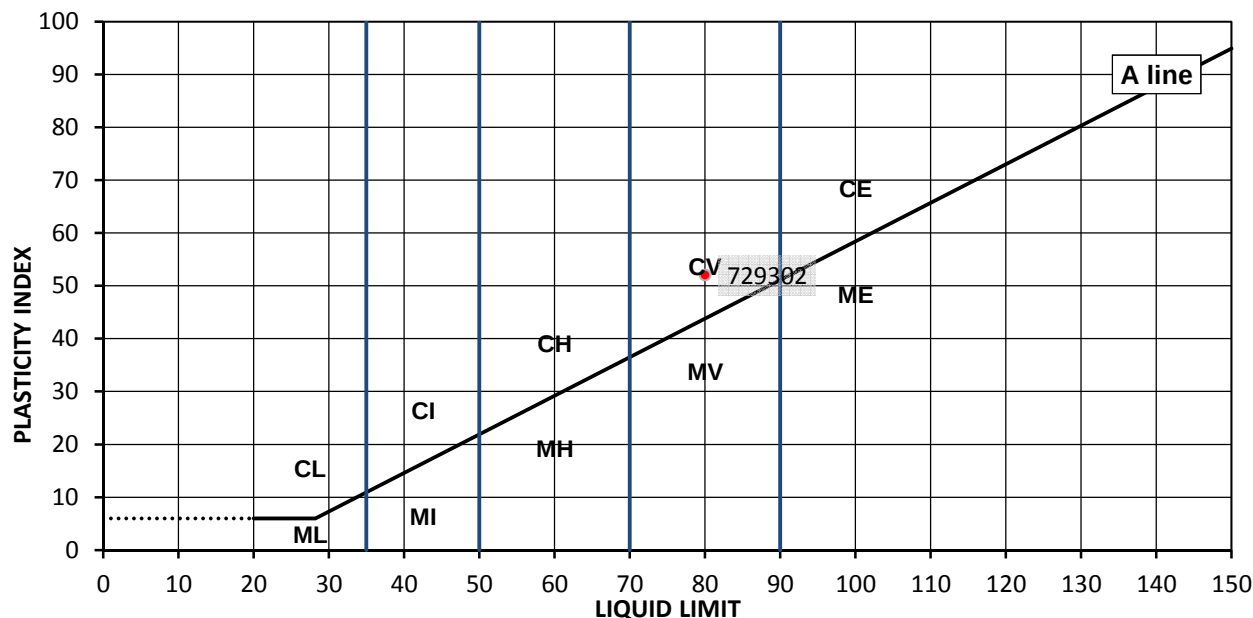
TEST RESULTS

Laboratory Reference: 729302
Sample Reference: 3

Description: Brownish grey CLAY
Location: TP11C
Sample Preparation: Tested in natural condition

Sample Type: B
Depth Top [m]: 1.5
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
31	80	28	52	100



Remarks

Approved:

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Site Address: Not Given

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Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

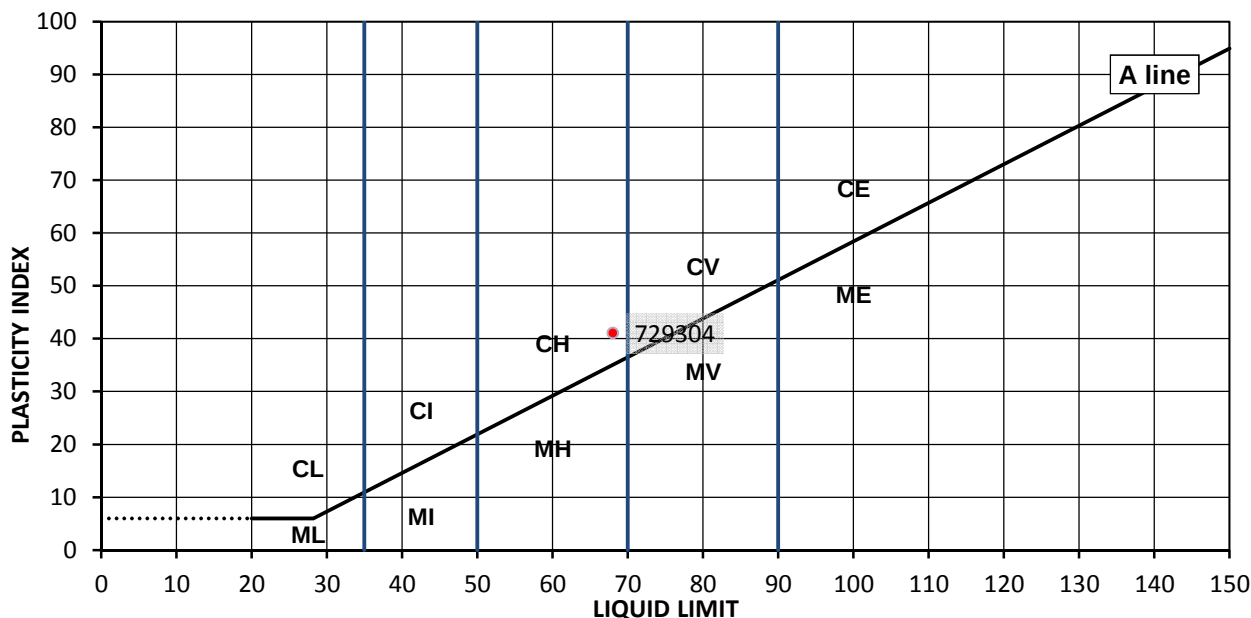
TEST RESULTS

Laboratory Reference: 729304
Sample Reference: 3

Description: Grey slightly gravelly slightly sandy CLAY
Location: TP12C
Sample Preparation: Tested after >425um removed by hand

Sample Type: B
Depth Top [m]: 1.4
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
29	68	27	41	94



Legend, based on BS 5930:2015 Code of practice for site investigations

	Plasticity	Liquid Limit
C	Clay	below 35
M	Silt	35 to 50
	L Low	50 to 70
	I Medium	70 to 90
	H High	exceeding 90
	V Very high	
	E Extremely high	
Organic	O	append to classification for organic material (eg CHO)

Remarks

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Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729307
Sample Reference: 2

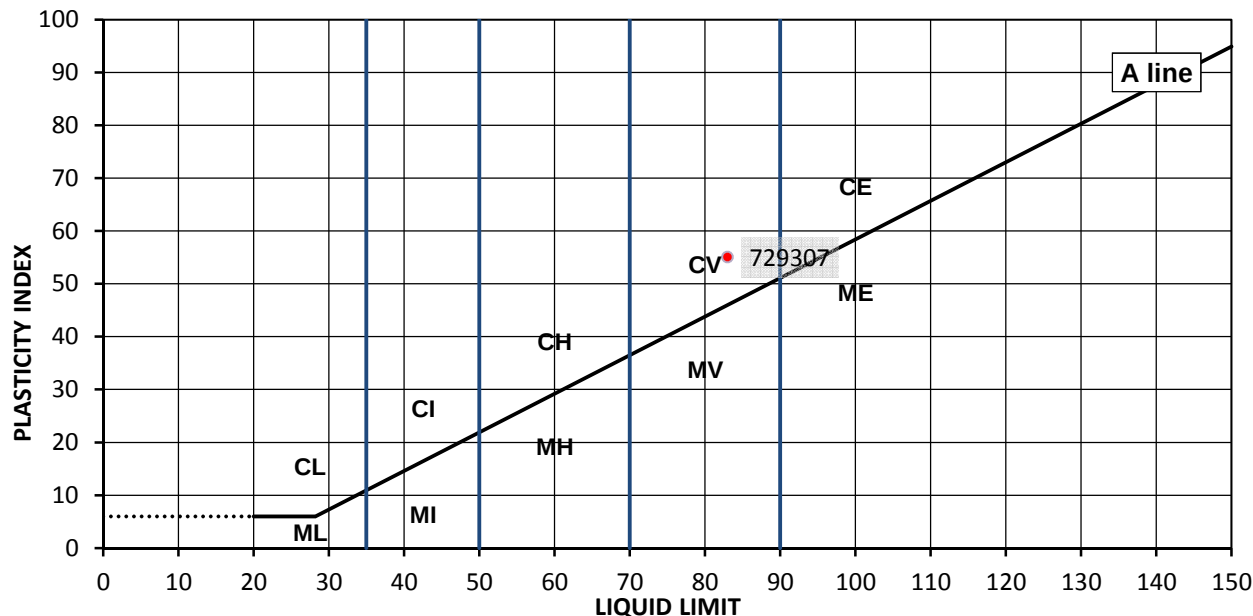
Description: Brown slightly gravelly CLAY

Location: TP14C

Sample Preparation: Tested after >425um removed by hand

Sample Type: D
Depth Top [m]: 1.2
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
32	83	28	55	98



Legend, based on BS 5930:2015 Code of practice for site investigations

	Plasticity	Liquid Limit
C	Clay	below 35
M	Silt	35 to 50
	L Low	50 to 70
	I Medium	70 to 90
	H High	exceeding 90
	V Very high	
	E Extremely high	
Organic	O	append to classification for organic material (eg CHO)

Remarks

Approved:

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Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

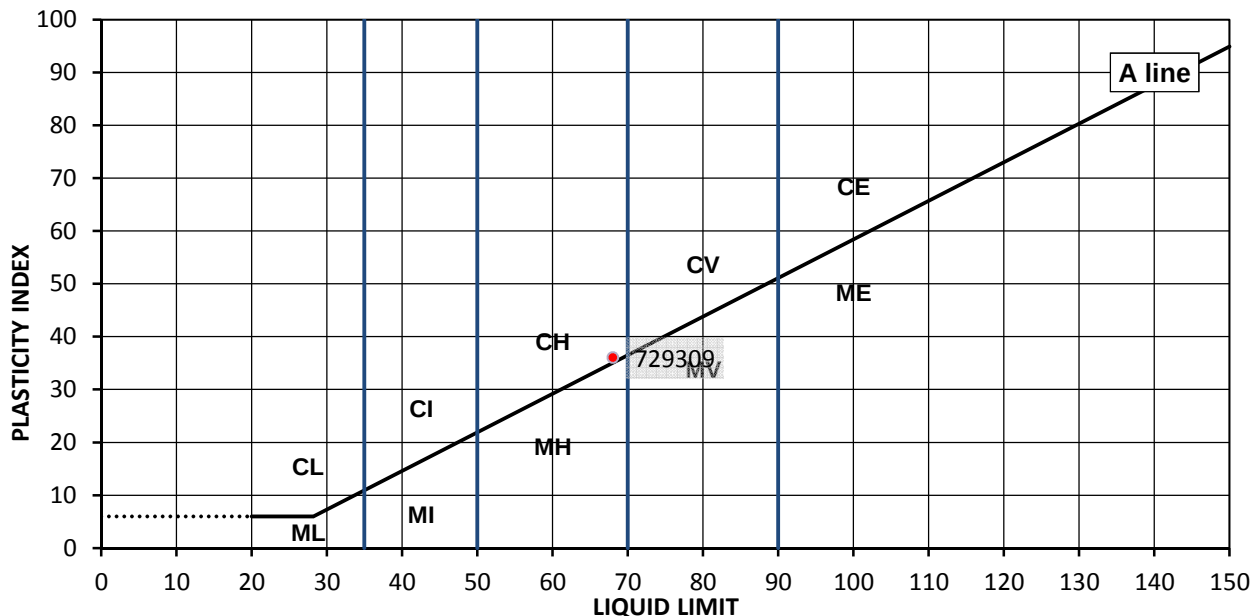
TEST RESULTS

Laboratory Reference: 729309
Sample Reference: 2

Description: Yellowish brown slightly gravelly slightly sandy CLAY
Location: TP20C
Sample Preparation: Tested after washing to remove >425um

Sample Type: B
Depth Top [m]: 1.4
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
44	68	32	36	85



Legend, based on BS 5930:2015 Code of practice for site investigations

	Plasticity	Liquid Limit
C	Clay	below 35
M	Silt	35 to 50
	L	Low
	I	Medium
	H	High
	V	Very high
	E	Extremely high
Organic	O	append to classification for organic material (eg CHO)

Remarks

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Site Address: Not Given

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Date Sampled: Not Given
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Sampled By: Not Given

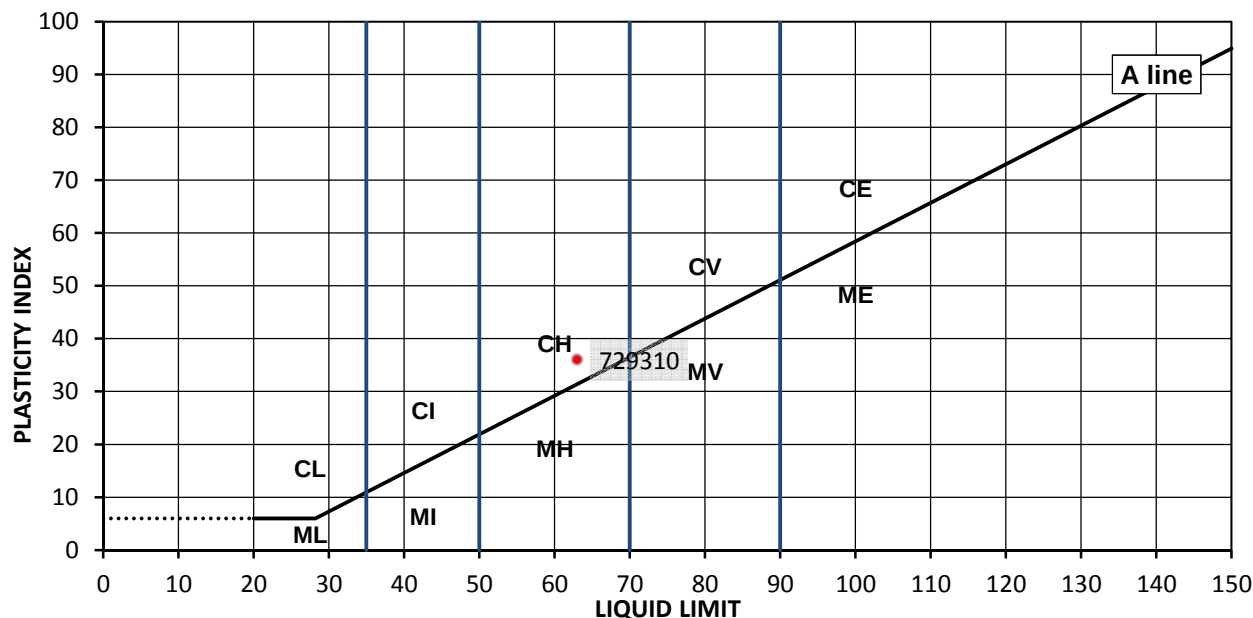
TEST RESULTS

Laboratory Reference: 729310
Sample Reference: 1

Description: Yellowish brown slightly gravelly slightly sandy CLAY
Location: TP22C
Sample Preparation: Tested after washing to remove >425um

Sample Type: D
Depth Top [m]: 0.4
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
26	63	27	36	68



Legend, based on BS 5930:2015 Code of practice for site investigations

	Plasticity	Liquid Limit
C	Clay	below 35
M	Silt	35 to 50
	L	Low
	I	Medium
	H	High
	V	Very high
	E	Extremely high
Organic	O	append to classification for organic material (eg CHO)

Remarks

Approved:

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Signed:

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Site Address: Not Given

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Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
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Sampled By: Not Given

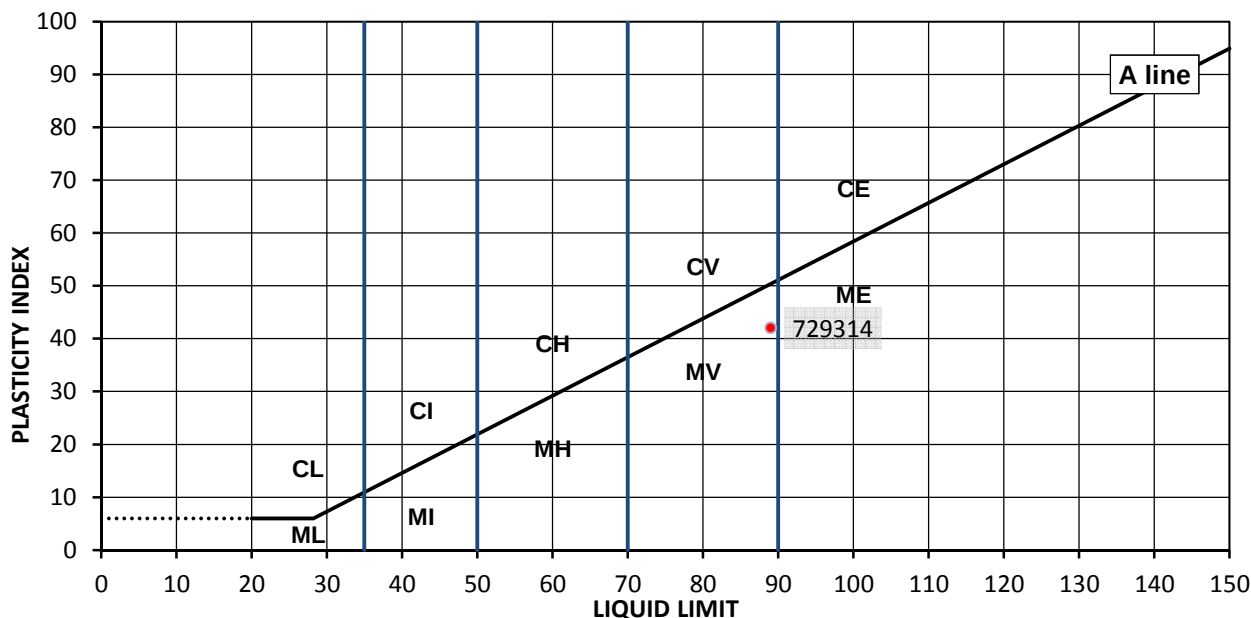
TEST RESULTS

Laboratory Reference: 729314
Sample Reference: 1

Description: Dark brown slightly gravelly organic CLAY
Location: TP27C
Sample Preparation: Tested after >425um removed by hand

Sample Type: D
Depth Top [m]: 2.5
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
65	89	47	42	99



Legend, based on BS 5930:2015 Code of practice for site investigations

	Plasticity	Liquid Limit
C	Clay	below 35
M	Silt	35 to 50
	L	Low
	I	Medium
	H	High
	V	Very high
	E	Extremely high
Organic	O	append to classification for organic material (eg CHO)

Remarks

Approved:

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Site Address: Not Given

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Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

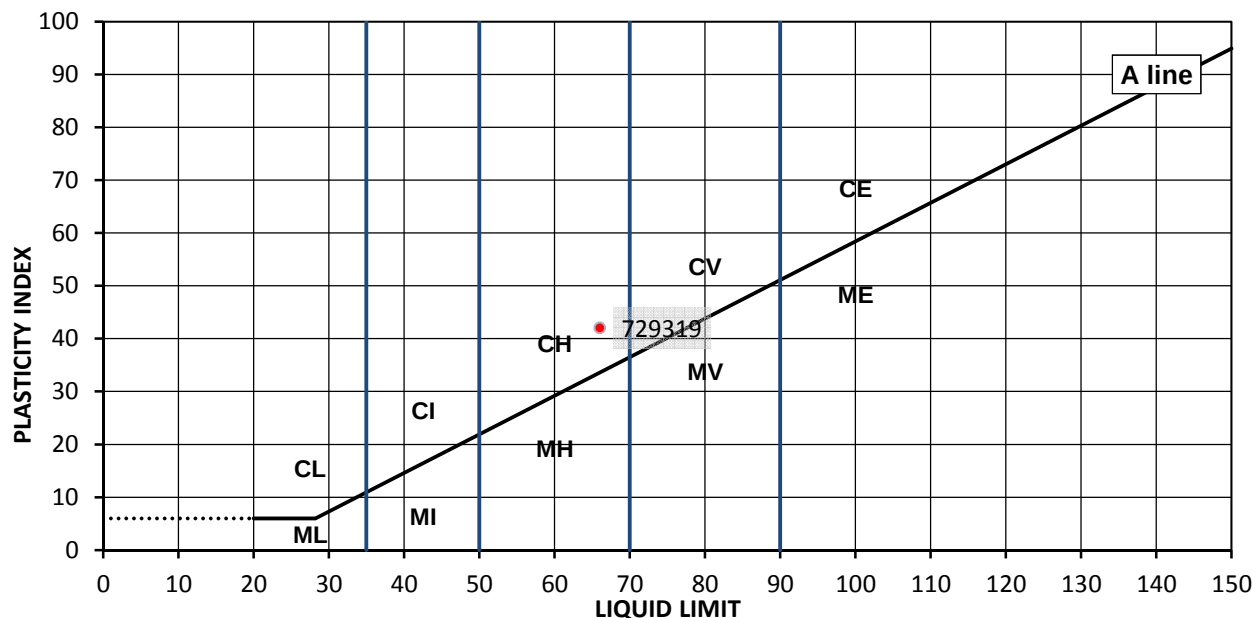
TEST RESULTS

Laboratory Reference: 729319
Sample Reference: 2

Description: Brown slightly sandy CLAY
Location: TP33C
Sample Preparation: Tested in natural condition

Sample Type: B
Depth Top [m]: 2.2
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
21	66	24	42	100



Legend, based on BS 5930:2015 Code of practice for site investigations

	Plasticity	Liquid Limit
C	Clay	below 35
M	Silt	35 to 50
	L	Low
	I	Medium
	H	High
	V	Very high
	E	Extremely high
Organic	O	append to classification for organic material (eg CHO)

Remarks

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Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729320
Sample Reference: Not Given

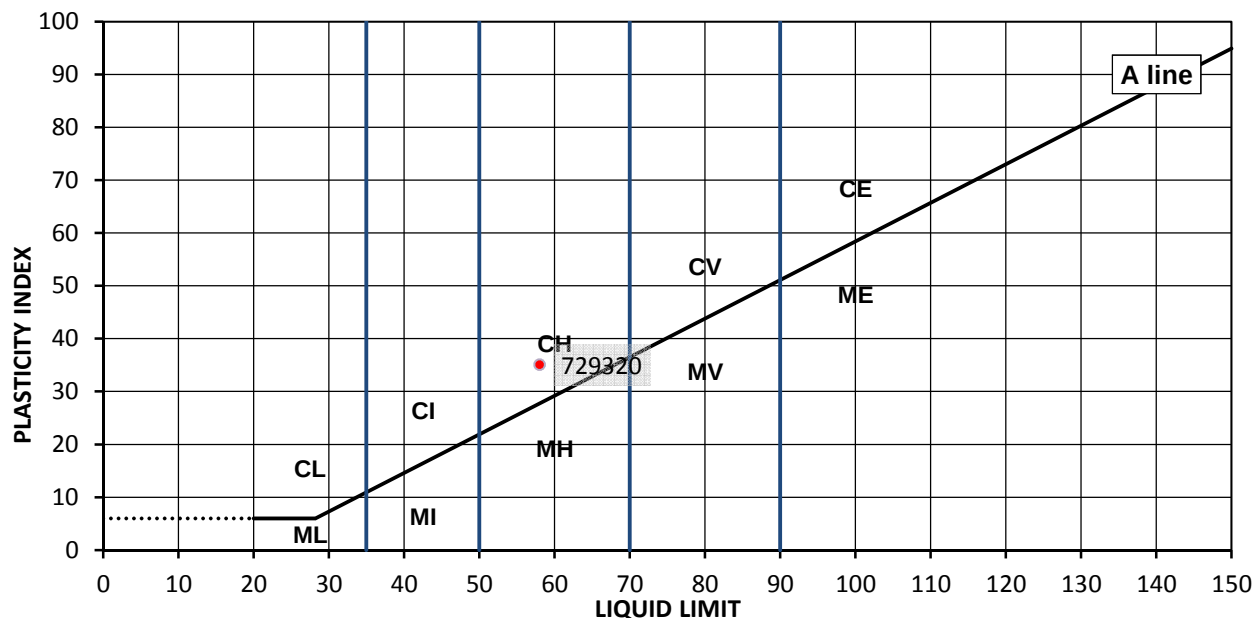
Description: Brown slightly sandy CLAY

Location: TP21C

Sample Preparation: Tested after >425um removed by hand

Sample Type: B
Depth Top [m]: 0.7
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
29	58	23	35	99



Remarks

Approved:

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TEST CERTIFICATE

Summary of Classification Test Results

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Site Address: Not Given

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Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017 - 11/04/2017
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Atterberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk	dry		% Passing 425um	LL	PL	PI	
							Mg/m3	Mg/m3		%	%	%	%	
729302	TP11C	3	1.50	Not Given	B	Brownish grey CLAY			31	100	80	28	52	
729304	TP12C	3	1.40	Not Given	B	Grey slightly gravelly slightly sandy CLAY			29	94	68	27	41	
729307	TP14C	2	1.20	Not Given	D	Brown slightly gravelly CLAY			32	98	83	28	55	
729309	TP20C	2	1.40	Not Given	B	Yellowish brown slightly gravelly slightly sandy CLAY			44	85	68	32	36	
729320	TP21C	Not Given	0.70	Not Given	B	Brown slightly sandy CLAY			29	99	58	23	35	
729310	TP22C	1	0.40	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY			26	68	63	27	36	
729314	TP27C	1	2.50	Not Given	D	Dark brown slightly gravelly organic CLAY			65	99	89	47	42	
729319	TP33C	2	2.20	Not Given	B	Brown slightly sandy CLAY			21	100	66	24	42	
729291	TP3C	1	1.00	Not Given	B	Yellowish brown slightly gravelly slightly sandy CLAY			28	70	80	29	51	
729296	TP6C	1	0.50	Not Given	B	Brown gravelly silty CLAY			18	71	45	20	25	

Comments:

Approved:

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TEST CERTIFICATE

Summary of Classification Test Results

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Amir Abbasi
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Atterberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk	dry		% Passing 425um	LL	PL	PI	
							Mg/m3	Mg/m3		%	%	%	%	%
729297	TP6C	2	1.85	Not Given	D	Brown slightly gravelly CLAY			28	98	78	27	51	
729299	TP7C	3	1.60	Not Given	D	Brown CLAY			23	100	71	26	45	

Comments:

Approved:

Mirosława Pytlak
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager (Geotechnical
Division)

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



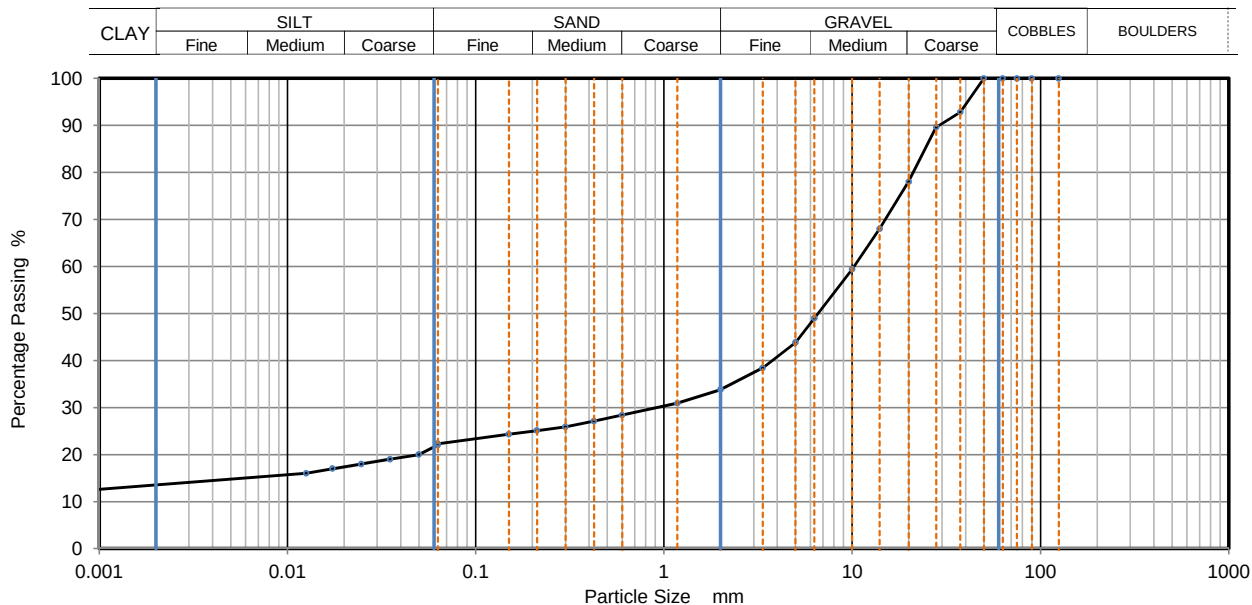
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729290
Sample description: Yellowish brown clayey sandy GRAVEL
Location: TP1C
Supplier: Not Given

Sample Reference: 1
Sample Type: B
Depth Top [m]: 1
Depth Base [m]: Not Given



Dry Mass of sample [g]: 5672

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	22
90	100	0.0500	20
75	100	0.0352	19
63	100	0.0247	18
50	100	0.0174	17
37.5	93	0.0126	16
28	90	0.006	12
20	78		
14	68		
10	59		
6.3	49		
5	44		
3.35	38		
2	34		
1.18	31		
0.6	28	Particle density (assumed) 2.65 Mg/m ³	
0.425	27		
0.3	26		
0.212	25		
0.15	24		
0.063	22		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		66.20
Sand		11.40
Silt		8.70
Clay		13.70

Grading Analysis		
D100	mm	50
D60	mm	10.3
D30	mm	0.933
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below
The material submitted, fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729291

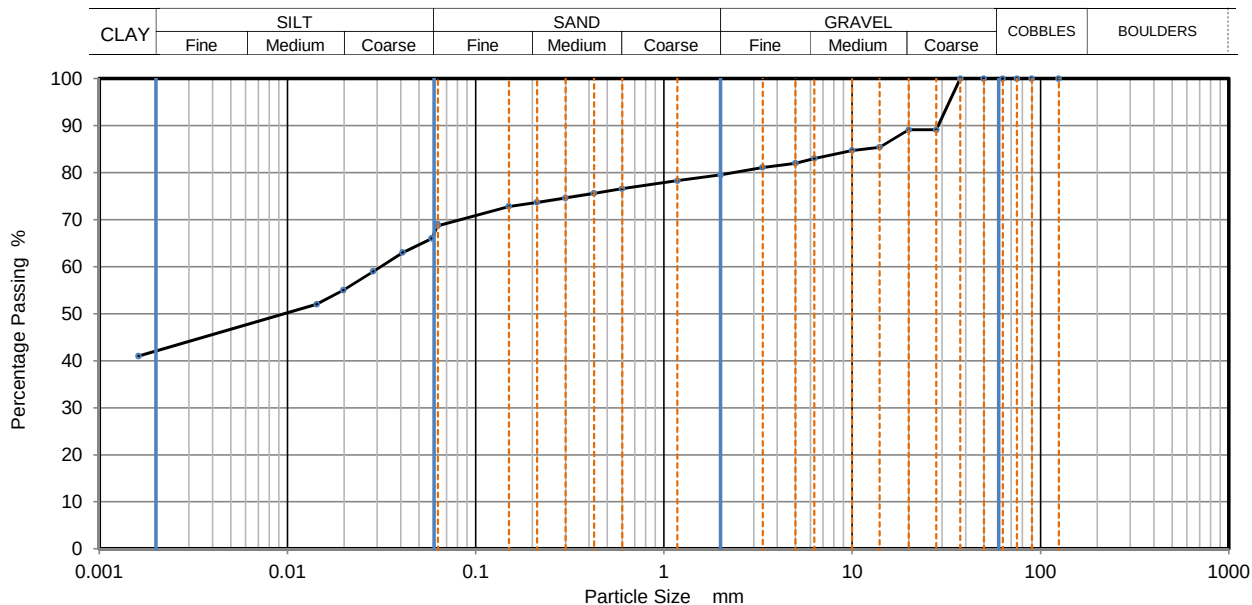
Sample Reference: 1

Sample description: Yellowish brown slightly gravelly slightly sandy
CLAY

Sample Type: B

Location: TP3C
Supplier: Not Given

Depth Top [m]: 1
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	69
90	100	0.0585	66
75	100	0.0409	63
63	100	0.0285	59
50	100	0.0199	55
37.5	100	0.0144	52
28	89	0.0016	41
20	89		
14	85		
10	85		
6.3	83		
5	82		
3.35	81		
2	80		
1.18	78		
0.6	77	Particle density (assumed) 2.65 Mg/m ³	
0.425	76		
0.3	75		
0.212	74		
0.15	73		
0.063	69		

Dry Mass of sample [g]: 523

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	20.50
Sand	10.70
Silt	26.50
Clay	42.30

Grading Analysis	
D100	mm 37.5
D60	mm 0.0309
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below
The material submitted, fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377:Part 2:1990, clause 9.2

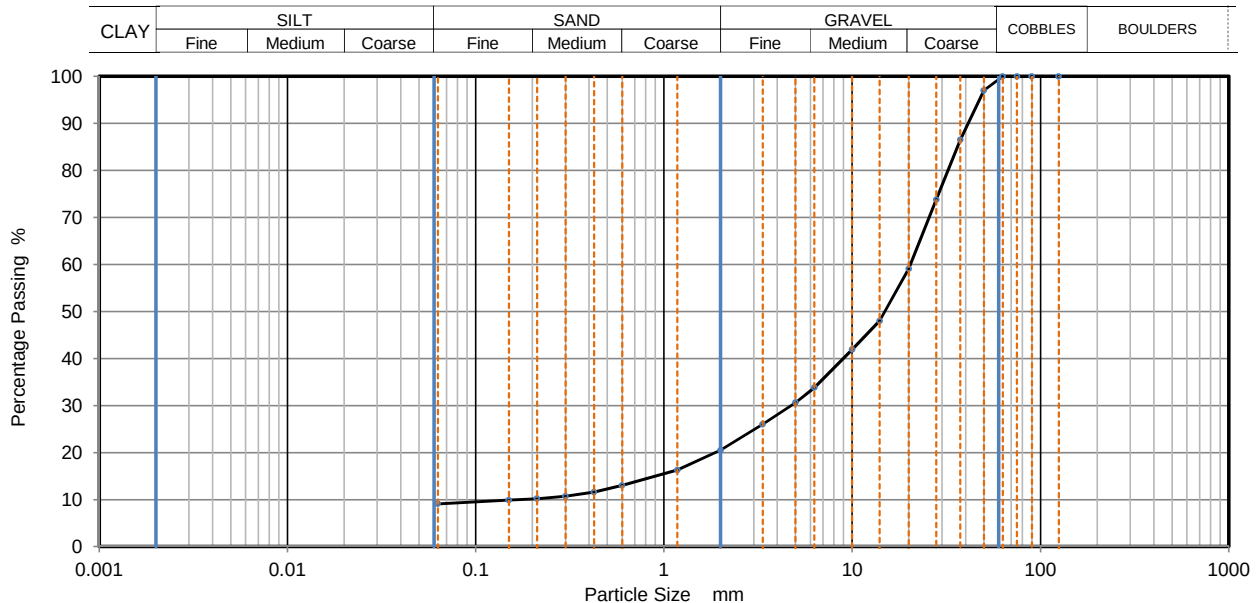
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729292
Sample description: Brown sandy clayey GRAVEL
Location: TP3C
Supplier: Not Given

Sample Reference: 2
Sample Type: B
Depth Top [m]: 1.7
Depth Base [m]: Not Given



Dry Mass of sample [g]: 14943

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	97		
37.5	87		
28	74		
20	59		
14	48		
10	42		
6.3	34		
5	31		
3.35	26		
2	21		
1.18	16		
0.6	13		
0.425	12		
0.3	11		
0.212	10		
0.15	10		
0.063	9		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		79.50
Sand		11.40
Fines <0.063mm		9.10

Grading Analysis		
D100	mm	63
D60	mm	20.4
D30	mm	4.75
D10	mm	0.173
Uniformity Coefficient		120
Curvature Coefficient		6.4

Remarks

Preparation and testing in accordance with BS1377 unless noted below
The material submitted, fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Particle Size Distribution

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



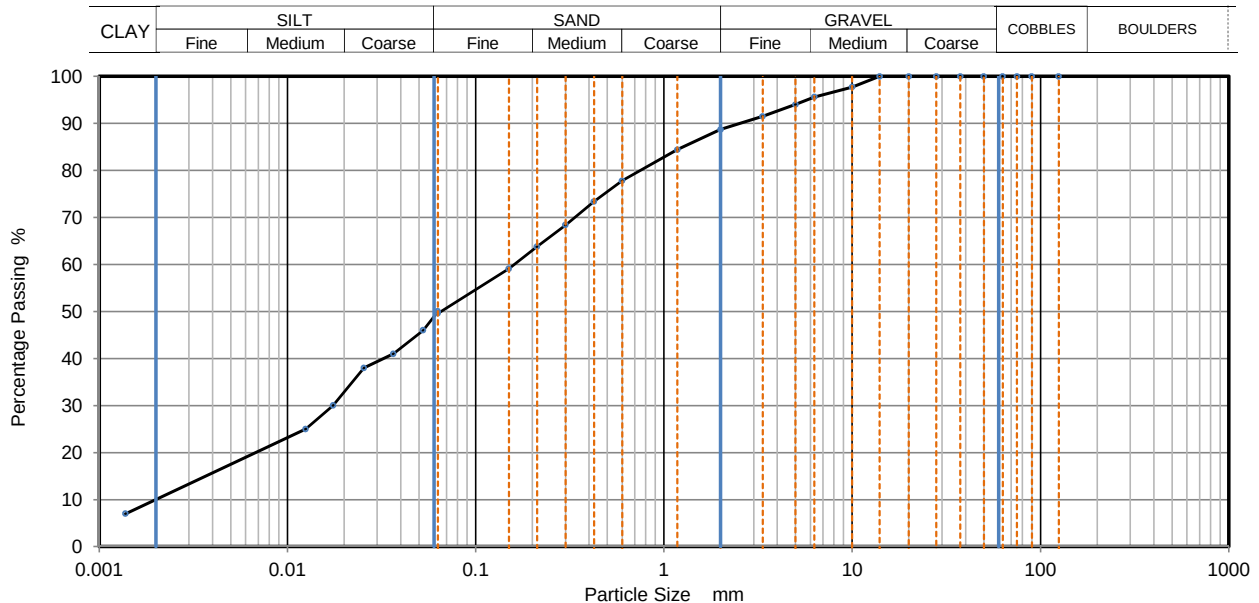
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729293
Sample description: Dark brown sandy clayey SILT
Location: TP4C
Supplier: Not Given

Sample Reference: 1
Sample Type: D
Depth Top [m]: 0.4
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	50
90	100	0.0525	46
75	100	0.0365	41
63	100	0.0255	38
50	100	0.0175	30
37.5	100	0.0125	25
28	100	0.0014	7
20	100		
14	100		
10	98		
6.3	96		
5	94		
3.35	92		
2	89		
1.18	84		
0.6	78	Particle density (assumed) 2.65 Mg/m ³	
0.425	73		
0.3	68		
0.212	64		
0.15	59		
0.063	50		

Dry Mass of sample [g]: 517

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	11.30
Sand	39.00
Silt	40.00
Clay	9.70

Grading Analysis	
D100	mm 14
D60	mm 0.16
D30	mm 0.0177
D10	mm 0.00208
Uniformity Coefficient	77
Curvature Coefficient	0.94

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377:Part 2:1990, clause 9.2

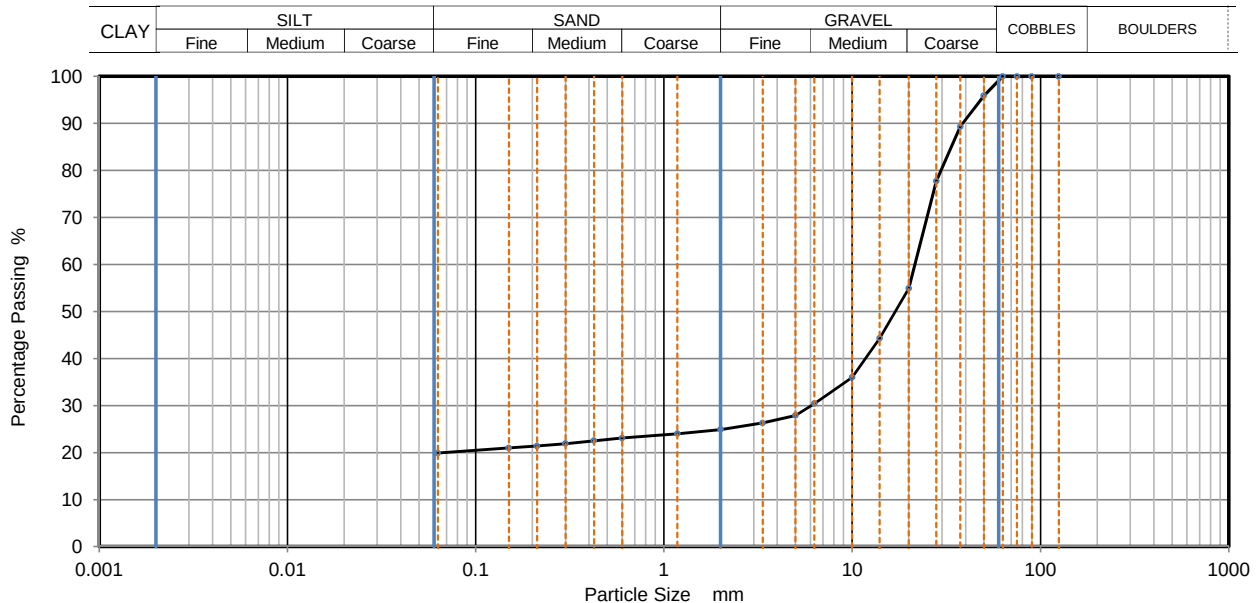
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729294
Sample description: Grey slightly sandy clayey GRAVEL
Location: TP4C
Supplier: Not Given

Sample Reference: 2
Sample Type: B
Depth Top [m]: 2
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	96		
37.5	89		
28	78		
20	55		
14	44		
10	36		
6.3	30		
5	28		
3.35	26		
2	25		
1.18	24		
0.6	23		
0.425	23		
0.3	22		
0.212	21		
0.15	21		
0.063	20		

Dry Mass of sample [g]: 13847

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	75.10
Sand	4.90
Fines <0.063mm	19.90

Grading Analysis	
D100	mm 63
D60	mm 21.6
D30	mm 6.08
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below
The material submitted, fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



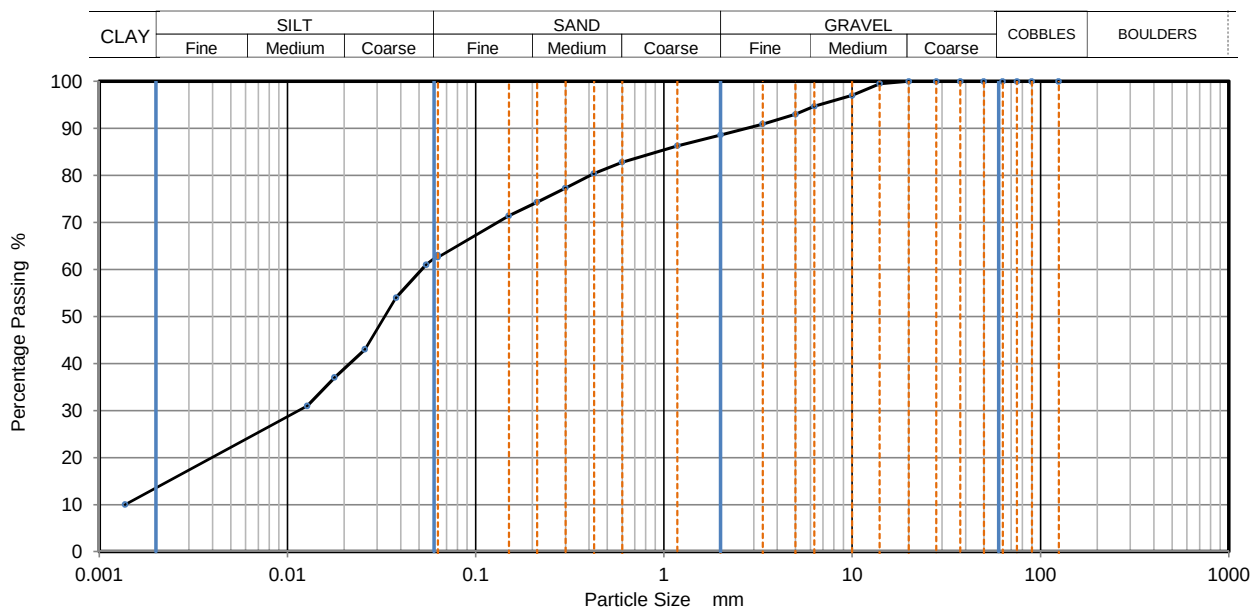
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729295
Sample description: Brown slightly sandy silty CLAY
Location: TP5C
Supplier: Not Given

Sample Reference: 2
Sample Type: B
Depth Top [m]: 0.5
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	63
90	100	0.0546	61
75	100	0.0378	54
63	100	0.0258	43
50	100	0.0178	37
37.5	100	0.0128	31
28	100	0.0014	10
20	100		
14	100		
10	97		
6.3	95		
5	93		
3.35	91		
2	89		
1.18	86		
0.6	83	Particle density (assumed) 2.65 Mg/m ³	
0.425	80		
0.3	77		
0.212	74		
0.15	71		
0.063	63		

Dry Mass of sample [g]: 516

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		11.40
Sand		26.00
Silt		48.60
Clay		14.00

Grading Analysis		
D100	mm	20
D60	mm	0.0521
D30	mm	0.0111
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



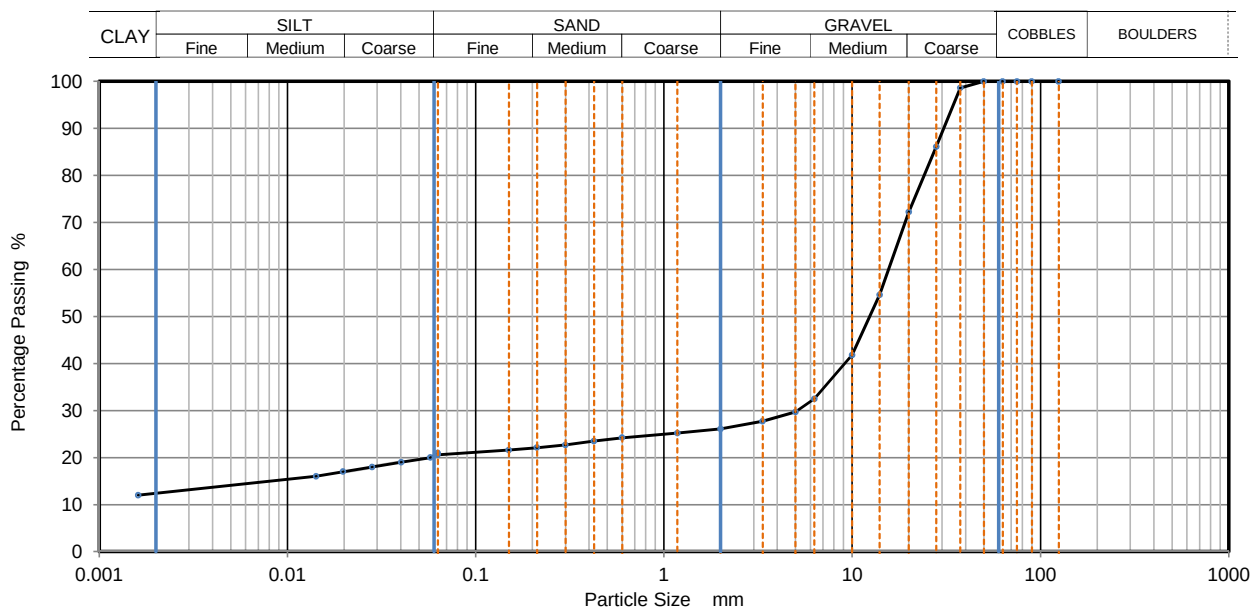
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729298
Sample description: Grey slightly sandy clayey GRAVEL
Location: TP6C
Supplier: Not Given

Sample Reference: 1
Sample Type: B
Depth Top [m]: 0.4
Depth Base [m]: Not Given



Dry Mass of sample [g]: 7650

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	21
90	100	0.0576	20
75	100	0.0403	19
63	100	0.0282	18
50	100	0.0198	17
37.5	99	0.0142	16
28	86	0.0016	12
20	72		
14	55		
10	42		
6.3	33		
5	30		
3.35	28		
2	26		
1.18	25		
0.6	24	Particle density (assumed) 2.65 Mg/m ³	
0.425	24		
0.3	23		
0.212	22		
0.15	22		
0.063	21		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		73.90
Sand		5.40
Silt		8.20
Clay		12.50

Grading Analysis		
D100	mm	50
D60	mm	15.6
D30	mm	5.14
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



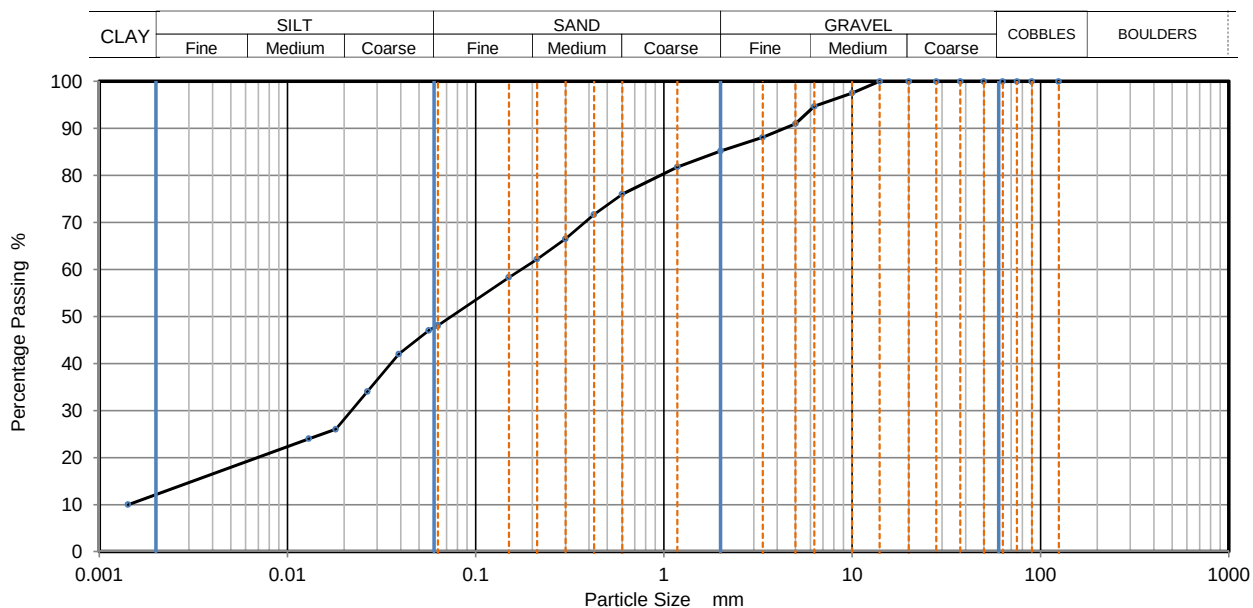
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729300
Sample description: Dark brown sandy silty CLAY
Location: TP8C
Supplier: Not Given

Sample Reference: 2
Sample Type: B
Depth Top [m]: 0.45
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	48
90	100	0.0563	47
75	100	0.0390	42
63	100	0.0266	34
50	100	0.0180	26
37.5	100	0.0130	24
28	100	0.0014	10
20	100		
14	100		
10	98		
6.3	95		
5	91		
3.35	88		
2	85		
1.18	82		
0.6	76	Particle density (assumed) 2.65 Mg/m ³	
0.425	72		
0.3	67		
0.212	62		
0.15	58		
0.063	48		

Dry Mass of sample [g]: 646

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	14.80
Sand	37.10
Silt	35.70
Clay	12.40

Grading Analysis	
D100	mm 14
D60	mm 0.174
D30	mm 0.0215
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**Determination of Particle Size Distribution**

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377:Part 2:1990, clause 9.2

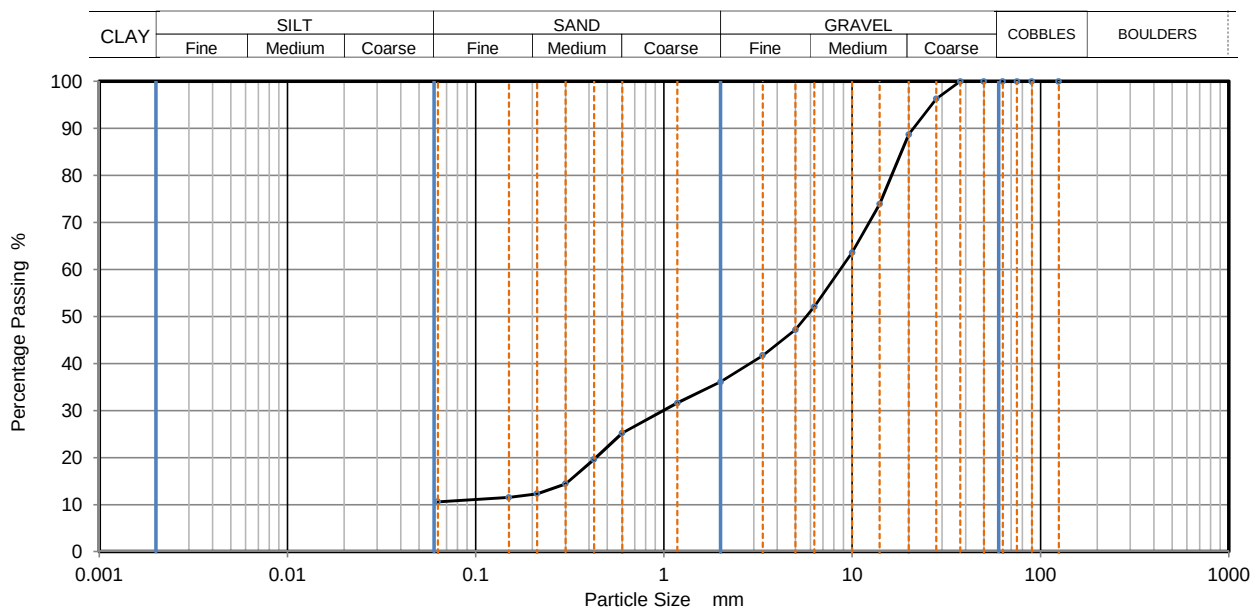
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729301
Sample description: Brown clayey very sandy GRAVEL
Location: TP8C
Supplier: Not Given

Sample Reference: 3
Sample Type: B
Depth Top [m]: 0.8
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	89		
14	74		
10	64		
6.3	52		
5	47		
3.35	42		
2	36		
1.18	32		
0.6	25		
0.425	20		
0.3	14		
0.212	12		
0.15	12		
0.063	11		

Dry Mass of sample [g]: 1241

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	63.90
Sand	25.50
Fines <0.063mm	10.60

Grading Analysis	
D100	mm 37.5
D60	mm 8.64
D30	mm 0.997
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377:Part 2:1990, clause 9.2

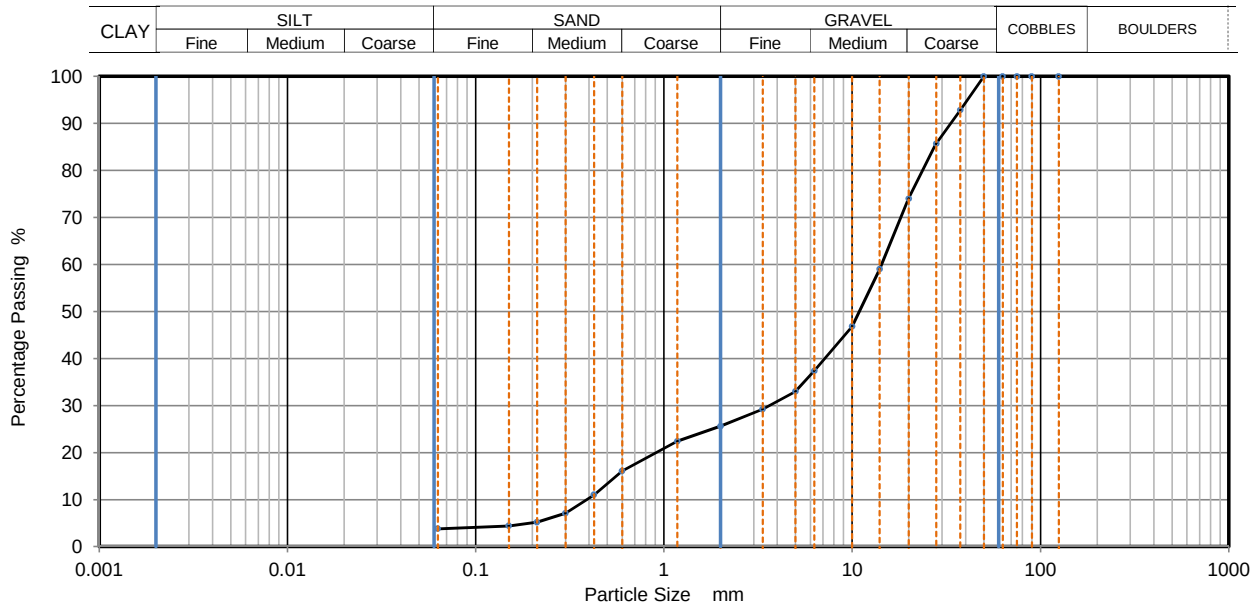
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729303
Sample description: Brown slightly clayey very sandy GRAVEL
Location: TP12C
Supplier: Not Given

Sample Reference: 1
Sample Type: B
Depth Top [m]: 0.5
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	93		
28	86		
20	74		
14	59		
10	47		
6.3	37		
5	33		
3.35	29		
2	26		
1.18	22		
0.6	16		
0.425	11		
0.3	7		
0.212	5		
0.15	4		
0.063	4		

Dry Mass of sample [g]: 18912

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	74.40
Sand	21.80
Fines <0.063mm	3.80

Grading Analysis	
D100	mm 50
D60	mm 14.3
D30	mm 3.63
D10	mm 0.388
Uniformity Coefficient	37
Curvature Coefficient	2.4

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



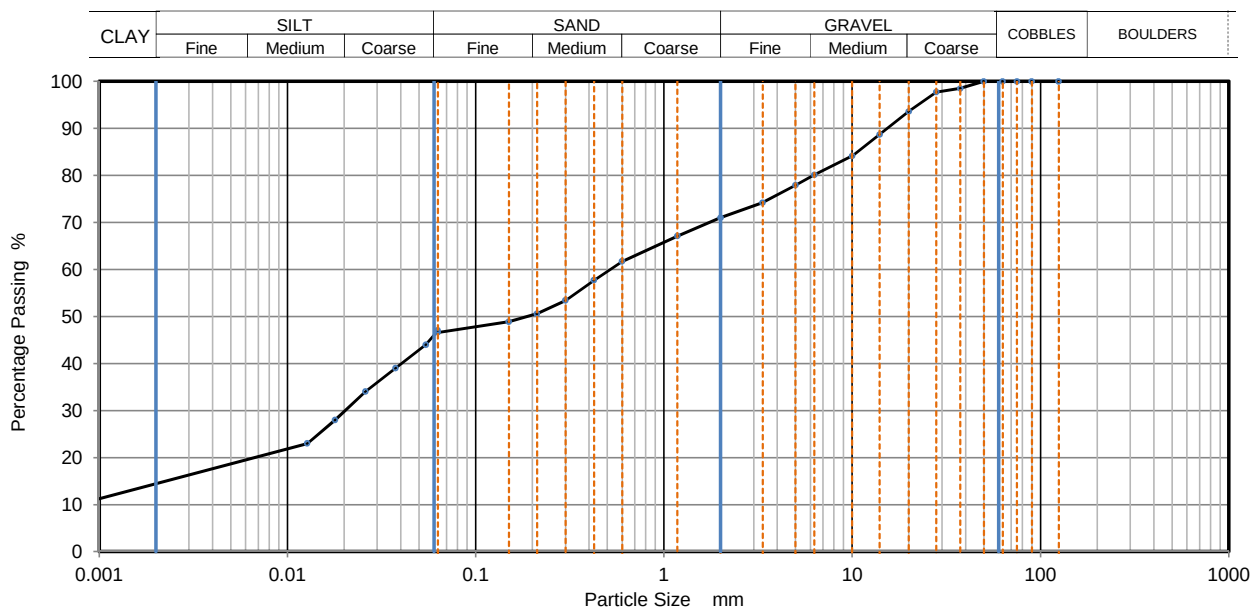
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729305
Sample description: Greyish brown slightly sandy silty CLAY
Location: TP13C
Supplier: Not Given

Sample Reference: 1
Sample Type: D
Depth Top [m]: 0.3
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	47
90	100	0.0544	44
75	100	0.0376	39
63	100	0.0260	34
50	100	0.0179	28
37.5	99	0.0127	23
28	98	0.006	9
20	94		
14	89		
10	84		
6.3	80		
5	78		
3.35	74		
2	71		
1.18	67		
0.6	62	Particle density (assumed) 2.65 Mg/m ³	
0.425	58		
0.3	53		
0.212	51		
0.15	49		
0.063	47		

Dry Mass of sample [g]: 5292

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	29.00
Sand	24.40
Silt	32.00
Clay	14.60

Grading Analysis	
D100	mm 50
D60	mm 0.518
D30	mm 0.02
D10	mm 0.000753
Uniformity Coefficient	690
Curvature Coefficient	1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377:Part 2:1990, clause 9.2

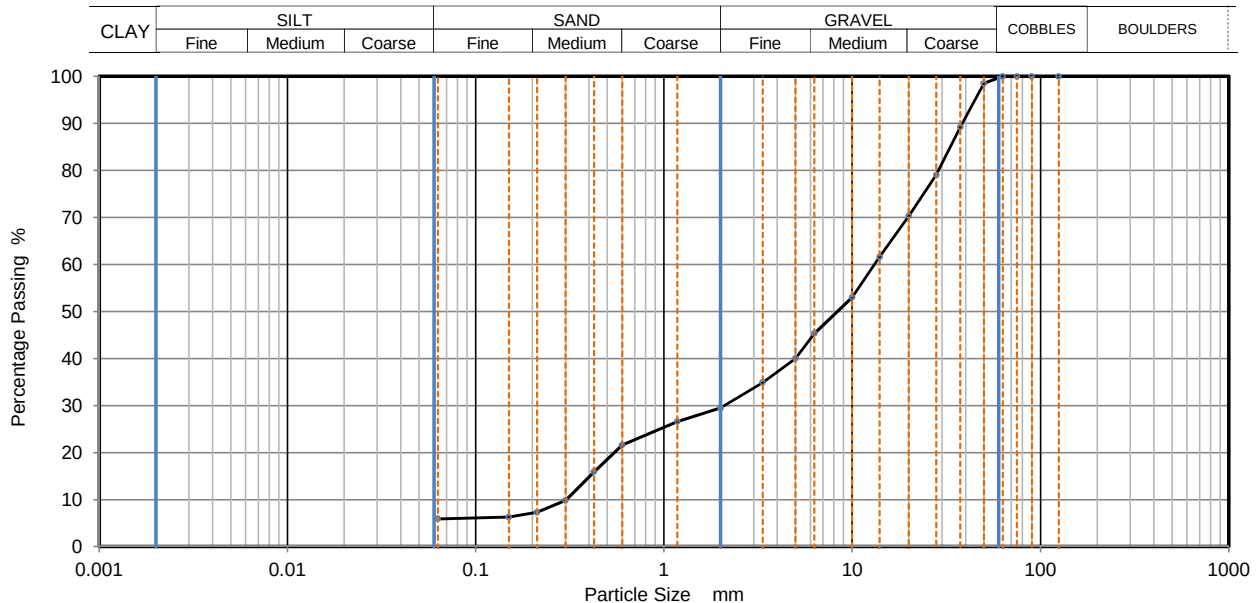
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729306
Sample description: Yellowish brown clayey very sandy GRAVEL
Location: TP13C
Supplier: Not Given

Sample Reference: 3
Sample Type: B
Depth Top [m]: 1.4
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	99		
37.5	89		
28	79		
20	70		
14	62		
10	53		
6.3	45		
5	40		
3.35	35		
2	30		
1.18	27		
0.6	22		
0.425	16		
0.3	10		
0.212	7		
0.15	6		
0.063	6		

Dry Mass of sample [g]: 21351

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		70.50
Sand		23.60
Fines <0.063mm		5.90

Grading Analysis		
D100	mm	63
D60	mm	13.1
D30	mm	2.1
D10	mm	0.304
Uniformity Coefficient		43
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

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PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



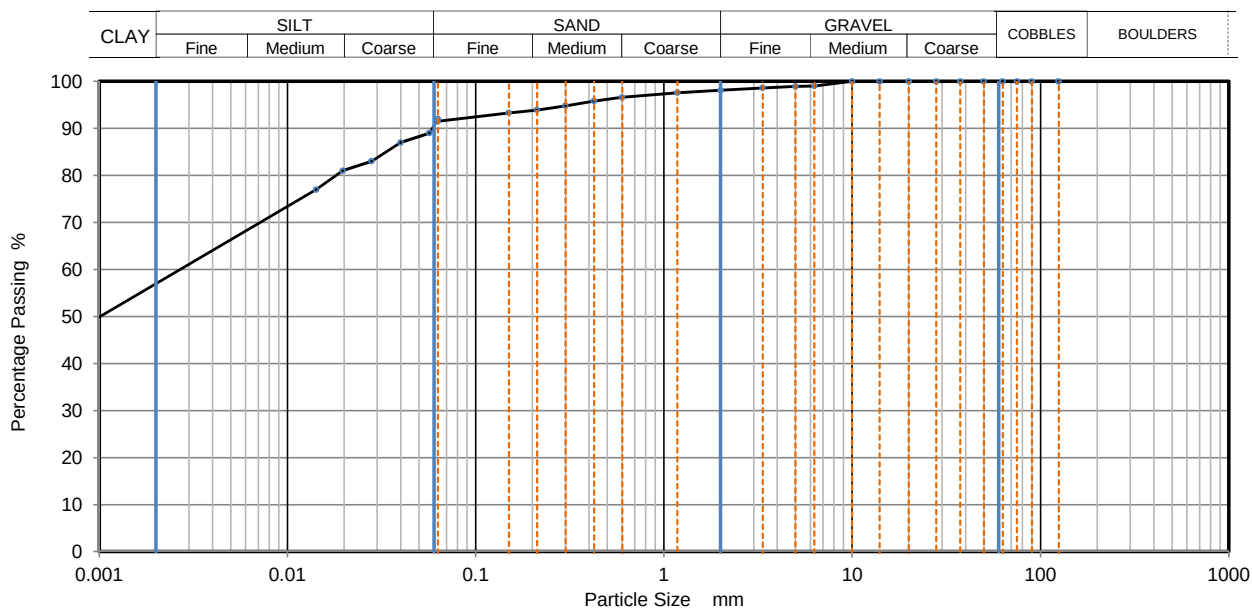
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729308
Sample description: Brown slightly gravelly slightly sandy CLAY
Location: TP16C
Supplier: Not Given

Sample Reference: 1
Sample Type: B
Depth Top [m]: 1.5
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	92
90	100	0.0569	89
75	100	0.0400	87
63	100	0.0280	83
50	100	0.0197	81
37.5	100	0.0142	77
28	100	0.0007	46
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97	Particle density (assumed) 2.65 Mg/m ³	
0.425	96		
0.3	95		
0.212	94		
0.15	93		
0.063	92		

Dry Mass of sample [g]: 230

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	1.90
Sand	6.60
Silt	34.70
Clay	56.80

Grading Analysis	
D100	mm 10
D60	mm 0.00274
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

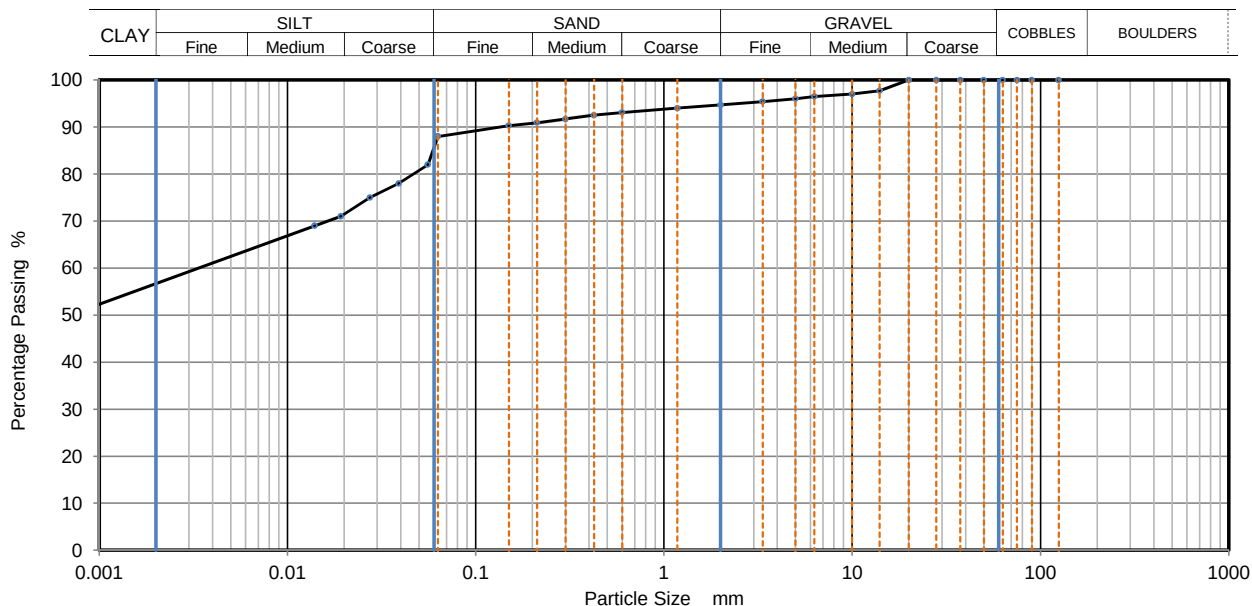
Laboratory Reference: 729309
Sample description: Yellowish brown slightly gravelly slightly sandy
CLAY

Sample Reference: 2

Sample Type: B

Location: TP20C
Supplier: Not Given

Depth Top [m]: 1.4
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	88
90	100	0.0558	82
75	100	0.0390	78
63	100	0.0275	75
50	100	0.0192	71
37.5	100	0.0140	69
28	100	0.0007	50
20	100		
14	98		
10	97		
6.3	97		
5	96		
3.35	95		
2	95		
1.18	94		
0.6	93	Particle density (assumed) 2.65 Mg/m ³	
0.425	93		
0.3	92		
0.212	91		
0.15	90		
0.063	88		

Dry Mass of sample [g]: 317

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	5.30
Sand	6.70
Silt	31.10
Clay	56.90

Grading Analysis	
D100	mm 20
D60	mm 0.00326
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

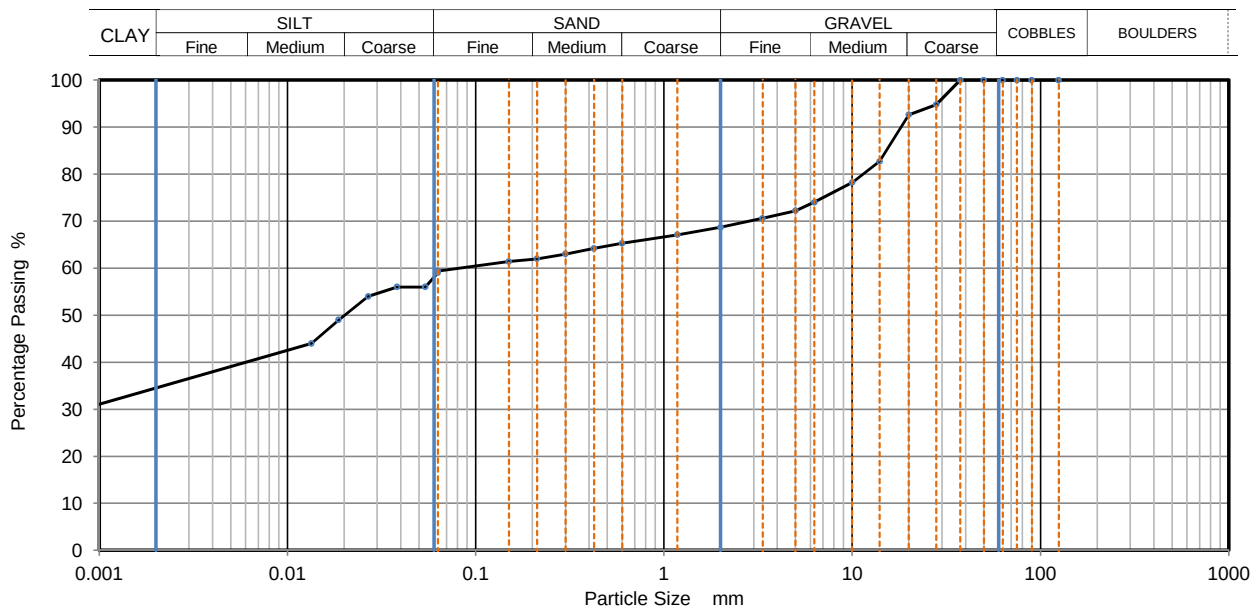
Laboratory Reference: 729310
Sample description: Yellowish brown slightly gravelly slightly sandy
CLAY

Sample Reference: 1

Sample Type: D

Location: TP22C
Supplier: Not Given

Depth Top [m]: 0.4
Depth Base [m]: Not Given



Dry Mass of sample [g]: 971

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	59
90	100	0.0541	56
75	100	0.0382	56
63	100	0.0269	54
50	100	0.0187	49
37.5	100	0.0134	44
28	95	0.007	29
20	93		
14	83		
10	78		
6.3	74		
5	72		
3.35	71		
2	69		
1.18	67		
0.6	65	Particle density (assumed) 2.65 Mg/m ³	
0.425	64		
0.3	63		
0.212	62		
0.15	61		
0.063	59		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	31.30
Sand	9.30
Silt	24.90
Clay	34.50

Grading Analysis	
D100	mm 37.5
D60	mm 0.0825
D30	mm 0.000831
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below
The material submitted, fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



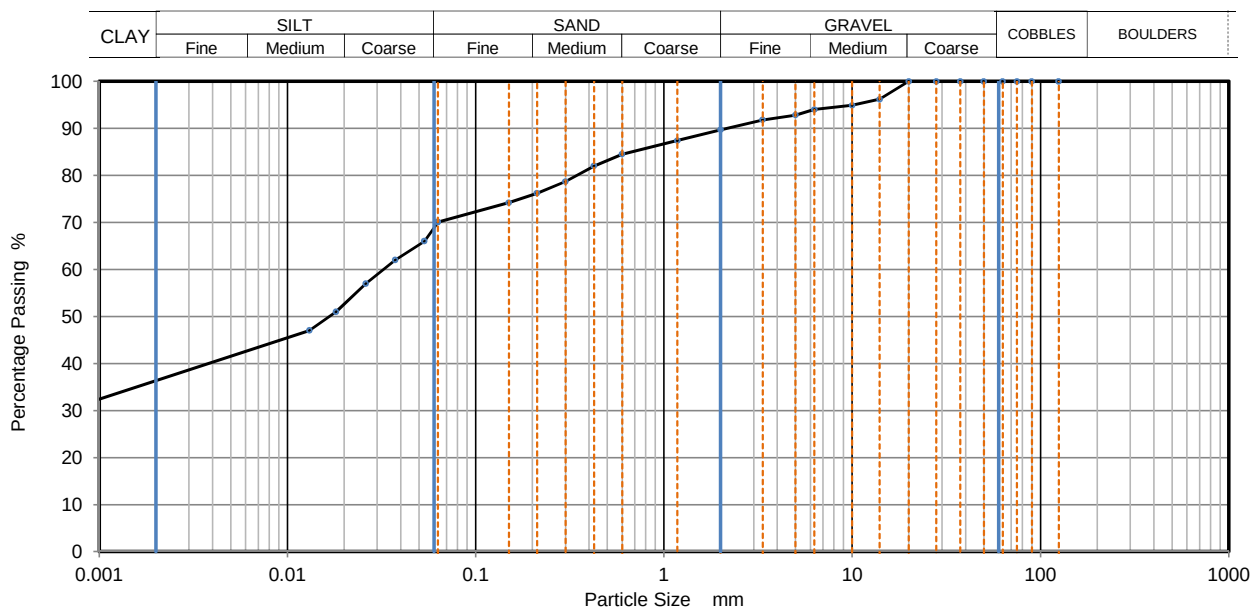
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729311
Sample description: Brown slightly gravelly slightly sandy CLAY
Location: TP23C
Supplier: Not Given

Sample Reference: 1
Sample Type: B
Depth Top [m]: 0.4
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	70
90	100	0.0534	66
75	100	0.0373	62
63	100	0.0261	57
50	100	0.0181	51
37.5	100	0.0131	47
28	100	0.0066	30
20	100		
14	96		
10	95		
6.3	94		
5	93		
3.35	92		
2	90		
1.18	87		
0.6	85	Particle density (assumed) 2.65 Mg/m ³	
0.425	82		
0.3	79		
0.212	76		
0.15	74		
0.063	70		

Dry Mass of sample [g]: 566

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	10.30
Sand	19.70
Silt	33.90
Clay	36.10

Grading Analysis	
D100	mm 20
D60	mm 0.0326
D30	mm 0.000681
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729312

Sample Reference: 1

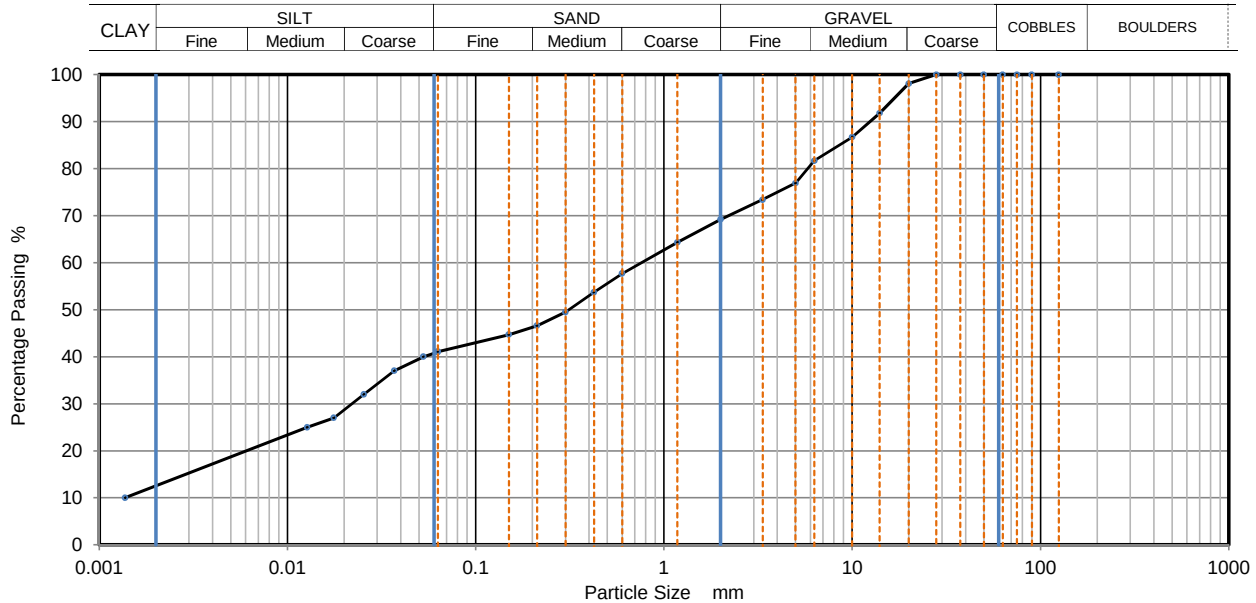
Sample description:

Brownish grey slightly gravelly slightly sandy CLAY

Sample Type: B

Location: TP24C
Supplier: Not Given

Depth Top [m]: 1
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	41
90	100	0.0528	40
75	100	0.0369	37
63	100	0.0255	32
50	100	0.0177	27
37.5	100	0.0127	25
28	100	0.0014	10
20	98		
14	92		
10	87		
6.3	82		
5	77		
3.35	73		
2	69		
1.18	64		
0.6	58	Particle density (assumed) 2.65 Mg/m ³	
0.425	54		
0.3	50		
0.212	47		
0.15	45		
0.063	41		

Dry Mass of sample [g]: 1613

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		30.80
Sand		28.20
Silt		28.90
Clay		12.10

Grading Analysis		
D100	mm	28
D60	mm	0.76
D30	mm	0.0223
D10	mm	0.00146
Uniformity Coefficient		520
Curvature Coefficient		0.45

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

Signed:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



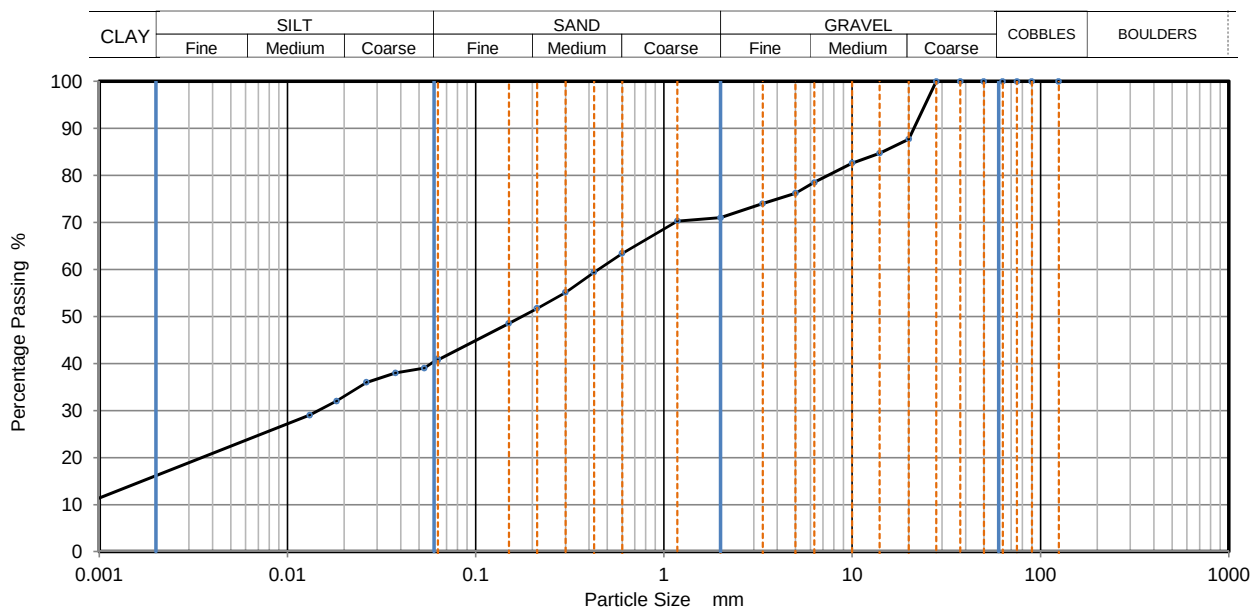
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729313
Sample description: Dark brown slightly gravelly slightly sandy CLAY
Location: TP25C
Supplier: Not Given

Sample Reference: 1
Sample Type: B
Depth Top [m]: 1.5
Depth Base [m]: Not Given





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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



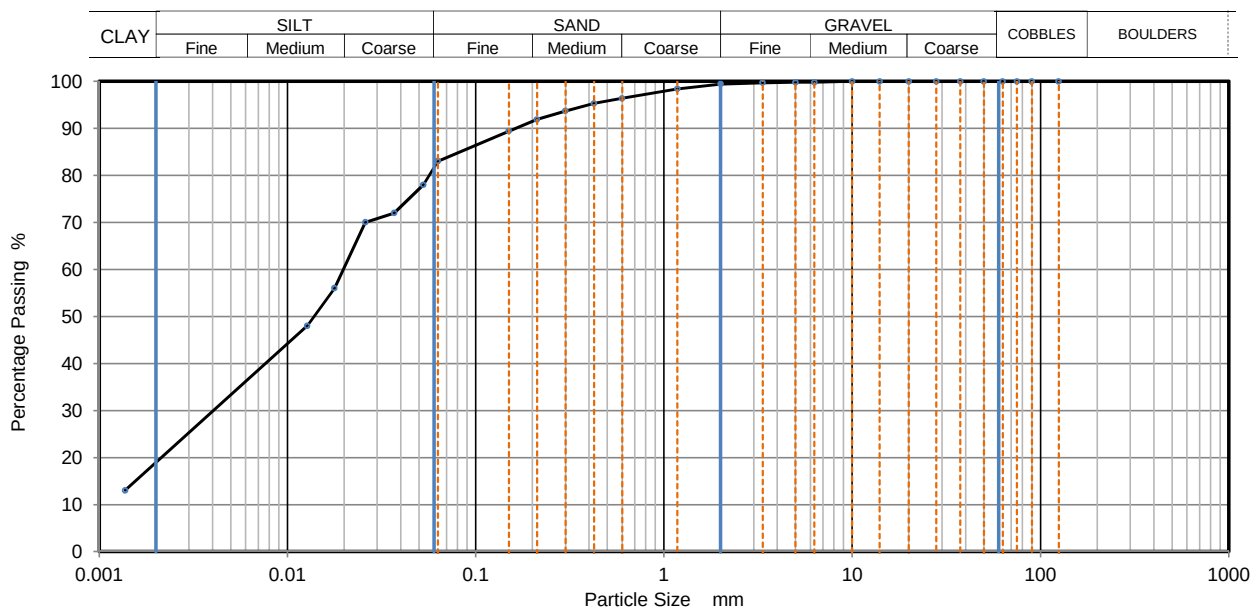
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729314
Sample description: Dark brown slightly gravelly organic CLAY
Location: TP27C
Supplier: Not Given

Sample Reference: 1
Sample Type: D
Depth Top [m]: 2.5
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	83
90	100	0.0528	78
75	100	0.0369	72
63	100	0.0259	70
50	100	0.0178	56
37.5	100	0.0127	48
28	100	0.0014	13
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	98		
0.6	96	Particle density (assumed) 2.65 Mg/m ³	
0.425	95		
0.3	94		
0.212	92		
0.15	89		
0.063	83		

Dry Mass of sample [g]: 198

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		0.60
Sand		16.40
Silt		63.70
Clay		19.30

Grading Analysis		
D100	mm	10
D60	mm	0.0198
D30	mm	0.00397
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**Determination of Particle Size Distribution**

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377:Part 2:1990, clause 9.2

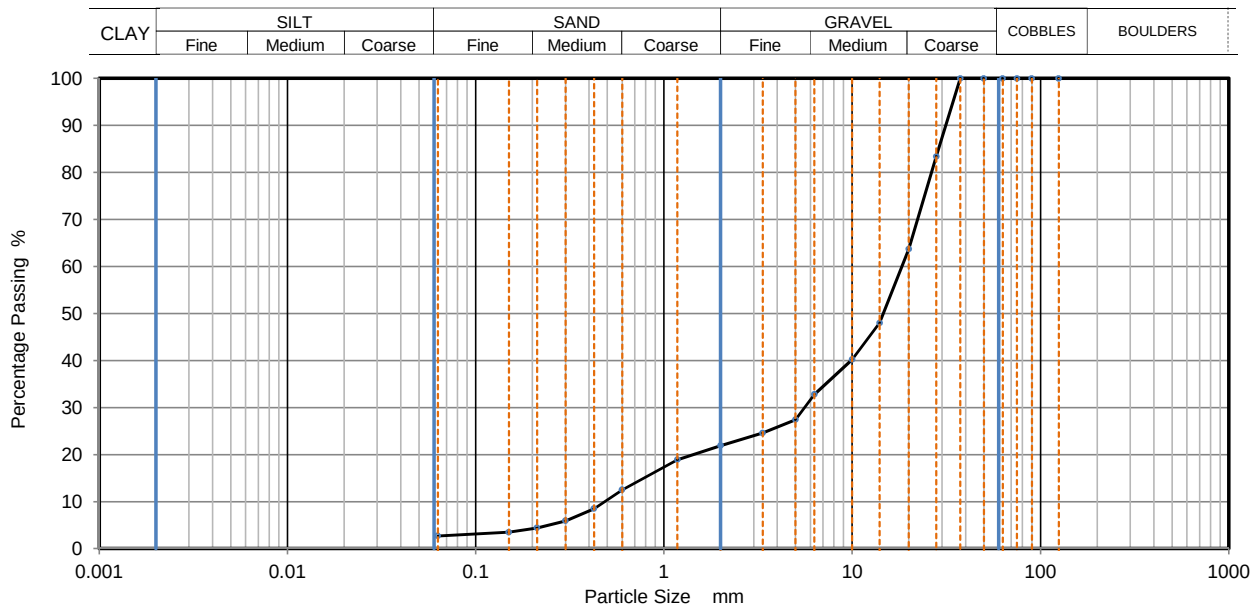
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729315
Sample description: Brown slightly clayey sandy GRAVEL
Location: TP30C
Supplier: Not Given

Sample Reference: 1
Sample Type: B
Depth Top [m]: 1
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	83		
20	64		
14	48		
10	40		
6.3	33		
5	27		
3.35	25		
2	22		
1.18	19		
0.6	13		
0.425	9		
0.3	6		
0.212	4		
0.15	4		
0.063	3		

Dry Mass of sample [g]: 2994

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	78.10
Sand	19.20
Fines <0.063mm	2.70

Grading Analysis	
D100	mm 37.5
D60	mm 18.4
D30	mm 5.59
D10	mm 0.483
Uniformity Coefficient	38
Curvature Coefficient	3.5

Remarks

Preparation and testing in accordance with BS1377 unless noted below
The material submitted, fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



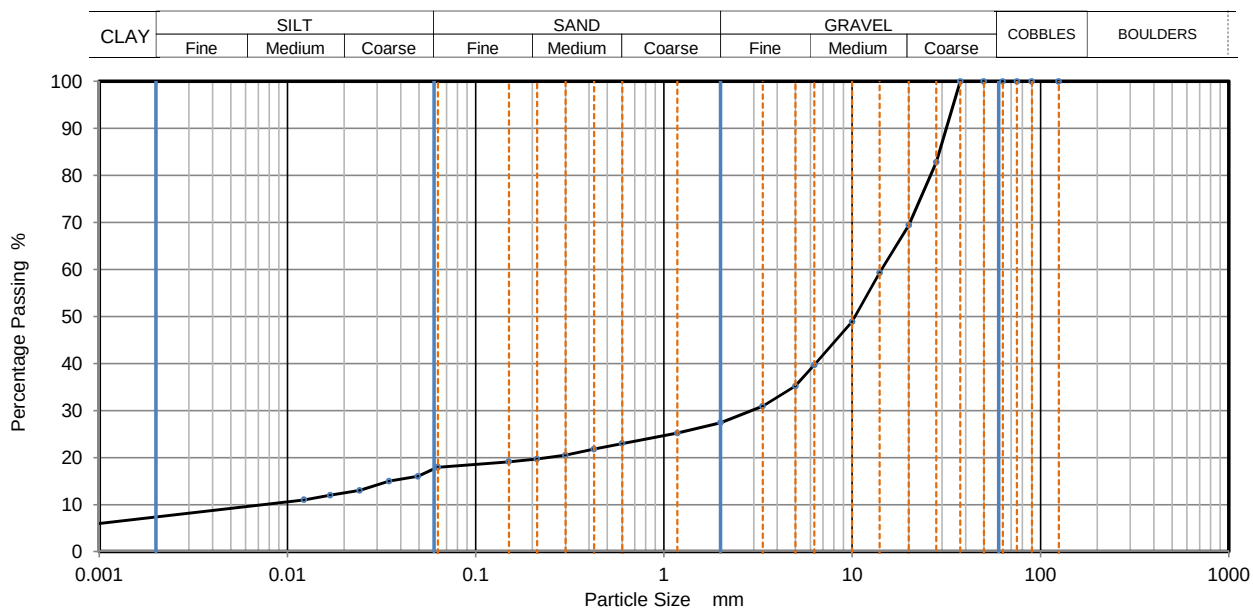
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729316
Sample description: Brown sandy clayey GRAVEL
Location: TP31C
Supplier: Not Given

Sample Reference: 1
Sample Type: B
Depth Top [m]: 1.4
Depth Base [m]: Not Given



Dry Mass of sample [g]: 7496

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	18
90	100	0.0494	16
75	100	0.0347	15
63	100	0.0242	13
50	100	0.0169	12
37.5	100	0.0123	11
28	83	0.006	5
20	69		
14	59		
10	49		
6.3	40		
5	35		
3.35	31		
2	27		
1.18	25		
0.6	23	Particle density (assumed) 2.65 Mg/m ³	
0.425	22		
0.3	21		
0.212	20		
0.15	19		
0.063	18		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		72.60
Sand		9.50
Silt		10.40
Clay		7.50

Grading Analysis		
D100	mm	37.5
D60	mm	14.3
D30	mm	2.93
D10	mm	0.00811
Uniformity Coefficient		1800
Curvature Coefficient		74

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



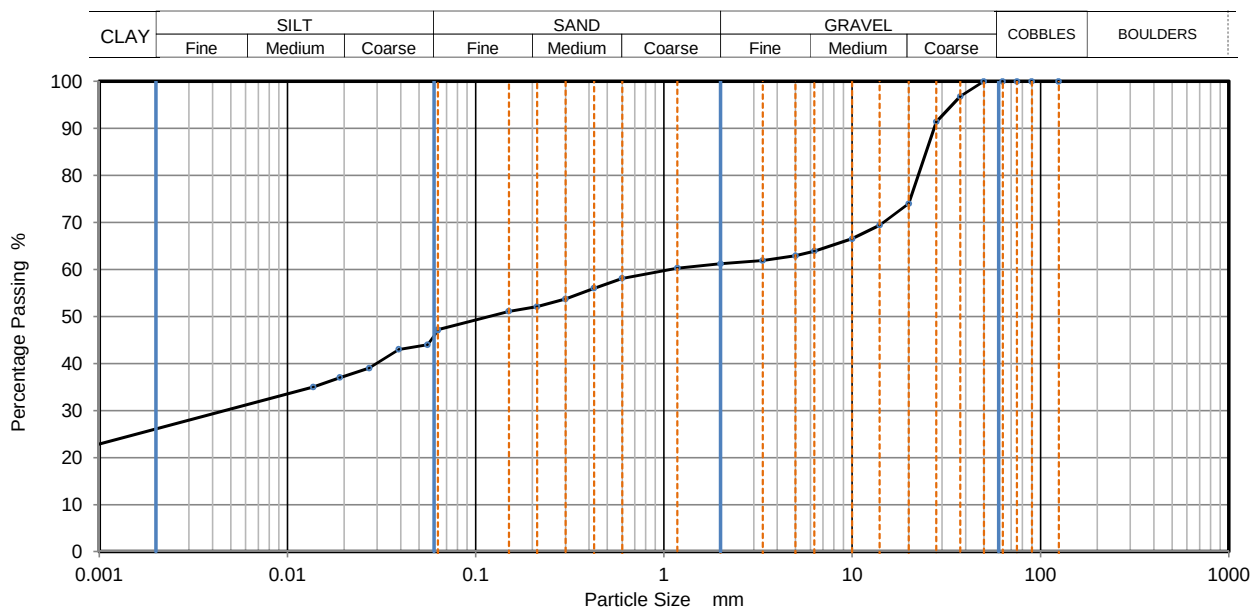
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729317
Sample description: Yellowish brown slightly sandy gravelly CLAY
Location: TP32C
Supplier: Not Given

Sample Reference: 1
Sample Type: B
Depth Top [m]: 1
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	47
90	100	0.0556	44
75	100	0.0391	43
63	100	0.0272	39
50	100	0.0190	37
37.5	97	0.0137	35
28	91	0.0007	21
20	74		
14	69		
10	67		
6.3	64		
5	63		
3.35	62		
2	61		
1.18	60		
0.6	58	Particle density (assumed) 2.65 Mg/m ³	
0.425	56		
0.3	54		
0.212	52		
0.15	51		
0.063	47		

Dry Mass of sample [g]: 5205

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	38.80
Sand	13.90
Silt	21.60
Clay	25.70

Grading Analysis		
D100	mm	50
D60	mm	1.07
D30	mm	0.00508
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with BS1377:Part 2:1990, clause 9.2

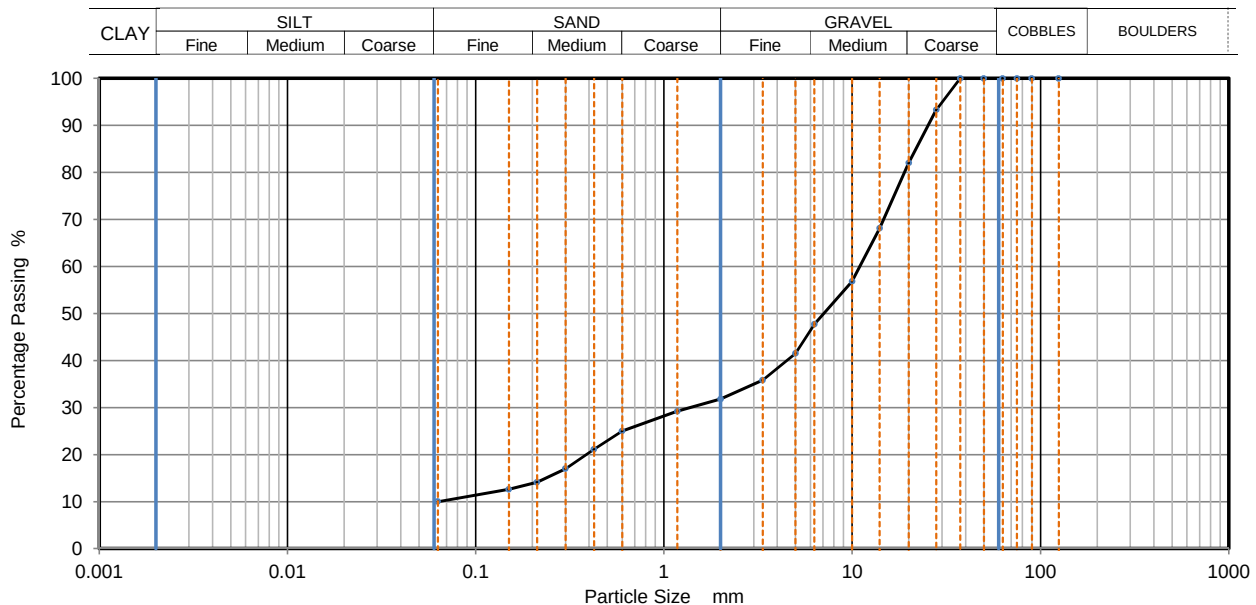
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729318
Sample description: Brown clayey very sandy GRAVEL
Location: TP32C
Supplier: Not Given

Sample Reference: 2
Sample Type: B
Depth Top [m]: 2
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	82		
14	68		
10	57		
6.3	48		
5	42		
3.35	36		
2	32		
1.18	29		
0.6	25		
0.425	21		
0.3	17		
0.212	14		
0.15	13		
0.063	10		

Dry Mass of sample [g]: 6275

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	68.20
Sand	21.90
Fines <0.063mm	10.00

Grading Analysis	
D100	mm 37.5
D60	mm 11
D30	mm 1.39
D10	mm 0.0639
Uniformity Coefficient	170
Curvature Coefficient	2.7

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



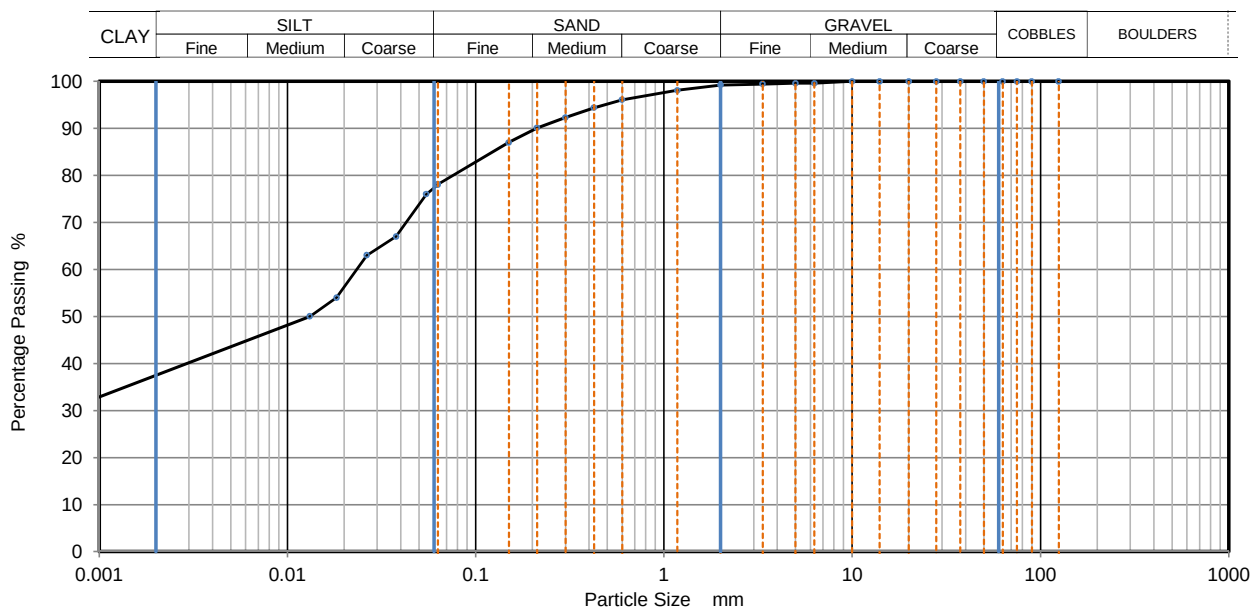
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729320
Sample description: Brown slightly sandy CLAY
Location: TP21C
Supplier: Not Given

Sample Reference: Not Given
Sample Type: B
Depth Top [m]: 0.7
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	78
90	100	0.0547	76
75	100	0.0378	67
63	100	0.0264	63
50	100	0.0182	54
37.5	100	0.0132	50
28	100	0.0066	30
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	98		
0.6	96	Particle density (assumed) 2.65 Mg/m ³	
0.425	94		
0.3	92		
0.212	90		
0.15	87		
0.063	78		

Dry Mass of sample [g]: 184

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.80
Sand	21.10
Silt	40.40
Clay	37.70

Grading Analysis	
D100	mm 10
D60	mm 0.0233
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Determination of Particle Size Distribution**

Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



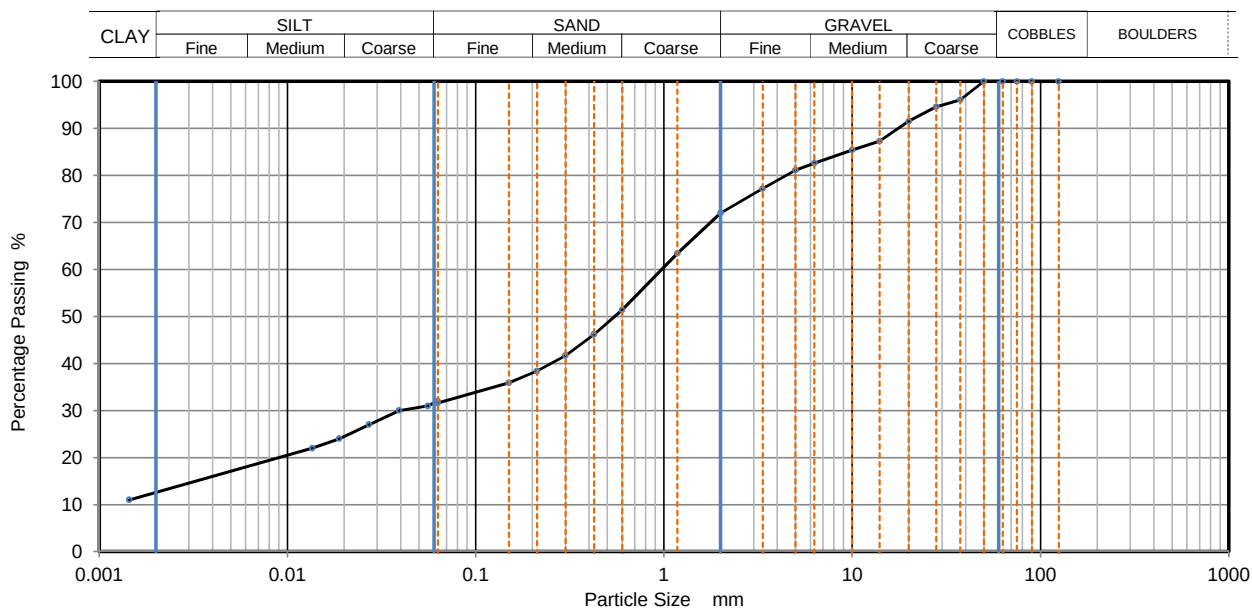
Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729321
Sample description: Dark brown clayey very gravelly SAND
Location: TP27
Supplier: Not Given

Sample Reference: Not Given
Sample Type: B
Depth Top [m]: 0.5
Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	32
90	100	0.0557	31
75	100	0.0392	30
63	100	0.0271	27
50	100	0.0189	24
37.5	96	0.0136	22
28	95	0.0014	11
20	92		
14	87		
10	85		
6.3	83		
5	81		
3.35	77		
2	72		
1.18	63		
0.6	51	Particle density (assumed) 2.65 Mg/m3	
0.425	46		
0.3	42		
0.212	38		
0.15	36		
0.063	32		

Dry Mass of sample [g]: 3218

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		28.00
Sand		40.40
Silt		18.90
Clay		12.70

Grading Analysis		
D100	mm	50
D60	mm	0.973
D30	mm	0.0391
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**Dry Density / Moisture Content Relationship
Light Compaction**

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

Client Reference: CGN-3732D

Job Number: 17-44724

Date Sampled: Not Given

Date Received: 28/03/2017

Date Tested: 10/04/2017

Sampled By: Not Given

Contact: Amir Abbasi

Site Name: Southall

Site Address: Not Given

TEST RESULTS

Laboratory Reference: 729292

Hole No.: TP3C

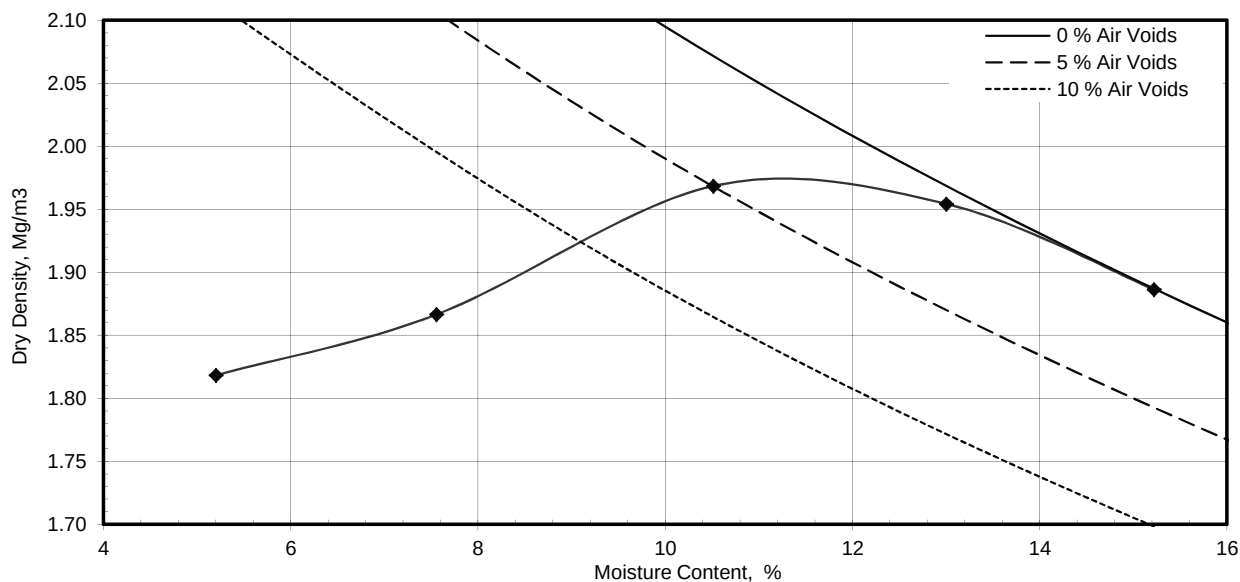
Sample Reference: 2

Sample Description: Brown sandy clayey GRAVEL

Depth Top [m]: 1.7

Depth Base [m]: Not Given

Sample Type: B



Preparation	Material used was natural	
Mould Type	1 Litre	
Samples Used	Separate specimens tested	
Material Retained on 37.5 mm Sieve	%	10
Material Retained on 20.0 mm Sieve	%	30
Particle Density - Assumed	Mg/m³	2.65
As received Moisture Content	%	11
Maximum Dry Density	Mg/m³	1.97
Optimum Moisture Content	%	11

Remarks: Zone X - test carried out as per client request; Insufficient material - compacted in proctor mould

Approved:

Signed:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Dry Density / Moisture Content Relationship Light Compaction

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

Client Reference: CGN-3732D

Job Number: 17-44724

Date Sampled: Not Given

Date Received: 28/03/2017

Date Tested: 11/04/2017

Sampled By: Not Given

Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

TEST RESULTS

Laboratory Reference: 729296

Hole No.: TP6C

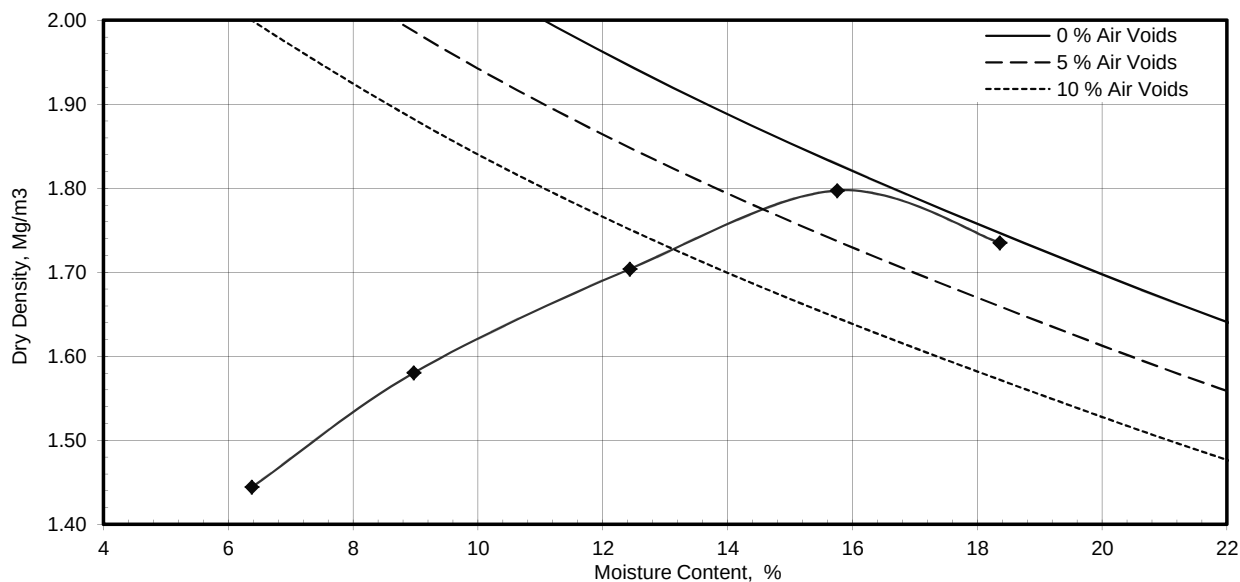
Sample Reference: 1

Sample Description: Brown gravelly silty CLAY

Depth Top [m]: 0.5

Depth Base [m]: Not Given

Sample Type: B



Preparation	Material used was natural	
Mould Type	1 Litre	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	2
Material Retained on 20.0 mm Sieve	%	7
Particle Density - Assumed	Mg/m³	2.57
As received Moisture Content	%	18
Maximum Dry Density	Mg/m³	1.80

Optimum Moisture Content	%	16
--------------------------	---	----

Remarks

Insufficient material - compacted in proctor mould

Approved:

Signed:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Dry Density / Moisture Content Relationship
Light Compaction**i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

Client Reference: CGN-3732D

Job Number: 17-44724

Date Sampled: Not Given

Date Received: 28/03/2017

Date Tested: 10/04/2017

Sampled By: Not Given

Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given**TEST RESULTS**

Laboratory Reference: 729298

Hole No.: TP6C

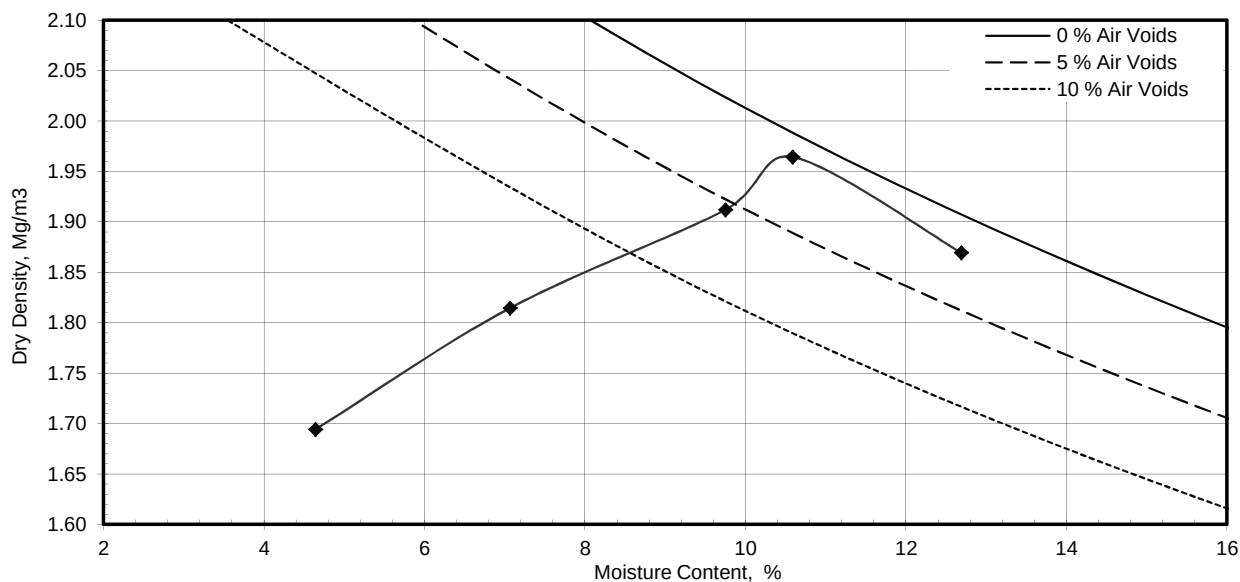
Sample Reference: 1

Sample Description: Grey slightly sandy clayey GRAVEL

Depth Top [m]: 0.4

Depth Base [m]: Not Given

Sample Type: B



Preparation	Material used was natural	
Mould Type	1 Litre	
Samples Used	Separate specimens tested	
Material Retained on 37.5 mm Sieve	%	6
Material Retained on 20.0 mm Sieve	%	37
Particle Density - Assumed	Mg/m³	2.52
As received Moisture Content	%	9.8
Maximum Dry Density	Mg/m³	1.96
Optimum Moisture Content	%	11

Remarks: Zone X - test carried out as per client request; Insufficient material - compacted in proctor mould

Approved:

Signed:

Miroslawa Pytlik
PL Snr Quality Specialist
Geotechnical SectionSushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."



4041

TEST CERTIFICATE**Dry Density / Moisture Content Relationship
Light Compaction**i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

Client Reference: CGN-3732D

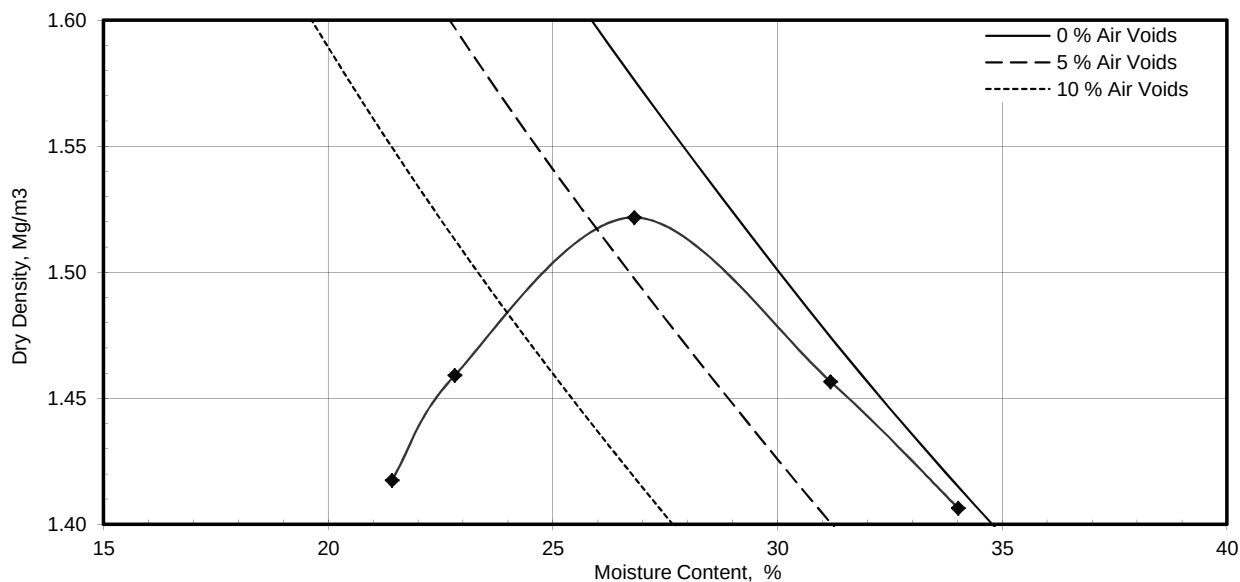
Job Number: 17-44724

Date Sampled: Not Given

Date Received: 28/03/2017

Date Tested: 10/04/2017

Sampled By: Not Given

Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given**TEST RESULTS**Laboratory Reference: 729302
Hole No.: TP11C
Sample Reference: 3
Sample Description: Brownish grey CLAYDepth Top [m]: 1.5
Depth Base [m]: Not Given
Sample Type: B

Preparation		Material used was natural
Mould Type		1 Litre
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.73
As received Moisture Content	%	31
Maximum Dry Density	Mg/m³	1.52
Optimum Moisture Content	%	27

Remarks

Approved:

Miroslawa Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**Dry Density / Moisture Content Relationship
Light Compaction**

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

Client Reference: CGN-3732D

Job Number: 17-44724

Date Sampled: Not Given

Date Received: 28/03/2017

Date Tested: 10/04/2017

Sampled By: Not Given

Contact: Amir Abbasi

Site Name: Southall

Site Address: Not Given

TEST RESULTS

Laboratory Reference: 729310

Hole No.: TP22C

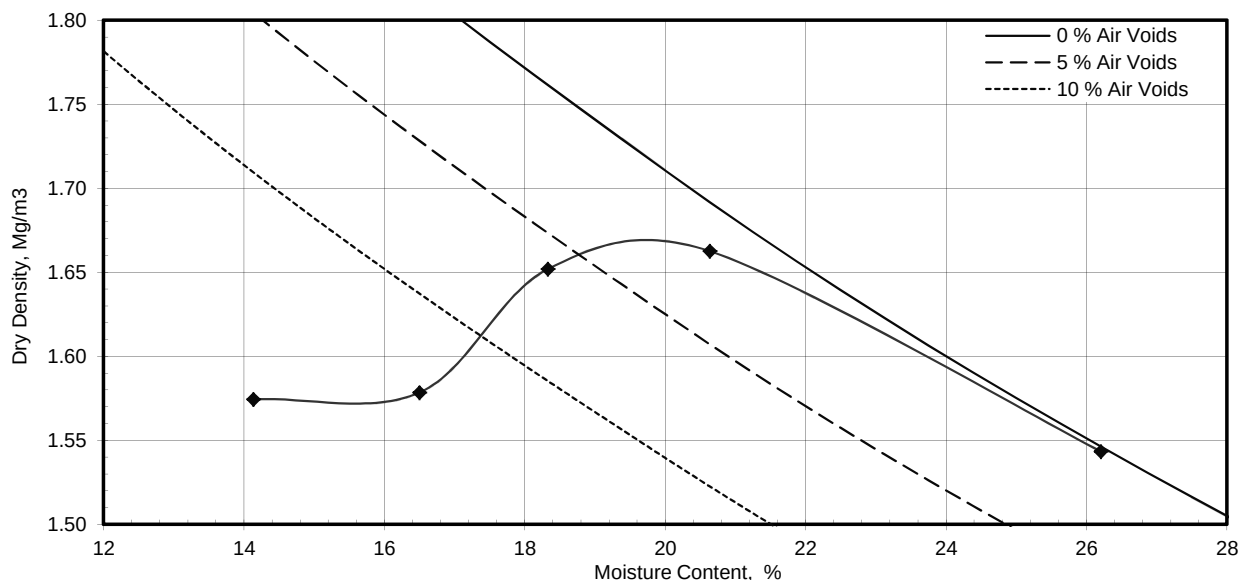
Sample Reference: 1

Sample Description: Yellowish brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 0.4

Depth Base [m]: Not Given

Sample Type: D



Preparation	Material used was natural	
Mould Type	1 Litre	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.60
As received Moisture Content	%	26
Maximum Dry Density	Mg/m³	1.67
Optimum Moisture Content	%	20

Remarks

Insufficient material - compacted in proctor mould

Approved:

Signed:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**Dry Density / Moisture Content Relationship
Light Compaction**i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

Client Reference: CGN-3732D

Job Number: 17-44724

Date Sampled: Not Given

Date Received: 28/03/2017

Date Tested: 10/04/2017

Sampled By: Not Given

Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given**TEST RESULTS**

Laboratory Reference: 729312

Hole No.: TP24C

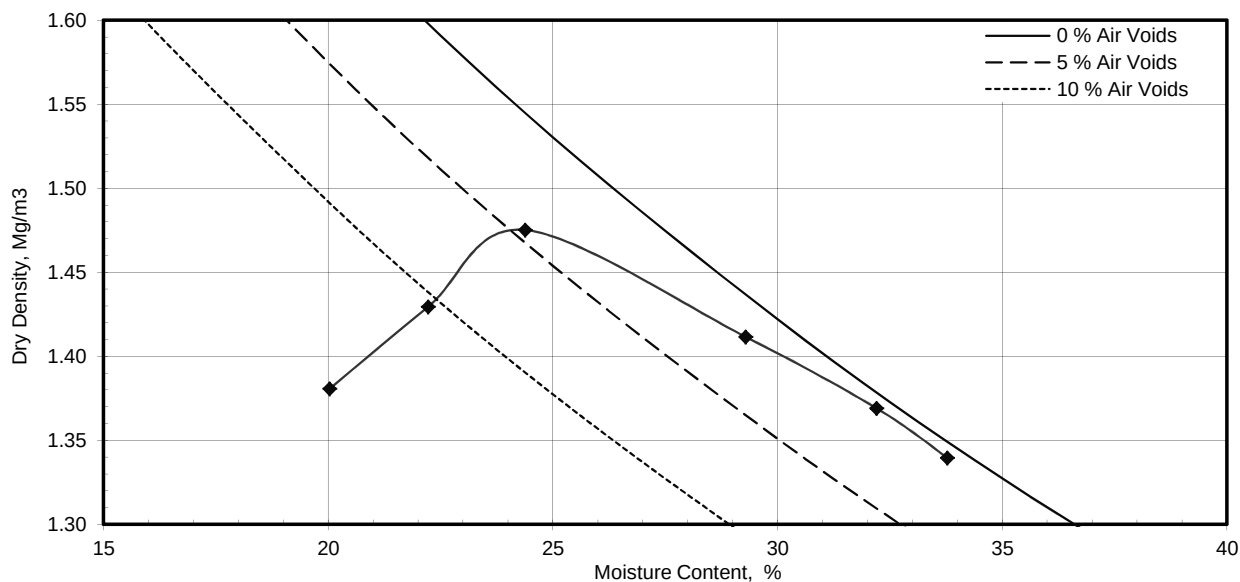
Sample Reference: 1

Sample Description: Brownish grey slightly gravelly slightly sandy CLAY

Depth Top [m]: 1

Depth Base [m]: Not Given

Sample Type: B



Preparation		Material used was natural
Mould Type		1 Litre
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.48
As received Moisture Content	%	29
Maximum Dry Density	Mg/m³	1.48
Optimum Moisture Content	%	24

Remarks

Insufficient material - compacted in proctor mould

Approved:

Signed:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical SectionSushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Dry Density / Moisture Content Relationship Light Compaction

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

Client Reference: CGN-3732D

Job Number: 17-44724

Date Sampled: Not Given

Date Received: 28/03/2017

Date Tested: 10/04/2017

Sampled By: Not Given

Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

TEST RESULTS

Laboratory Reference: 729314

Hole No.: TP27C

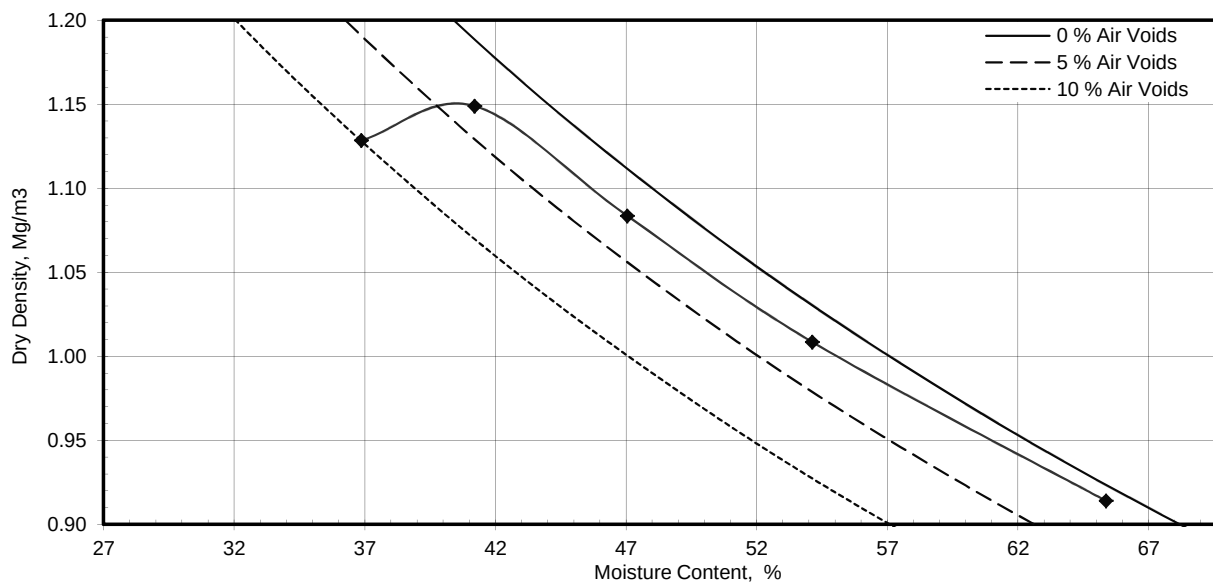
Sample Reference: 1

Sample Description: Dark brown slightly gravelly organic CLAY

Depth Top [m]: 2.5

Depth Base [m]: Not Given

Sample Type: D



Preparation		Material used was natural
Mould Type		1 Litre
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.33
As received Moisture Content	%	65
Maximum Dry Density	Mg/m³	1.15
Optimum Moisture Content	%	41

Remarks

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Dry Density / Moisture Content Relationship
Light Compaction**

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Environmental Science

Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

Client Reference: CGN-3732D

Job Number: 17-44724

Date Sampled: Not Given

Date Received: 28/03/2017

Date Tested: 10/04/2017

Sampled By: Not Given

Contact: Amir Abbasi

Site Name: Southall

Site Address: Not Given

TEST RESULTS

Laboratory Reference: 729316

Hole No.: TP31C

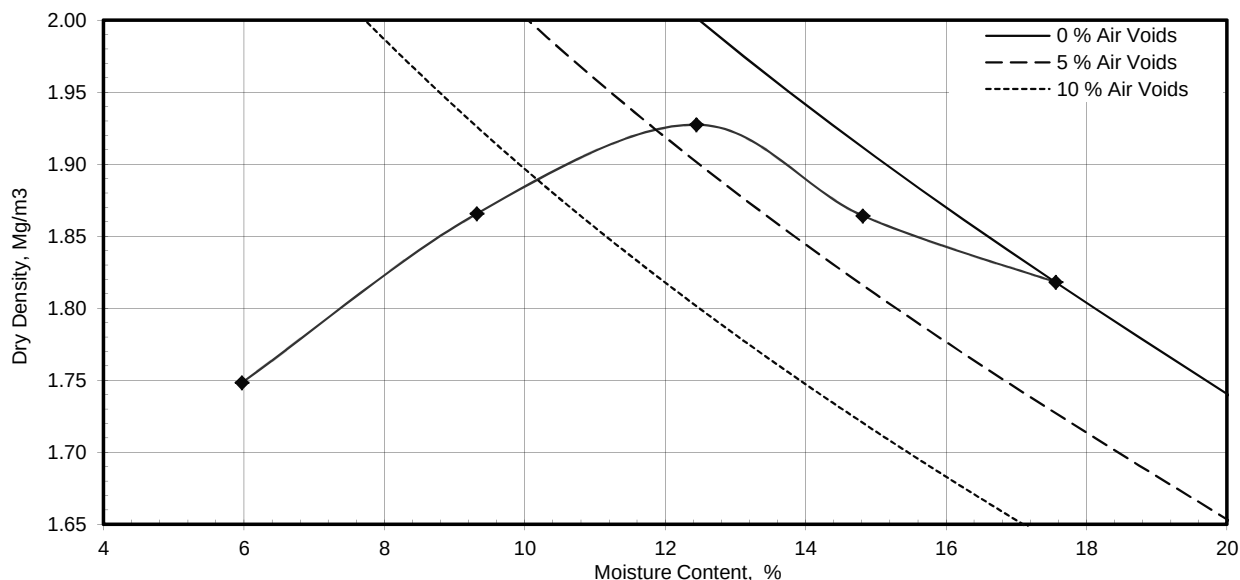
Sample Reference: 1

Sample Description: Brown sandy clayey GRAVEL

Depth Top [m]: 1.4

Depth Base [m]: Not Given

Sample Type: B



Preparation		Material used was natural
Mould Type		1 Litre
Samples Used		Separate specimens tested
Material Retained on 37.5 mm Sieve	%	6
Material Retained on 20.0 mm Sieve	%	25
Particle Density - Assumed	Mg/m³	2.67
As received Moisture Content	%	12
Maximum Dry Density	Mg/m³	1.93
Optimum Moisture Content	%	12

Remarks: Zone X - test carried out as per client request; Insufficient material - compacted in proctor mould

Approved:

Signed:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE**Dry Density / Moisture Content Relationship
Light Compaction**

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Environmental Science

Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

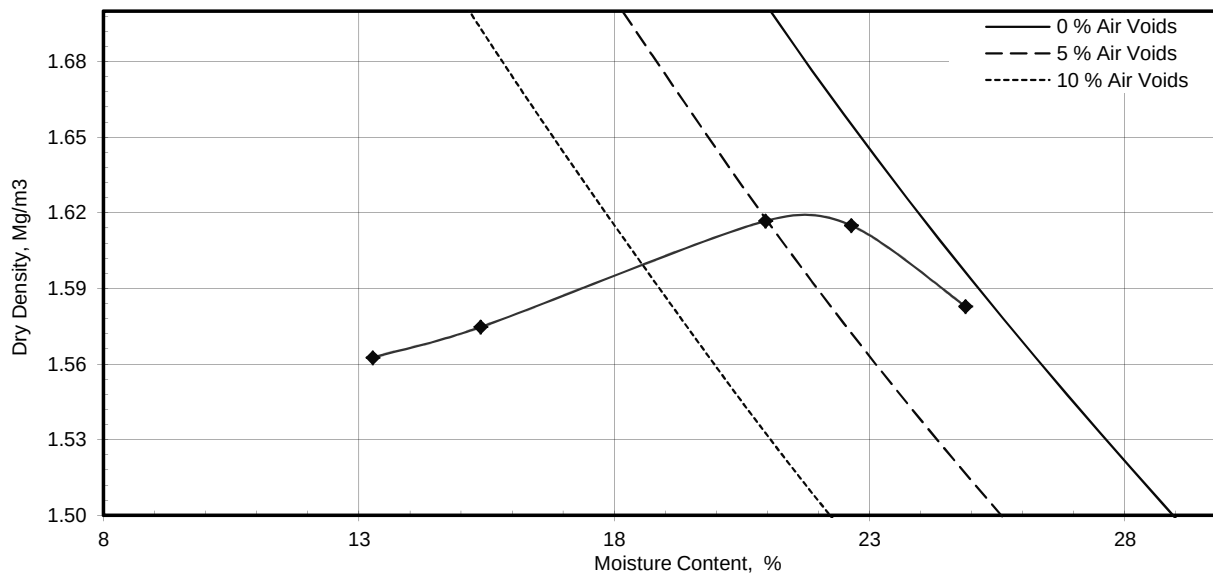
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04/2017
Sampled By: Not Given

TEST RESULTS

Laboratory Reference: 729319
Hole No.: TP33C
Sample Reference: 2
Sample Description: Brown slightly sandy CLAY

Depth Top [m]: 2.2
Depth Base [m]: Not Given
Sample Type: B



Preparation		Material used was natural
Mould Type		1 Litre
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
As received Moisture Content	%	21
Maximum Dry Density	Mg/m³	1.62
Optimum Moisture Content	%	22

Remarks

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE

Dry Density / Moisture Content Relationship Light Compaction

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in accordance with BS 1377-4:1990: Clause 3.3 using 2.5kg[light] Rammer

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW

Client Reference: CGN-3732D

Job Number: 17-44724

Date Sampled: Not Given

Date Received: 28/03/2017

Date Tested: 10/04/2017

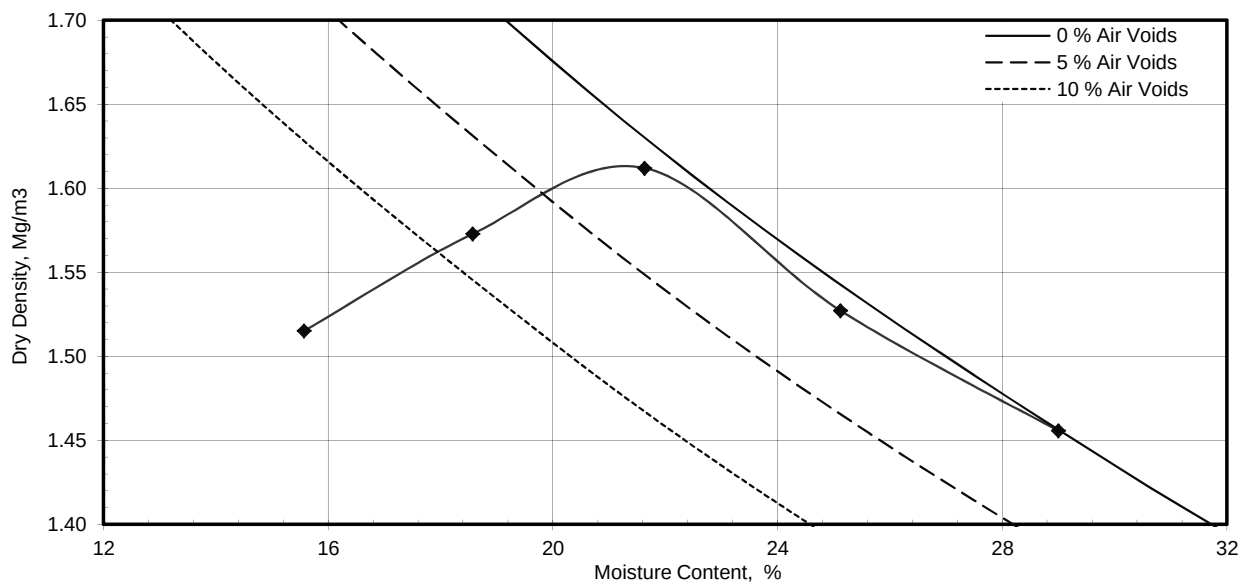
Sampled By: Not Given

Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

TEST RESULTS

Laboratory Reference: 729320
Hole No.: TP21C
Sample Reference: Not Given
Sample Description: Brown slightly sandy CLAY

Depth Top [m]: 0.7
Depth Base [m]: Not Given
Sample Type: B



Preparation	Material used was natural	
Mould Type	1 Litre	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.52
As received Moisture Content	%	29
Maximum Dry Density	Mg/m³	1.61
Optimum Moisture Content	%	22

Remarks

Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

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Moisture Condition Value / Moisture Content Relationship

Job Ref 17-44724

Borehole/Pit No. TP6C

Site Name	Southall			Sample No.	1
Soil Description	Brown gravelly silty CLAY			Depth	0.5
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	729296
Test Method	BS1377:Part4:1990:clause 5.5			Date started	11/04/2017

Sample preparation

Amount of material larger than 20mm sieve removed	9	%
Natural Moisture Content of sample	18	%
Initial Moisture Content of test sample below 20mm	18	%
Composite of fresh and reused material tested		

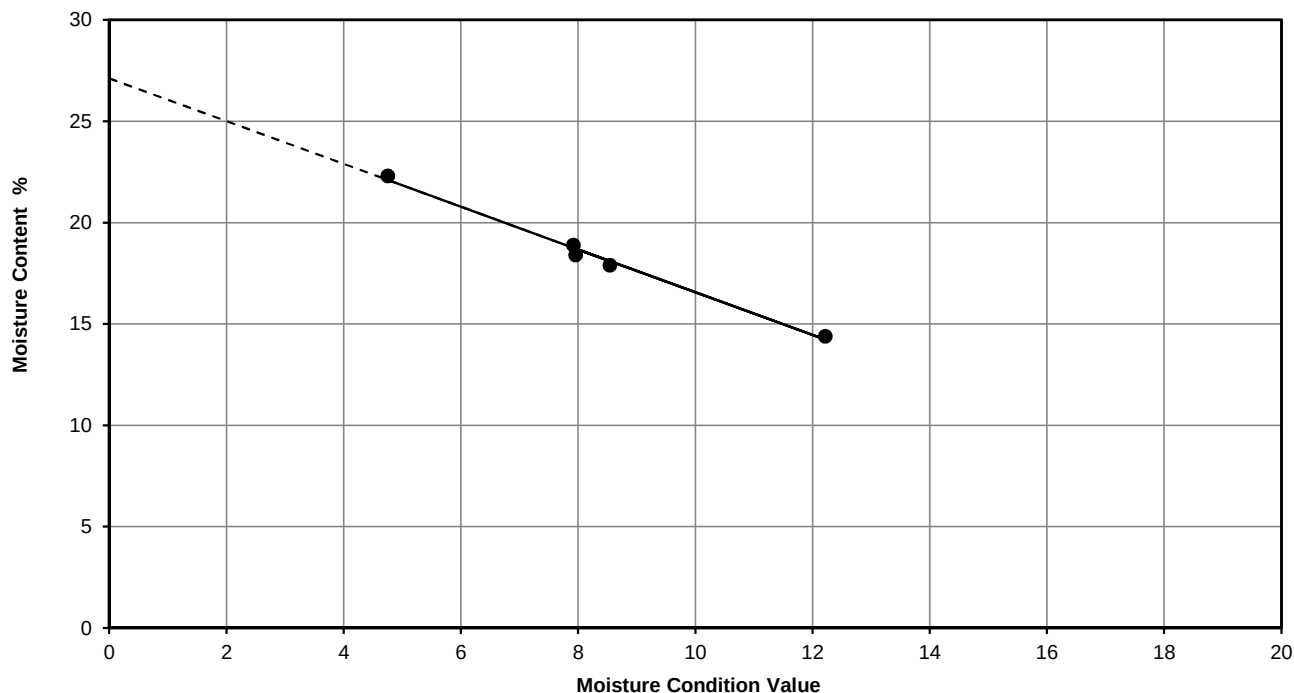
General remarks

Table of results

MCV Test Number
Moisture Content, %
Moisture Condition Value
MCV report
Effective / Valid data point
Specimen remarks

1	2	3	4	5
18.4	14.4	18.9	17.9	22.3
8.0	12.2	7.9	8.5	4.8
8	12.2	7.9	8.5	4.8
YES	YES	YES	YES	YES

● valid points × invalid points - - - - - extended regression — linear regression



Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section
Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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Moisture Condition Value / Moisture Content Relationship

Job Ref 17-44724

Borehole/Pit No. TP11C

Environmental Science					
Site Name	Southall			Sample No.	3
Soil Description	Brownish grey CLAY			Depth	1.5
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	729302
Test Method	BS1377:Part4:1990:clause 5.5			Date started	13/04/2017

Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	31	%
Initial Moisture Content of test sample below 20mm	31	%
Composite of fresh and reused material tested		

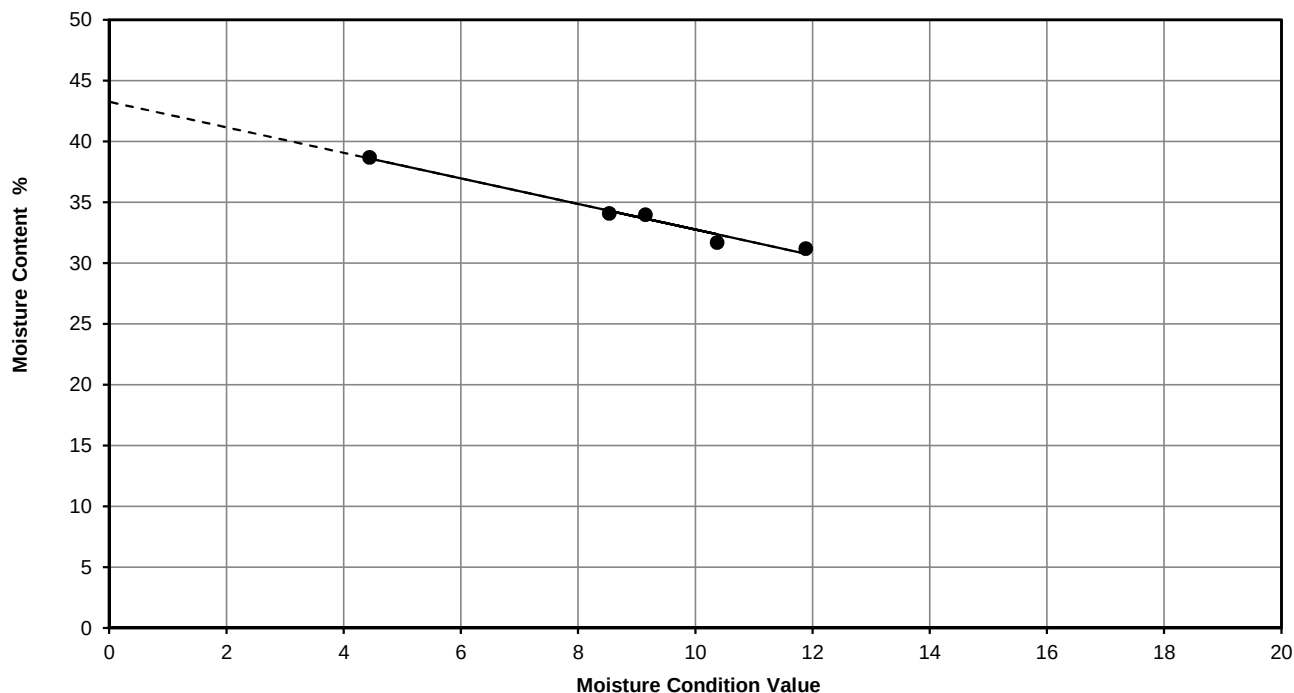
General remarks

Table of results

MCV Test Number
Moisture Content, %
Moisture Condition Value
MCV report
Effective / Valid data point
Specimen remarks

1	2	3	4	5
31.2	34.0	34.1	31.7	38.7
11.9	9.1	8.5	10.4	4.4
11.9	9.1	8.5	10.4	4.4
YES	YES	YES	YES	YES

● valid points × invalid points - - - - - extended regression — linear regression



Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section
Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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Moisture Condition Value / Moisture Content Relationship

Job Ref 17-44724

Borehole/Pit No. TP22C

Environmental Science

Site Name	Southall			Sample No.	1
Soil Description	Yellowish brown slightly gravelly slightly sandy CLAY			Depth	0.4
Specimen Reference		Specimen Depth	m	Sample Type	D
Specimen Description				KeyLAB ID	729310
Test Method	BS1377:Part4:1990:clause 5.5			Date started	10/04/2017

Sample preparation

Amount of material larger than 20mm sieve removed	9	%
Natural Moisture Content of sample	26	%
Initial Moisture Content of test sample below 20mm	26	%
Composite of fresh and reused material tested		

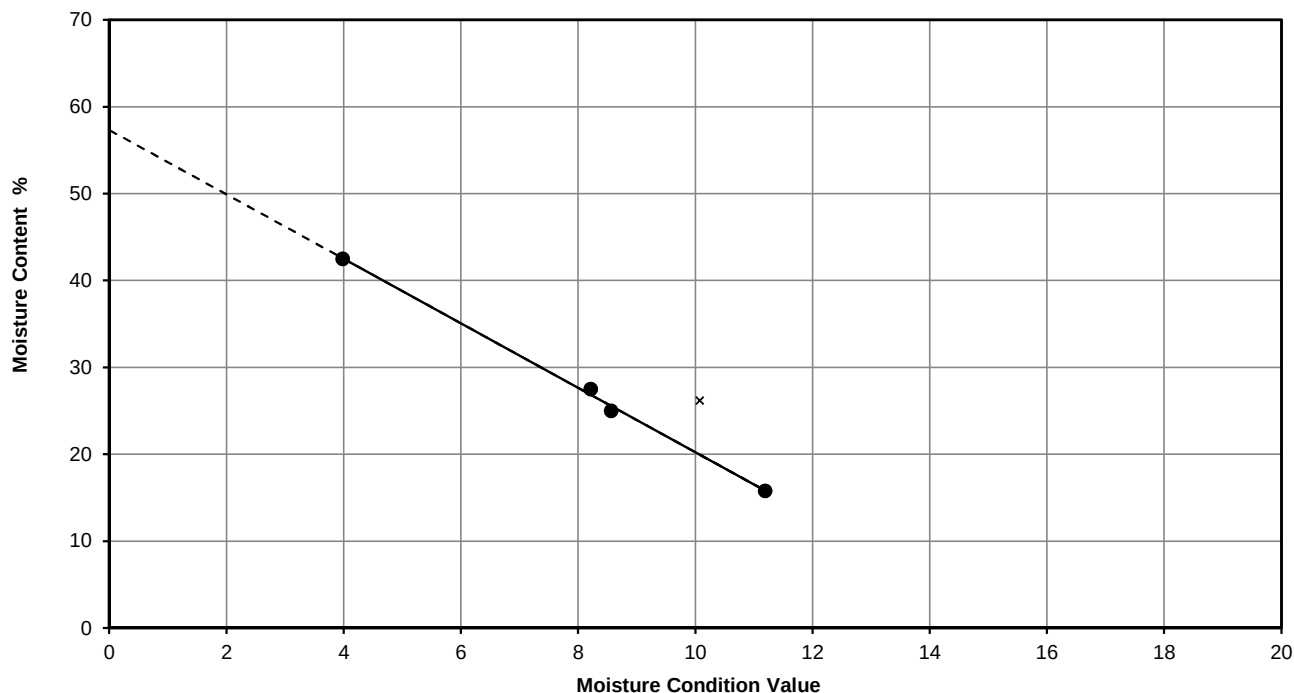
General remarks

Table of results

MCV Test Number
Moisture Content, %
Moisture Condition Value
MCV report
Effective / Valid data point
Specimen remarks

1	2	3	4	5
26.2	15.8	25.0	27.5	42.5
10.1	11.2	8.6	8.2	4.0
10.1	11.2	8.6	8.2	4
NO	YES	YES	YES	YES

● valid points × invalid points - - - - - extended regression — linear regression



Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section
Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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Moisture Condition Value / Moisture Content Relationship

Job Ref	17-44724
Borehole/Pit No.	TP27C
Sample No.	1
Depth	2.5
Sample Type	D
KeyLAB ID	729314
Date started	10/04/2017

Site Name Southall

Soil Description Dark brown slightly gravelly organic CLAY

Specimen Reference Specimen Depth m

Specimen Description KeyLAB ID 729314

Test Method BS1377:Part4:1990:clause 5.5 Date started 10/04/2017

Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	65.4	%
Initial Moisture Content of test sample below 20mm	65.4	%
Composite of fresh and reused material tested		

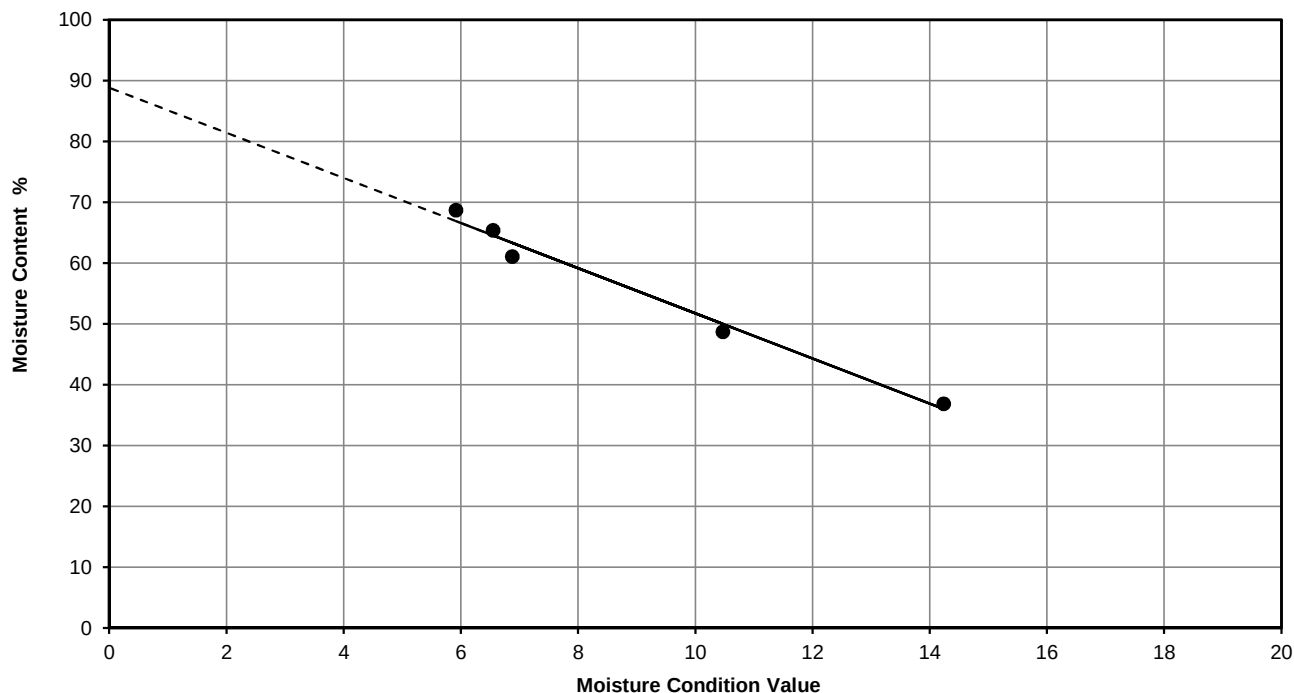
General remarks

Table of results

MCV Test Number
Moisture Content, %
Moisture Condition Value
MCV report
Effective / Valid data point
Specimen remarks

1	2	3	4	5
65.4	36.9	61.1	48.7	68.7
6.5	14.2	6.9	10.5	5.9
6.5	14.2	6.9	10.5	5.9
YES	YES	YES	YES	YES

● valid points × invalid points - - - - - extended regression — linear regression



Approved:

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section
Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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Moisture Condition Value / Moisture Content Relationship

Job Ref 17-44724

Borehole/Pit No. TP33C

Environmental science

Site Name	Southall			Sample No.	2
Soil Description	Brown slightly sandy CLAY			Depth	2.2
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	729319
Test Method	BS1377:Part4:1990:clause 5.5			Date started	10/04/2017

Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	21	%
Initial Moisture Content of test sample below 20mm	21	%
Composite of fresh and reused material tested		

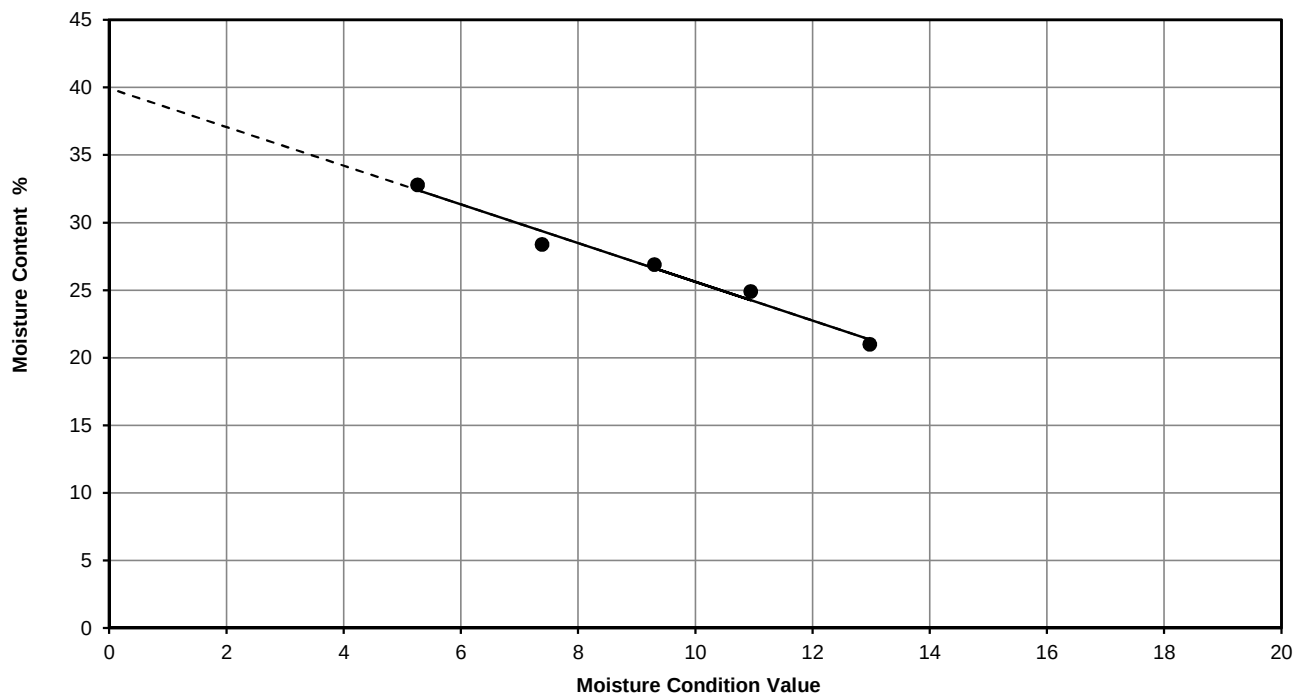
General remarks

Table of results

MCV Test Number
Moisture Content, %
Moisture Condition Value
MCV report
Effective / Valid data point
Specimen remarks

1	2	3	4	5
21.0	26.9	24.9	28.4	32.8
13.0	9.3	10.9	7.4	5.3
13	9.3	10.9	7.4	5.3
YES	YES	YES	YES	YES

● valid points × invalid points - - - - - extended regression — linear regression



Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Date Reported: 20/04/2017

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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Moisture Condition Value / Moisture Content Relationship

Job Ref 17-44724

Borehole/Pit No. TP21C

Site Name Southall Sample No. Not Given

Soil Description Brown slightly sandy CLAY Depth 0.7

Specimen Reference Specimen Depth m Sample Type B

Specimen Description KeyLAB ID 729320

Test Method BS1377:Part4:1990:clause 5.5 Date started 10/04/2017

Sample preparation

Amount of material larger than 20mm sieve removed 0 %
 Natural Moisture Content of sample 29 %
 Initial Moisture Content of test sample below 20mm 29 %
 Composite of fresh and reused material tested

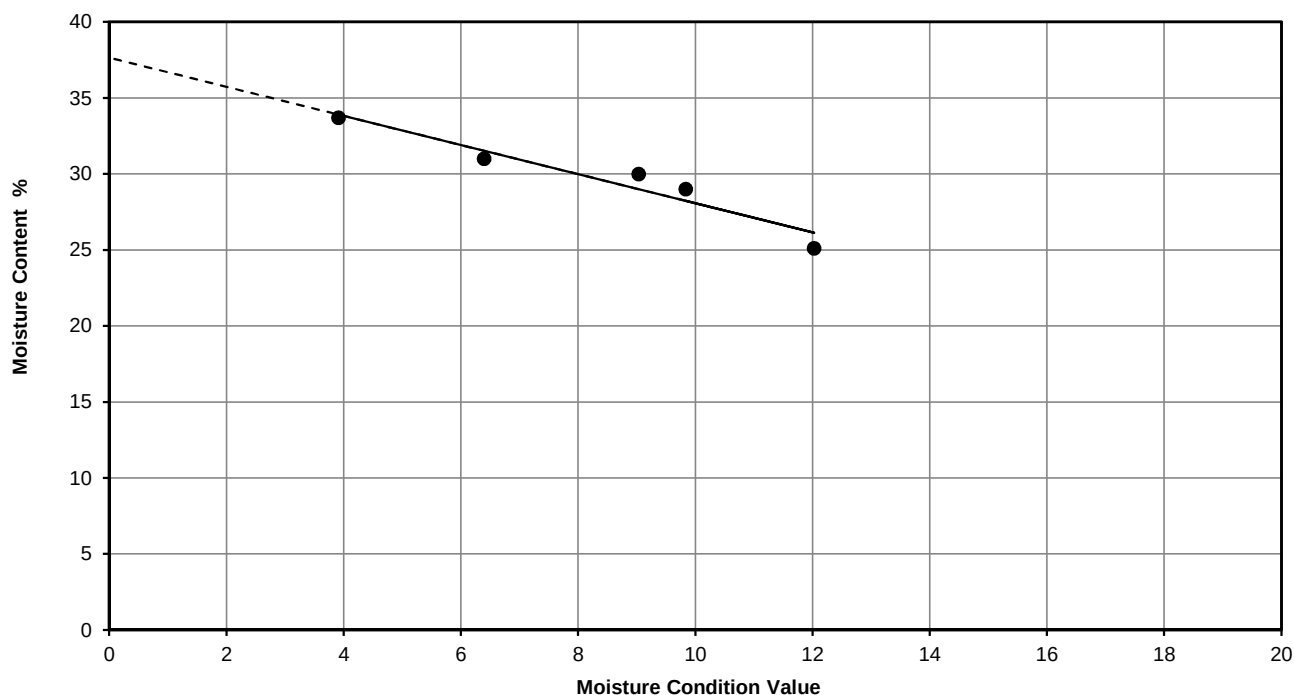
General remarks

Table of results

MCV Test Number
 Moisture Content, %
 Moisture Condition Value
 MCV report
 Effective / Valid data point
 Specimen remarks

1	2	3	4	5
29.0	25.1	30.0	31.0	33.7
9.8	12.0	9.0	6.4	3.9
9.8	12	9	6.4	3.9
YES	YES	YES	YES	YES

● valid points × invalid points - - - - extended regression — linear regression



Approved:

Mirosława Pytlík
 PL Snr Quality Specialist
 Geotechnical Section
 Date Reported: 20/04/2017

Signed:

Sushil Sharda
 Technical Manager
 (Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**Determination of Moisture Condition Value**

Tested in Accordance with BS 1377-4: 1990: Clause 5.4

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Lab Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 10/04 - 13/04/2017
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Retained on 20mm sieve %	Moisture Content <20mm %	Moisture Condition Value	Method of Interpretation	Remarks
		Reference	Depth Top [m]	Depth Base [m]	Type						
729302	TP11C	3.00	1.5	Not Given	B	Brownish grey CLAY	0	31	11.9	Steepest straight line	
729290	TP1C	1.00	1.0	Not Given	B	Yellowish brown clayey sandy GRAVEL	21	15	11.2	Steepest straight line	
729309	TP20C	2.00	1.4	Not Given	B	Yellowish brown slightly gravelly slightly sandy CLAY	0	44	10.1	Steepest straight line	
729320	TP21C	Not Given	0.7	Not Given	B	Brown slightly sandy CLAY	0	29	9.8	Steepest straight line	
729310	TP22C	1.00	0.4	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY	9	26	10.1	Steepest straight line	
729314	TP27C	1.00	2.5	Not Given	D	Dark brown slightly gravelly organic CLAY	0	65	6.5	Steepest straight line	
729316	TP31C	1.00	1.4	Not Given	B	Brown sandy clayey GRAVEL	31	12	11.8	Steepest straight line	
729319	TP33C	2.00	2.2	Not Given	B	Brown slightly sandy CLAY	0	21	14.9	Steepest straight line	
729291	TP3C	1.00	1.0	Not Given	B	Yellowish brown slightly gravelly slightly sandy CLAY	12	28	10.3	Steepest straight line	
729292	TP3C	2.00	1.7	Not Given	B	Brown sandy clayey GRAVEL	9	18	15.1	Steepest straight line	

Comments:**Approved:**

Mirosława Pytlik
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

for and on behalf of i2 Analytical Ltd

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
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The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Śląska, Poland."



TEST CERTIFICATE

Determination of Moisture Condition Value

Tested in Accordance with BS 1377-4: 1990: Clause 5.4

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre
Woolsack Way
Godalming
Surrey GU7 1XW
Contact: Amir Abbasi
Site Name: Southall
Site Address: Not Given

Client Reference: CGN-3732D
Lab Job Number: 17-44724
Date Sampled: Not Given
Date Received: 28/03/2017
Date Tested: 11/04/2017
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Retained on 20mm sieve %	Moisture Content <20mm %	Moisture Condition Value	Method of Interpretation	Remarks
		Reference	Depth Top [m]	Depth Base [m]	Type						
729298	TP6C	1.00	0.4	Not Given	B	Grey slightly sandy clayey GRAVEL	42	9.8	12.5	Steepest straight line	
729296	TP6C	1.00	0.5	Not Given	B	Brown gravelly silty CLAY	9	18	8	Steepest straight line	

Comments:

Approved:

Mirosława Pytlík
PL Snr Quality Specialist
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 20/04/2017

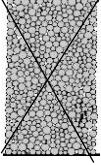
for and on behalf of i2 Analytical Ltd

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The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Śląska, Poland."

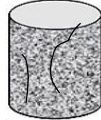
Total Stress Triaxial Compression

Unconsolidated Undrained (Single Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth 1.00		
	Description Yellowish brown slightly gravelly slightly sandy CLAY		
	Type	B	
	Initial Sample Length	L ₀	(mm) 69.5
	Initial Sample Diameter	D ₀	(mm) 37.5
	Initial Sample Weight	W ₀	(gr) 134.8
	Bulk Density	ρ ₀	(Mg/m ³) 1.76
	Particle Density	ρ _s	(Mg/m ³) 2.65

Initial Conditions			
Initial Cell Pressure	σ ₃	(kPa)	20
Strain Rate	m _s	(mm/min)	1.38980
Membrane Thickness	m _b	(mm)	0.24
Displacement Input	L _{IP}	(mm)	CH 2
Load Input	N _{IP}	(N)	CH 1
Initial Moisture	ω _i %	(%)	35
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.30
Initial Voids Ratio	e ₀	.	1.03
Initial Degree of Saturation	S _o	(%)	90

Final Conditions			
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	154
Membrane Correction	m _c	(kPa)	1.846
Strain At Max Stress	ε _f %	(%)	10.61
Shear Strength	c _u	(kPa)	77
Final Moisture	ω _f %	(%)	35
Final Dry Density	ρ _{df}	(Mg/m ³)	1.30
Final Voids Ratio	e _f	.	1.03
Final Degree of Saturation	S _f	(%)	89.9
Notes			
 Failure Sketch (surface inclination) 			

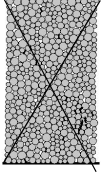
 Environmental Science	Test Method BS1377-7 : 1990 Clause 8		Test Name 729291	
	Database: .\SQLEXPRESS \ 6171-I2 Analytical		Test Date 12/04/2017	
	Site Reference	Southall	Borehole	TP3C
	Jobfile	17-44724	Sample	1
	Client	Card	Depth	1.00
Operator palmowska		Checked pytlkm	Approved	pytlkm

i2 Analytical Limited, 7 Woodshots Meadow, Croxley Green Business Park, Herts WD18 8YS
 i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Total Stress Triaxial Compression

Unconsolidated Undrained (Single Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	0.50		
	Description	Brown gravelly silty CLAY		
	Type	B		
	Initial Sample Length	L ₀	(mm)	68.6
	Initial Sample Diameter	D ₀	(mm)	37.2
	Initial Sample Weight	W ₀	(gr)	143.2
	Bulk Density	ρ ₀	(Mg/m ³)	1.92
	Particle Density	ρ _s	(Mg/m ³)	2.65

Initial Conditions				
Initial Cell Pressure	σ ₃	(kPa)	10	
Strain Rate	m _s	(mm/min)	1.37120	
Membrane Thickness	m _b	(mm)	0.28	
Displacement Input	L _{IP}	(mm)	CH 2	
Load Input	N _{IP}	(N)	CH 1	
Initial Moisture	ω _i %	(%)	20	
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.60	
Initial Voids Ratio	e ₀	.	0.65	
Initial Degree of Saturation	S _o	(%)	80	

Final Conditions				
Max Deviator Stress	$(\sigma_1 - \sigma_3)_f$ (kPa)	95		
Membrane Correction	m_c (kPa)	2.263		
Strain At Max Stress	$\epsilon_f\%$ (%)	10.69		
Shear Strength	c_u (kPa)	47		
Final Moisture	$\omega_f\%$ (%)	20		
Final Dry Density	ρ_{df} (Mg/m ³)	1.60		
Final Voids Ratio	e_f .	0.65		
Final Degree of Saturation	S_f (%)	79.6		
Notes				
			Failure Sketch (surface inclination)	

	Test Method		BS1377-7 : 1990 Clause 8		Test Name		729296				
	Database:		.\SQLEXPRESS \ 6171-I2 Analytical		Test Date		12/04/2017				
	Site Reference		Southall		Borehole		TP6C				
	Jobfile		17-44724		Sample		1				
	Client		Card		Depth		0.50				
	Operator		palmowska		Checked		pytlikm		Approved		pytlikm

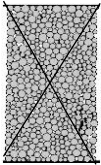
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i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

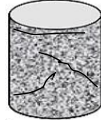
Total Stress Triaxial Compression

Unconsolidated Undrained (Single Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth 1.40 Description Yellowish brown slightly gravelly slightly sandy CLAY Type B		
	Initial Sample Length L ₀ (mm) 74.1 Initial Sample Diameter D ₀ (mm) 38.2 Initial Sample Weight W ₀ (gr) 147.3 Bulk Density ρ ₀ (Mg/m ³) 1.73 Particle Density ρ _s (Mg/m ³) 2.65		

Initial Conditions			
Initial Cell Pressure	σ ₃	(kPa)	28
Strain Rate	m _s	(mm/min)	1.48180
Membrane Thickness	m _b	(mm)	0.26
Displacement Input	L _{IP}	(mm)	CH 2
Load Input	N _{IP}	(N)	CH 1
Initial Moisture	ω _i %	(%)	49
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.16
Initial Voids Ratio	e ₀	.	1.28
Initial Degree of Saturation	S _o	(%)	100

Final Conditions			
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	113
Membrane Correction	m _c	(kPa)	1.439
Strain At Max Stress	ε _f %	(%)	4.57
Shear Strength	c _u	(kPa)	57
Final Moisture	ω _f %	(%)	49
Final Dry Density	ρ _{df}	(Mg/m ³)	1.16
Final Voids Ratio	e _f	.	1.28
Final Degree of Saturation	S _f	(%)	100.0
Notes  Failure Sketch (surface inclination) 			

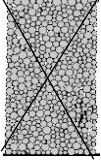
	Test Method BS1377-7 : 1990 Clause 8 Database: .\SQLEXPRESS \ 6171-I2 Analytical	Test Name 729309 Test Date 12/04/2017
	Site Reference Southall Jobfile 17-44724 Client Card	Borehole TP20C Sample 2 Depth 1.40
Operator palmowska Checked pytlkm		Approved pytlkm

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 i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Total Stress Triaxial Compression

Unconsolidated Undrained (Single Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth 0.40		
	Description Yellowish brown slightly gravelly slightly sandy CLAY		
	Type	D	
	Initial Sample Length	L ₀	(mm) 75.2
	Initial Sample Diameter	D ₀	(mm) 37.5
	Initial Sample Weight	W ₀	(gr) 157.2
	Bulk Density	ρ ₀	(Mg/m ³) 1.89
	Particle Density	ρ _s	(Mg/m ³) 2.65

Initial Conditions			
Initial Cell Pressure	σ ₃	(kPa)	8
Strain Rate	m _s	(mm/min)	1.50480
Membrane Thickness	m _b	(mm)	0.23
Displacement Input	L _{IP}	(mm)	CH 2
Load Input	N _{IP}	(N)	CH 1
Initial Moisture	ω _i %	(%)	33
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.43
Initial Voids Ratio	e ₀	.	0.86
Initial Degree of Saturation	S _o	(%)	100

Final Conditions			
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	94
Membrane Correction	m _c	(kPa)	2.057
Strain At Max Stress	ε _f %	(%)	12.37
Shear Strength	c _u	(kPa)	47
Final Moisture	ω _f %	(%)	33
Final Dry Density	ρ _{df}	(Mg/m ³)	1.43
Final Voids Ratio	e _f	.	0.86
Final Degree of Saturation	S _f	(%)	100.0
Notes			
 			
			

 Environmental Science	Test Method BS1377-7 : 1990 Clause 8		Test Name 729310	
	Database: .\SQLEXPRESS \ 6171-I2 Analytical		Test Date 12/04/2017	
	Site Reference Southall		Borehole TP22C	
	Jobfile 17-44724		Sample 1	
	Client Card		Depth 0.40	
	Operator palmowska	Checked pytlkm	Approved	pytlkm

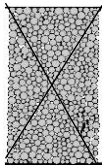
i2 Analytical Limited, 7 Woodshots Meadow, Croxley Green Business Park, Herts WD18 8YS

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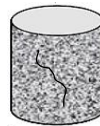
Total Stress Triaxial Compression

Unconsolidated Undrained (Single Stage)

Summary Report

Sample Details  sketch showing specimen location in original sample	Depth	2.50		
	Description	Dark brown slightly gravelly organic CLAY		
	Type	D		
	Initial Sample Length	L ₀	(mm)	68.9
	Initial Sample Diameter	D ₀	(mm)	37.8
	Initial Sample Weight	W ₀	(gr)	118.5
	Bulk Density	ρ ₀	(Mg/m ³)	1.53
	Particle Density	ρ _s	(Mg/m ³)	2.65

Initial Conditions			
Initial Cell Pressure	σ ₃	(kPa)	50
Strain Rate	m _s	(mm/min)	1.37780
Membrane Thickness	m _b	(mm)	0.22
Displacement Input	L _{IP}	(mm)	CH 2
Load Input	N _{IP}	(N)	CH 1
Initial Moisture	ω _i %	(%)	65
Initial Dry Density	ρ _{d0}	(Mg/m ³)	0.93
Initial Voids Ratio	e ₀	.	1.86
Initial Degree of Saturation	S _o	(%)	93

Final Conditions			
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	62
Membrane Correction	m _c	(kPa)	1.458
Strain At Max Stress	ε _f %	(%)	10.00
Shear Strength	c _u	(kPa)	31
Final Moisture	ω _f %	(%)	65
Final Dry Density	ρ _{df}	(Mg/m ³)	0.93
Final Voids Ratio	e _f	.	1.86
Final Degree of Saturation	S _f	(%)	93.3
Notes			
 Failure Sketch (surface inclination) 			

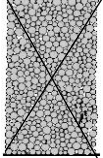
 Environmental Science	Test Method BS1377-7 : 1990 Clause 8		Test Name 729314	
	Database: .\SQLEXPRESS \ 6171-I2 Analytical		Test Date 12/04/2017	
	Site Reference Southall		Borehole TP27C	
	Jobfile 17-44724		Sample 1	
	Client Card		Depth 2.50	
	Operator palmowska	Checked pytlkm	Approved pytlkm	

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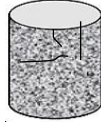
Total Stress Triaxial Compression

Unconsolidated Undrained (Single Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth 0.70 Description Brown slightly sandy CLAY Type B		
	Initial Sample Length L ₀ (mm) 72.2 Initial Sample Diameter D ₀ (mm) 37.7 Initial Sample Weight W ₀ (gr) 153.9 Bulk Density ρ ₀ (Mg/m ³) 1.91 Particle Density ρ _s (Mg/m ³) 2.65		

Initial Conditions			
Initial Cell Pressure	σ ₃	(kPa)	14
Strain Rate	m _s	(mm/min)	1.44320
Membrane Thickness	m _b	(mm)	0.23
Displacement Input	L _{IP}	(mm)	CH 2
Load Input	N _{IP}	(N)	CH 1
Initial Moisture	ω _i %	(%)	31
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.46
Initial Voids Ratio	e ₀	.	0.81
Initial Degree of Saturation	S _o	(%)	100

Final Conditions			
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	98
Membrane Correction	m _c	(kPa)	2.228
Strain At Max Stress	ε _f %	(%)	13.50
Shear Strength	c _u	(kPa)	49
Final Moisture	ω _f %	(%)	31
Final Dry Density	ρ _{df}	(Mg/m ³)	1.46
Final Voids Ratio	e _f	.	0.81
Final Degree of Saturation	S _f	(%)	100.0
Notes 			
 Failure Sketch (surface inclination)			

 Environmental Science	Test Method BS1377-7 : 1990 Clause 8 Database: .\SQLEXPRESS \ 6171-I2 Analytical	Test Name 729320 Test Date 12/04/2017
	Site Reference Southall Jobfile 17-44724 Client Card	Borehole TP21C Sample 729320 Depth 0.70
Operator palmowska Checked pytlkm		Approved pytlkm

i2 Analytical Limited, 7 Woodshots Meadow, Croxley Green Business Park, Herts WD18 8YS
 i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

APPENDIX C

Lime Trial Test

Results



M & H Testing Limited

"Adding Quality to Construction"

Southfield, Barnfield Road, Charing Heath, Ashford, Kent, TN27 0BP

Tel: 01233 714051 Fax: 0700 601 9306

www.mhtesting.co.uk

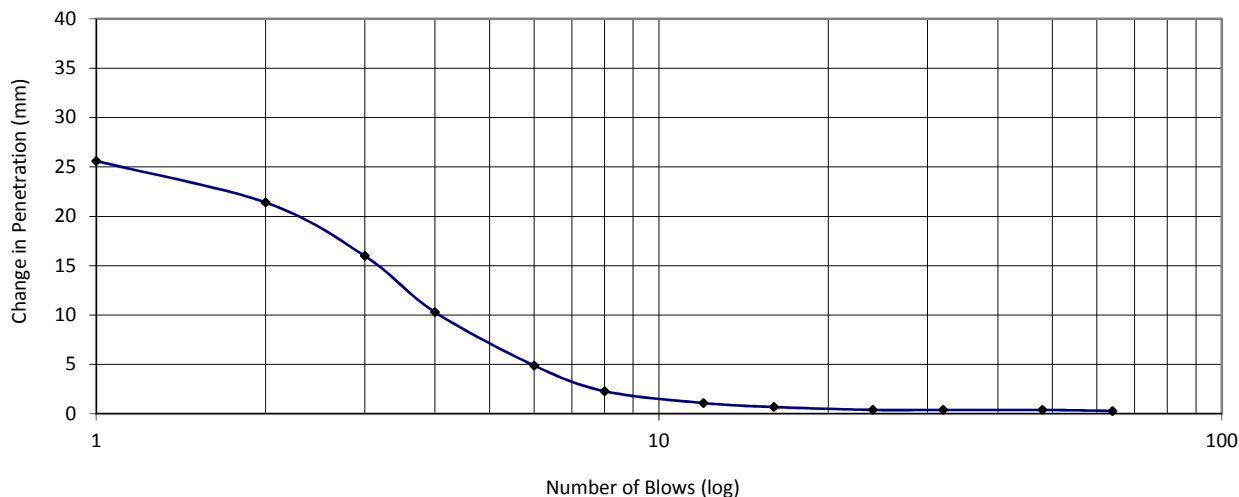
TEST REPORT: DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)
BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content

REPORT No.:	MH17-2992-2703-1	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4071/2	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	In-Situ
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay + 1.5% Lime
DATE RECEIVED:	27.03.2017	LOCATION:	Trial Pit
DATE TESTED:	11.04.2017	CERTIFICATE OF SAMPLING:	Yes
TESTED BY:	SM	VARIATIONS FROM STANDARD:	None
ORIENTATION OF TEST SPECIMEN		TYPE OF SAMPLE:	Disturbed
WITHIN ORIGINAL SAMPLE:	N/A		

RESULTS:

MOISTURE CONDITION VALUE	:	7.9
NATURAL MOISTURE CONTENT (%)	:	52.1
PERCENTAGE RETAINED 20mm (%)	:	0.0
INTERPRETATION OF CURVE	:	Best fit line
PREPARATION METHOD	:	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)

CHANGE IN PENETRATION vs No. OF BLOWS



REMARKS:

Checked and verified by:
Jon Champion
General Manager

24-Apr-17



M & H Testing Limited

"Adding Quality to Construction"

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Tel: 01233 714051 Fax: 0700 601 9306

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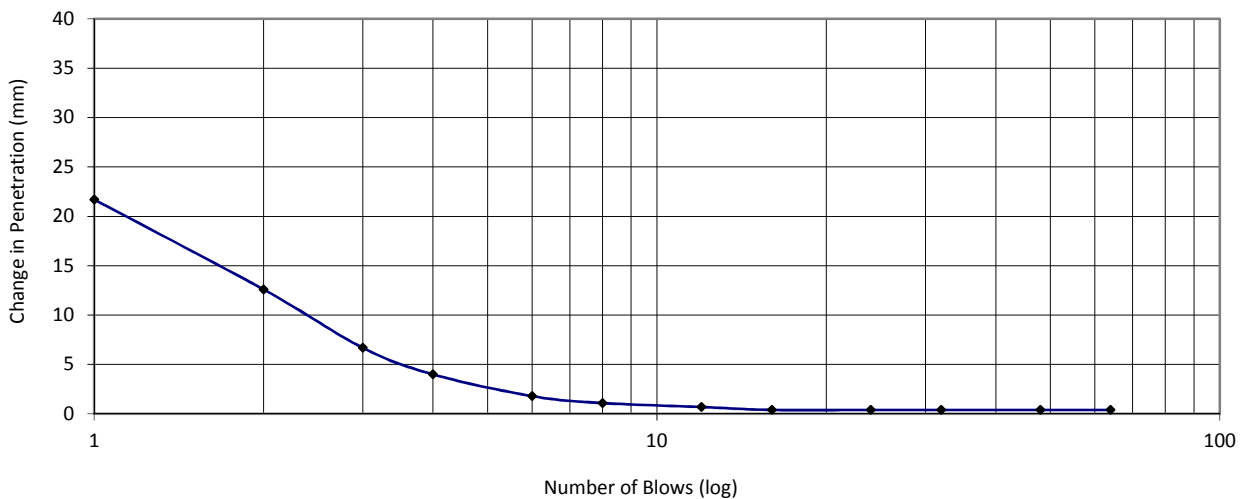
TEST REPORT: DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)
BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content

REPORT No.:	MH17-2992-2703-2	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4072/2	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	In-Situ
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay + 1% Lime & 2% GGBS
DATE RECEIVED:	27.03.2017	LOCATION:	Trial Pit
DATE TESTED:	11.04.2017	CERTIFICATE OF SAMPLING:	Yes
TESTED BY:	SM	VARIATIONS FROM STANDARD:	None
ORIENTATION OF TEST SPECIMEN		TYPE OF SAMPLE:	Disturbed
WITHIN ORIGINAL SAMPLE:	N/A		

RESULTS:

MOISTURE CONDITION VALUE	:	5.6
NATURAL MOISTURE CONTENT (%)	:	53.4
PERCENTAGE RETAINED 20mm (%)	:	0.0
INTERPRETATION OF CURVE	:	Best fit line
PREPARATION METHOD	:	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)

CHANGE IN PENETRATION vs No. OF BLOWS



REMARKS:

Checked and verified by:
Jon Champion
General Manager

12-Apr-17



M & H Testing Limited

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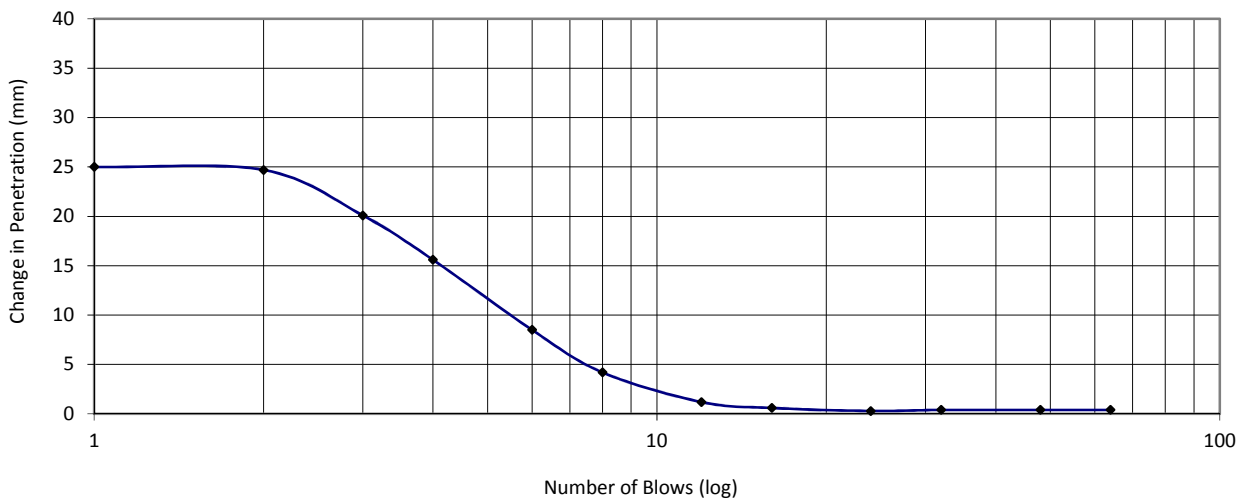
TEST REPORT: DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)
BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content

REPORT No.:	MH17-2992-2703-3	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4073/2	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	In-Situ
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay + 1.5% Lime & 3% GGBS
DATE RECEIVED:	27.03.2017	LOCATION:	Trial Pit
DATE TESTED:	11.04.2017	CERTIFICATE OF SAMPLING:	Yes
TESTED BY:	SM	VARIATIONS FROM STANDARD:	None
ORIENTATION OF TEST SPECIMEN		TYPE OF SAMPLE:	Disturbed
WITHIN ORIGINAL SAMPLE:	N/A		

RESULTS:

MOISTURE CONDITION VALUE	:	8.8
NATURAL MOISTURE CONTENT (%)	:	40.9
PERCENTAGE RETAINED 20mm (%)	:	0.0
INTERPRETATION OF CURVE	:	Best fit line
PREPARATION METHOD	:	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)

CHANGE IN PENETRATION vs No. OF BLOWS



REMARKS:

Checked and verified by:
Jon Champion
General Manager

12-Apr-17



M & H Testing Limited

"Adding Quality to Construction"

Southfield, Barnfield Road, Charing Heath, Ashford, Kent, TN27 0BP

Tel: 01233 714051 Fax: 0700 601 9306

TEST REPORT : DETERMINATION OF THE MOISTURE CONTENT OF SOIL MATERIAL

BS 1377:Part 2:1990 clause 3.2 - oven drying method

REPORT No.: MH17-2992-2703-4

CLIENT: Beach Ground Engineering Ltd

SAMPLE No.: 4071

ADDRESS: Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath

CLIENT REF: -

SITE: Pump Lane, Hayes

DATE SAMPLED: 27.03.2017

SUPPLIER: In-Situ

SAMPLED BY: D.Wilkins

MATERIAL: Black Silty Clay + 1% Lime

DATE RECEIVED: 27.03.2017

LOCATION: Trial Pits

DATE TESTED: 11.04.2017

ACCEPT STD.: Yes

TESTED BY: SM

PREPARATION METHOD: BS1377:Part1:1990 clauses 7.3 and 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: None

ORIENTATION OF TEST SPECIMEN WITHIN

ORIGINAL SAMPLE : N/A

SPECIFICATION REQUIREMENTS	
LOWER LIMIT	UPPER LIMIT
(%)	(%)

MATERIAL MOISTURE CONTENT:	55 %	N/A	-	N/A
----------------------------	------	-----	---	-----

REMARKS:

Checked and verified by:

Jon Champion

General Manager



M & H Testing Limited

"Adding Quality to Construction"

Southfield, Barnfield Road, Charing Heath, Ashford, Kent, TN27 0BP

Tel: 01233 714051 Fax: 0700 601 9306

TEST REPORT : DETERMINATION OF THE MOISTURE CONTENT OF SOIL MATERIAL

BS 1377:Part 2:1990 clause 3.2 - oven drying method

REPORT No.: MH17-2992-2703-5

CLIENT: Beach Ground Engineering Ltd

SAMPLE No.: 4072

ADDRESS: Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath

CLIENT REF: -

SITE: Pump Lane, Hayes

DATE SAMPLED: 27.03.2017

SUPPLIER: In-Situ

SAMPLED BY: D.Wilkins

MATERIAL: Black Silty Clay + 1% Lime & 2% GGBS

DATE RECEIVED: 27.03.2017

LOCATION: Trial Pits

DATE TESTED: 11.04.2017

ACCEPT STD.: Yes

TESTED BY: SM

PREPARATION METHOD: BS1377:Part1:1990 clauses 7.3 and 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: None

ORIENTATION OF TEST SPECIMEN WITHIN

ORIGINAL SAMPLE : N/A

SPECIFICATION REQUIREMENTS	
LOWER LIMIT	UPPER LIMIT
(%)	(%)

MATERIAL MOISTURE CONTENT:	58 %	N/A	-	N/A
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REMARKS:

Checked and verified by:

Jon Champion

General Manager



M & H Testing Limited

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TEST REPORT : DETERMINATION OF THE MOISTURE CONTENT OF SOIL MATERIAL

BS 1377:Part 2:1990 clause 3.2 - oven drying method

REPORT No.:	MH17-2992-2703-6	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4073	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	In-Situ
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay + 1.5% Lime & 3% GGBS
DATE RECEIVED:	27.03.2017	LOCATION:	Trial Pits
DATE TESTED:	11.04.2017	ACCEPT STD.:	Yes
TESTED BY:	SM	PREPARATION METHOD:	BS1377:Part1:1990 clauses 7.3 and 7.4.5
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	None

ORIENTATION OF TEST SPECIMEN WITHIN

ORIGINAL SAMPLE : N/A

SPECIFICATION REQUIREMENTS	
LOWER LIMIT	UPPER LIMIT
(%)	(%)

MATERIAL MOISTURE CONTENT:	52 %	N/A	-	N/A
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REMARKS:

Checked and verified by:
Jon Champion
General Manager



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TEST REPORT : DETERMINATION OF THE MOISTURE CONTENT OF SOIL MATERIAL

BS 1377:Part 2:1990 clause 3.2 - oven drying method

REPORT No.:	MH17-2992-2703-7	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	3935	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	In-Situ
SAMPLED BY:	D.Wilkins	MATERIAL:	Brown Silty Clay
DATE RECEIVED:	27.03.2017	LOCATION:	Trial Pits
DATE TESTED:	11.04.2017	ACCEPT STD.:	Yes
TESTED BY:	SM	PREPARATION METHOD:	BS1377:Part1:1990 clauses 7.3 and 7.4.5
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	None

ORIENTATION OF TEST SPECIMEN WITHIN

ORIGINAL SAMPLE : N/A

SPECIFICATION REQUIREMENTS	
LOWER LIMIT	UPPER LIMIT
(%)	(%)

MATERIAL MOISTURE CONTENT:	29 %	N/A	-	N/A
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REMARKS:

Checked and verified by:
Jon Champion
General Manager



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TEST REPORT : DETERMINATION OF THE MOISTURE CONTENT OF SOIL MATERIAL

BS 1377:Part 2:1990 clause 3.2 - oven drying method

REPORT No.: MH17-2992-2703-6

CLIENT: Beach Ground Engineering Ltd

SAMPLE No.: 4073

ADDRESS: Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath

CLIENT REF: -

SITE: Pump Lane, Hayes

DATE SAMPLED: 27.03.2017

SUPPLIER: In-Situ

SAMPLED BY: D.Wilkins

MATERIAL: Black Silty Clay + 1.5% Lime & 3% GGBS

DATE RECEIVED: 27.03.2017

LOCATION: Trial Pits

DATE TESTED: 11.04.2017

ACCEPT STD.: Yes

TESTED BY: SM

PREPARATION METHOD: BS1377:Part1:1990 clauses 7.3 and 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: None

ORIENTATION OF TEST SPECIMEN WITHIN

ORIGINAL SAMPLE : N/A

SPECIFICATION REQUIREMENTS	
LOWER LIMIT	UPPER LIMIT
(%)	(%)

MATERIAL MOISTURE CONTENT:	52 %	N/A	-	N/A
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REMARKS:

Checked and verified by:

Jon Champion

General Manager



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TEST REPORT : DETERMINATION OF THE MOISTURE CONTENT OF SOIL MATERIAL

BS 1377:Part 2:1990 clause 3.2 - oven drying method

REPORT No.:	MH17-2992-2703-8	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	3945	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	In-Situ
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay
DATE RECEIVED:	27.03.2017	LOCATION:	Trial Pits
DATE TESTED:	11.04.2017	ACCEPT STD.:	Yes
TESTED BY:	SM	PREPARATION METHOD:	BS1377:Part1:1990 clauses 7.3 and 7.4.5
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	None

ORIENTATION OF TEST SPECIMEN WITHIN

ORIGINAL SAMPLE : N/A

SPECIFICATION REQUIREMENTS	
LOWER LIMIT	UPPER LIMIT
(%)	(%)

MATERIAL MOISTURE CONTENT:	53 %	N/A	-	N/A
----------------------------	------	-----	---	-----

REMARKS:

Checked and verified by:
Jon Champion
General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-9	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4069/4	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	Brown Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	At Natural
DATE TESTED:	11-13.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	3 Day Air Cured	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.894	Mg/m ³
Moisture Content :	29	%
Dry Density :	1.465	Mg/m ³

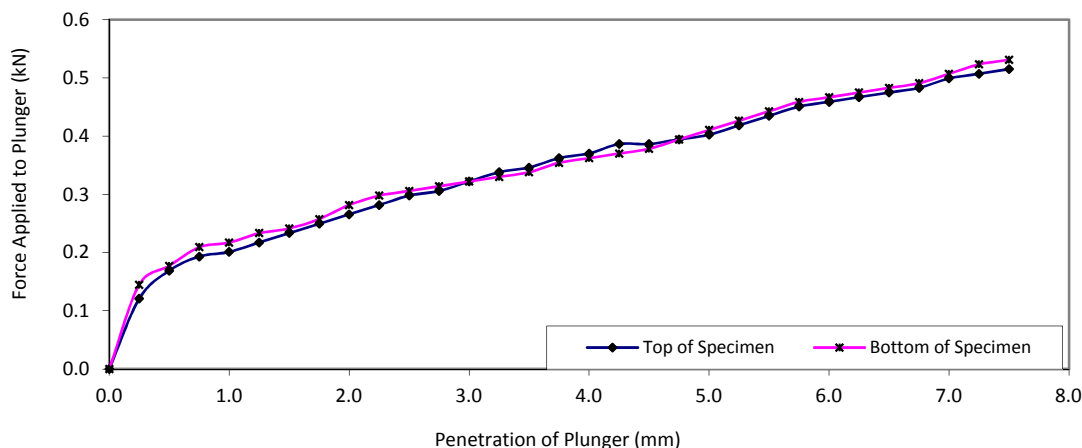
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.30	kN
CBR Value @ 2.5mm Penetration	: 2.2	%
Load on Plunger @ 5.0mm Penetration	: 0.40	kN
CBR Value @ 5.0mm Penetration	: 2.0	%
Top Half Moisture Content	: 29	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.31	kN
CBR Value @ 2.5mm Penetration	: 2.3	%
Load on Plunger @ 5.0mm Penetration	: 0.41	kN
CBR Value @ 5.0mm Penetration	: 2.1	%
Bottom Half Moisture Content	: 30	%

MEAN C.B.R VALUE: 2.3 %



REMARKS:

Remaining sample will be retained for a minimum of 14 days from date of report.

Checked and verified by:
Jon Champion
General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-10	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4070/4	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	At Natural
DATE TESTED:	11-13.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	3 Day Air Cured	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.582	Mg/m ³
Moisture Content :	53	%
Dry Density :	1.033	Mg/m ³

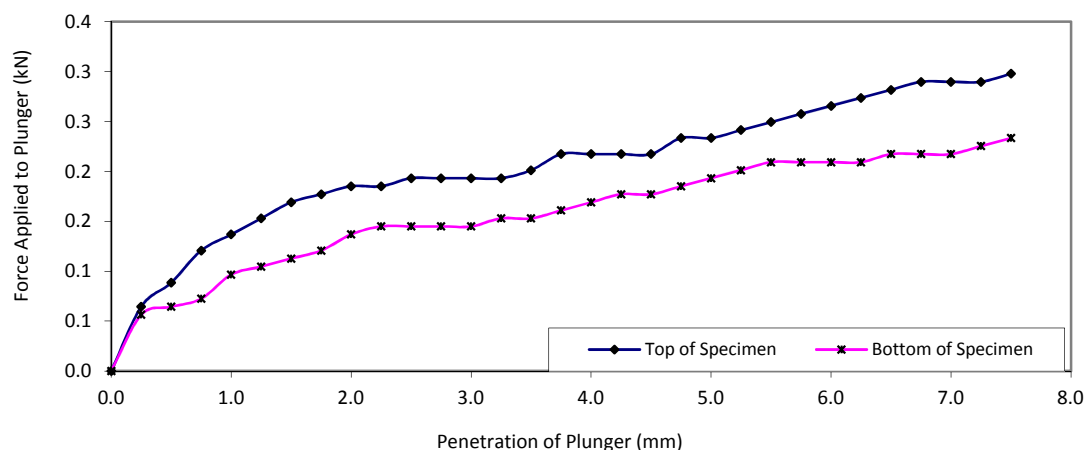
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.19	kN
CBR Value @ 2.5mm Penetration	: 1.5	%
Load on Plunger @ 5.0mm Penetration	: 0.23	kN
CBR Value @ 5.0mm Penetration	: 1.2	%
Top Half Moisture Content	: 53	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.14	kN
CBR Value @ 2.5mm Penetration	: 1.1	%
Load on Plunger @ 5.0mm Penetration	: 0.19	kN
CBR Value @ 5.0mm Penetration	: 1.0	%
Bottom Half Moisture Content	: 54	%

MEAN C.B.R VALUE: 1.3 %



REMARKS:

Remaining sample will be retained for a minimum of 14 days from date of report.

Checked and verified by:
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General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.: MH17-2992-2703-11

CLIENT: Beach Ground Engineering Ltd

SAMPLE No.: 4071/4

ADDRESS: Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath

CLIENT REF: -

SITE: Pump Lane, Hayes

DATE SAMPLED: 27.03.2017

SUPPLIER: Site Won Material

SAMPLED BY: D.Wilkins

MATERIAL: Black Silty Clay

DATE RECEIVED: 27.03.2017

ADDITIONS: 1.5% Lime

DATE TESTED: 11-13.04.2017

LOCATION: Stockpile

TESTED BY: S.Messer

PREPARATION METHOD: 2.5kg Rammer

CERTIFICATE OF SAMPLING: Yes

VARIATIONS FROM STD: None

CURING / SOAKING PERIOD: 3 Day Air Cured

TYPE OF SAMPLE: Disturbed

RESULTS:

Recompacted Bulk Density : 1.579 Mg/m³
Moisture Content : 53 %
Dry Density : 1.030 Mg/m³

Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration : 0.18 kN

CBR Value @ 2.5mm Penetration : 1.3 %

Load on Plunger @ 5.0mm Penetration : 0.32 kN

CBR Value @ 5.0mm Penetration : 1.6 %

Top Half Moisture Content : 53 %

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration : 0.16 kN

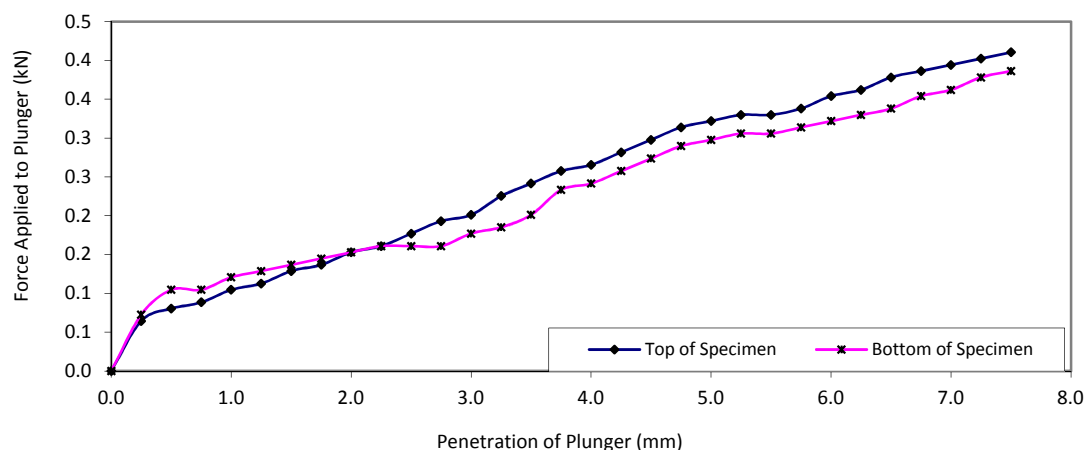
CBR Value @ 2.5mm Penetration : 1.2 %

Load on Plunger @ 5.0mm Penetration : 0.30 kN

CBR Value @ 5.0mm Penetration : 1.5 %

Bottom Half Moisture Content : 54 %

MEAN C.B.R VALUE: 1.6 %



REMARKS:

Remaining sample will be retained for a minimum of 14 days from date of report.

Checked and verified by:

Jon Champion

General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-12	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4072/3	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	1% Lime + 2% GGBS
DATE TESTED:	11-13.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	3 Day Air Cured	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.563	Mg/m ³
Moisture Content :	53	%
Dry Density :	1.020	Mg/m ³

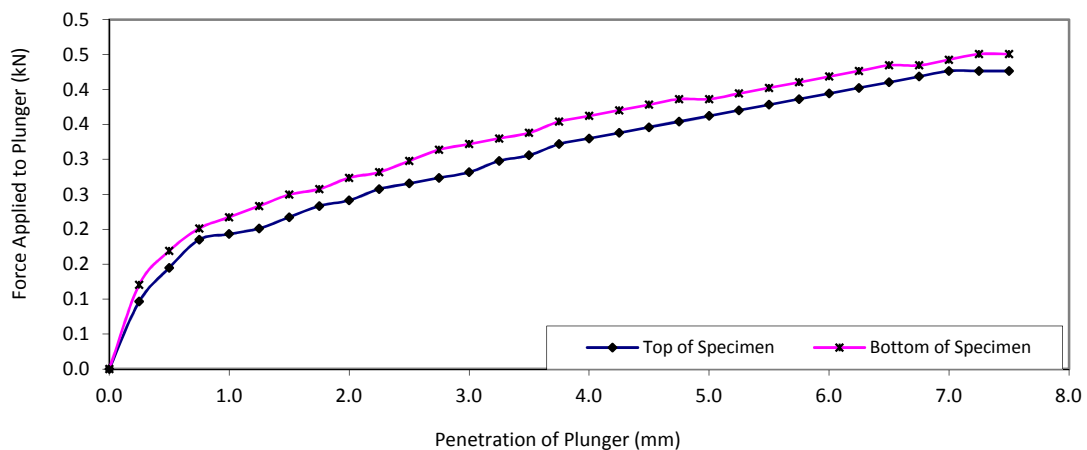
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.27	kN
CBR Value @ 2.5mm Penetration	: 2.0	%
Load on Plunger @ 5.0mm Penetration	: 0.36	kN
CBR Value @ 5.0mm Penetration	: 1.8	%
Top Half Moisture Content	: 53	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.30	kN
CBR Value @ 2.5mm Penetration	: 2.2	%
Load on Plunger @ 5.0mm Penetration	: 0.39	kN
CBR Value @ 5.0mm Penetration	: 1.9	%
Bottom Half Moisture Content	: 54	%

MEAN C.B.R VALUE: 2.1 %



REMARKS:

Remaining sample will be retained for a minimum of 14 days from date of report.

Checked and verified by:
Jon Champion
General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-13	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4073/3	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	1.5% Lime + 3% GGBS
DATE TESTED:	11-13.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	3 Day Air Cured	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.543	Mg/m ³
Moisture Content :	53	%
Dry Density :	1.007	Mg/m ³

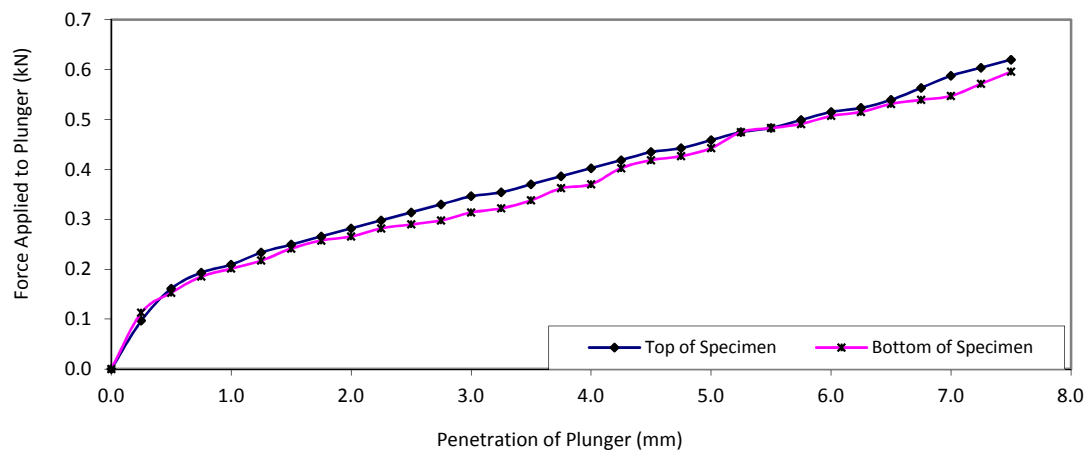
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.31	kN
CBR Value @ 2.5mm Penetration	: 2.4	%
Load on Plunger @ 5.0mm Penetration	: 0.46	kN
CBR Value @ 5.0mm Penetration	: 2.3	%
Top Half Moisture Content	: 53	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.29	kN
CBR Value @ 2.5mm Penetration	: 2.2	%
Load on Plunger @ 5.0mm Penetration	: 0.44	kN
CBR Value @ 5.0mm Penetration	: 2.2	%
Bottom Half Moisture Content	: 54	%

MEAN C.B.R VALUE: 2.3 %



REMARKS:

Remaining sample will be retained for a minimum of 14 days from date of report.

Checked and verified by:
Jon Champion
General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-18	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4073/4	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	1.5% Lime & 3% GGBS
DATE TESTED:	11-18.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	7 Day	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.548	Mg/m ³
Moisture Content :	58	%
Dry Density :	0.981	Mg/m ³

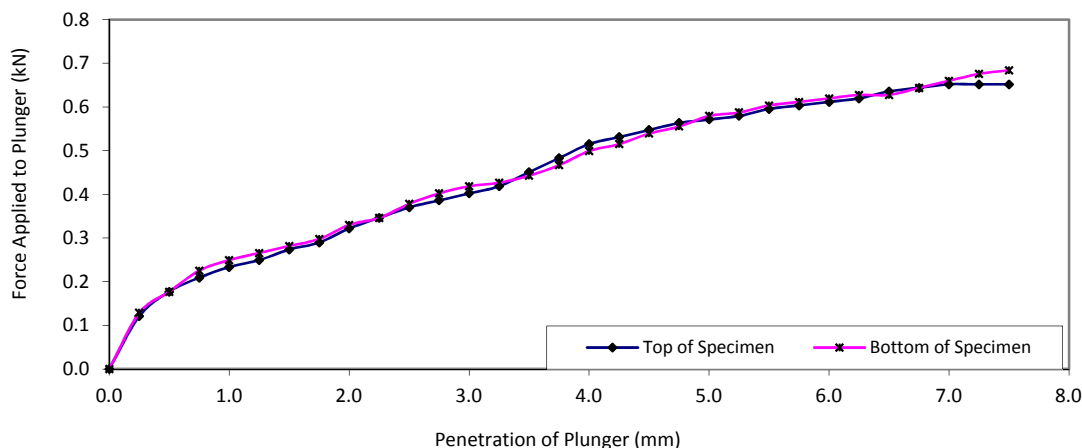
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.37	kN
CBR Value @ 2.5mm Penetration	: 2.8	%
Load on Plunger @ 5.0mm Penetration	: 0.57	kN
CBR Value @ 5.0mm Penetration	: 2.9	%
Top Half Moisture Content	: 58	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.38	kN
CBR Value @ 2.5mm Penetration	: 2.9	%
Load on Plunger @ 5.0mm Penetration	: 0.58	kN
CBR Value @ 5.0mm Penetration	: 2.9	%
Bottom Half Moisture Content	: 58	%

MEAN C.B.R VALUE: 2.9 %



REMARKS: Shear Vane - 76 KpA

Remaining sample will be retained for a minimum of 14 days from date of report.

Checked and verified by:

Jon Champion

General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-17	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4072/4	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	1% Lime & 2% GGBS
DATE TESTED:	11-18.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	7 Day	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.559	Mg/m ³
Moisture Content :	59	%
Dry Density :	0.978	Mg/m ³

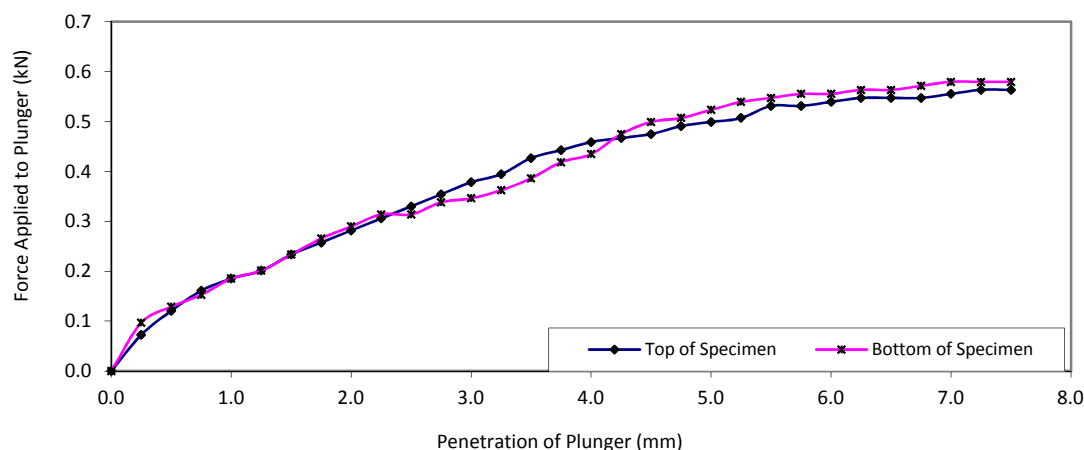
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.33	kN
CBR Value @ 2.5mm Penetration	: 2.5	%
Load on Plunger @ 5.0mm Penetration	: 0.50	kN
CBR Value @ 5.0mm Penetration	: 2.5	%
Top Half Moisture Content	: 59	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.31	kN
CBR Value @ 2.5mm Penetration	: 2.4	%
Load on Plunger @ 5.0mm Penetration	: 0.52	kN
CBR Value @ 5.0mm Penetration	: 2.6	%
Bottom Half Moisture Content	: 59	%

MEAN C.B.R VALUE: 2.6 %



REMARKS: Shear Vane - 44 KpA

Remaining sample will be retained for a minimum of 14 days from date of report.

Checked and verified by:

Jon Champion

General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-16	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4071/4	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	1.5% Lime
DATE TESTED:	11-18.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	7 Day	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.568	Mg/m ³
Moisture Content :	59	%
Dry Density :	0.986	Mg/m ³

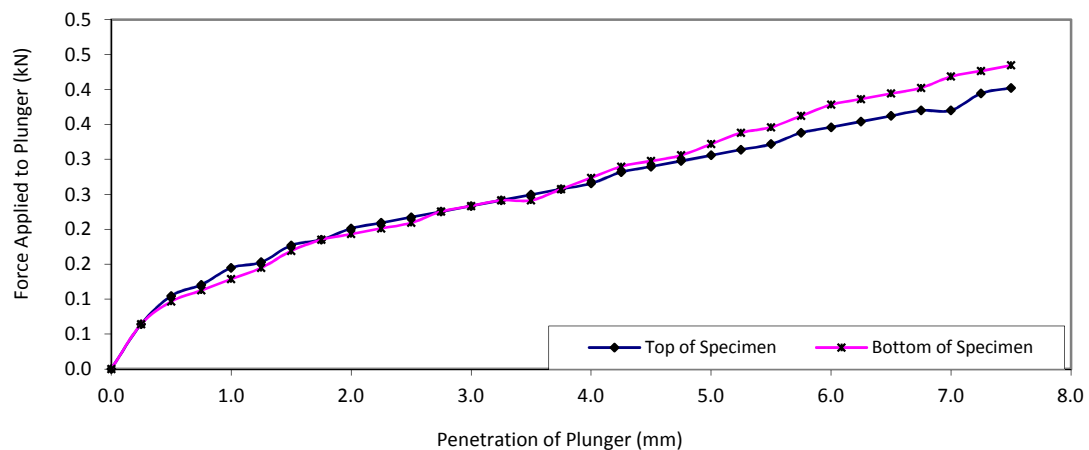
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.22	kN
CBR Value @ 2.5mm Penetration	: 1.6	%
Load on Plunger @ 5.0mm Penetration	: 0.31	kN
CBR Value @ 5.0mm Penetration	: 1.5	%
Top Half Moisture Content	: 59	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.21	kN
CBR Value @ 2.5mm Penetration	: 1.6	%
Load on Plunger @ 5.0mm Penetration	: 0.32	kN
CBR Value @ 5.0mm Penetration	: 1.6	%
Bottom Half Moisture Content	: 59	%

MEAN C.B.R VALUE: 1.6 %



REMARKS: Shear Vane - 42 KpA

Remaining sample will be retained for a minimum of 14 days from date of report.

Checked and verified by:

Jon Champion

General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-15	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4070/5	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	At Natural
DATE TESTED:	11-18.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	7 Day	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.568	Mg/m ³
Moisture Content :	61	%
Dry Density :	0.974	Mg/m ³

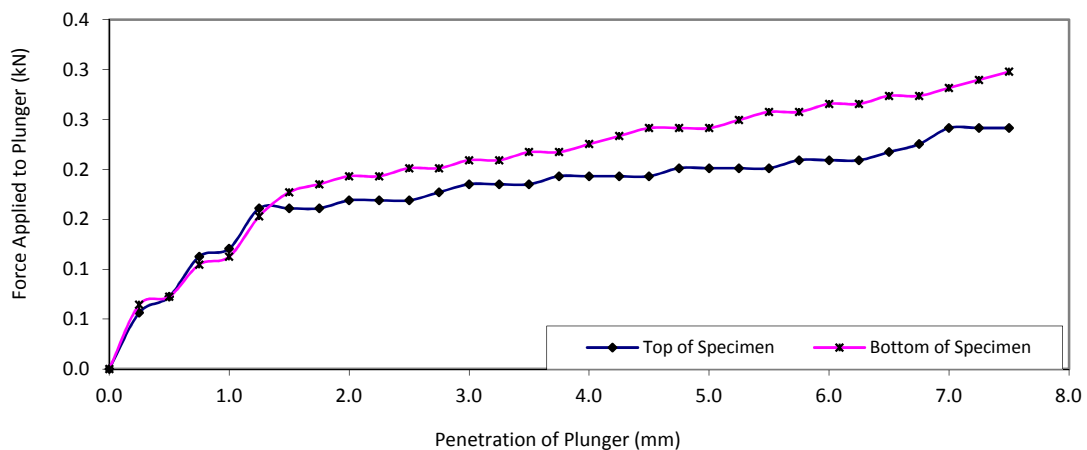
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.17	kN
CBR Value @ 2.5mm Penetration	: 1.3	%
Load on Plunger @ 5.0mm Penetration	: 0.20	kN
CBR Value @ 5.0mm Penetration	: 1.0	%
Top Half Moisture Content	: 61	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.20	kN
CBR Value @ 2.5mm Penetration	: 1.5	%
Load on Plunger @ 5.0mm Penetration	: 0.24	kN
CBR Value @ 5.0mm Penetration	: 1.2	%
Bottom Half Moisture Content	: 61	%

MEAN C.B.R VALUE: 1.4 %



REMARKS:

Remaining sample will be retained for a minimum of 14 days from date of report.

Approved Signatory
19-Apr-17

Checked and verified by:
Jon Champion
General Manager



M & H Testing Limited

"Adding Quality To Construction"

Southfield, Barnfield Road, Charing Heath, Ashford, Kent, TN27 0BP
Telephone: 01233 714051 Fax: 0700 601 9306
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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-14	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4069/5	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	Brown Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	At Natural
DATE TESTED:	11-18.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	7 Day	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.895	Mg/m ³
Moisture Content :	29	%
Dry Density :	1.470	Mg/m ³

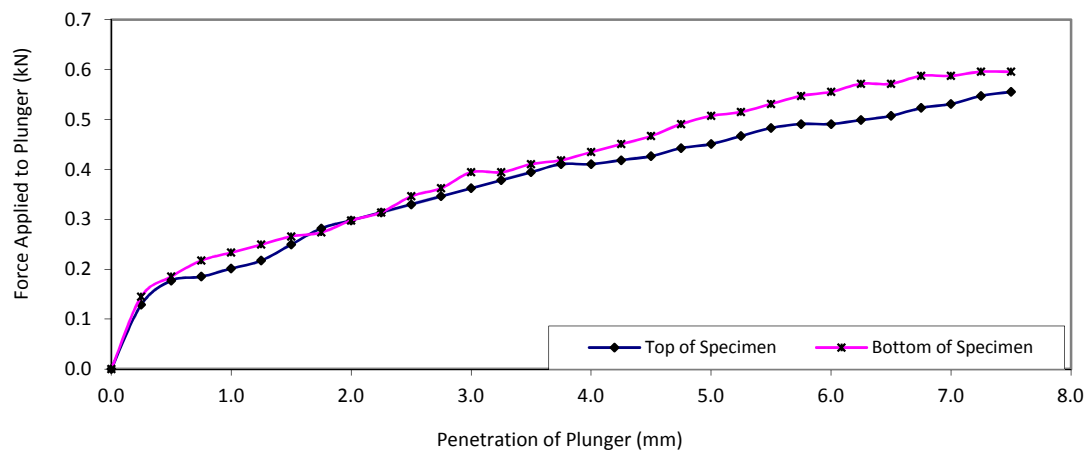
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.33	kN
CBR Value @ 2.5mm Penetration	: 2.5	%
Load on Plunger @ 5.0mm Penetration	: 0.45	kN
CBR Value @ 5.0mm Penetration	: 2.3	%
Top Half Moisture Content	: 29	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 0.35	kN
CBR Value @ 2.5mm Penetration	: 2.6	%
Load on Plunger @ 5.0mm Penetration	: 0.51	kN
CBR Value @ 5.0mm Penetration	: 2.5	%
Bottom Half Moisture Content	: 29	%

MEAN C.B.R VALUE: 2.6 %



REMARKS:

Remaining sample will be retained for a minimum of 14 days from date of report.

Approved Signatory

19-Apr-17

Checked and verified by:

Jon Champion

General Manager



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TEST REPORT: DETERMINATION OF THE CALIFORNIA BEARING RATIO (C.B.R.)

BS 1377 Part 4 : 1990 : clause 7

REPORT No.:	MH17-2992-2703-19	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	-	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	Site Won Material
SAMPLED BY:	D.Wilkins	MATERIAL:	60% Black Silty Clay + 40% Brown Silty Clay
DATE RECEIVED:	27.03.2017	ADDITIONS:	3% Lime & 5% GGBS
DATE TESTED:	24.04.2017	LOCATION:	Stockpile
TESTED BY:	S.Messer	PREPARATION METHOD:	2.5kg Rammer
CERTIFICATE OF SAMPLING:	Yes	VARIATIONS FROM STD:	None
CURING / SOAKING PERIOD:	3 Day	TYPE OF SAMPLE:	Disturbed

RESULTS:

Recompacted Bulk Density :	1.697	Mg/m ³
Moisture Content :	44	%
Dry Density :	1.180	Mg/m ³

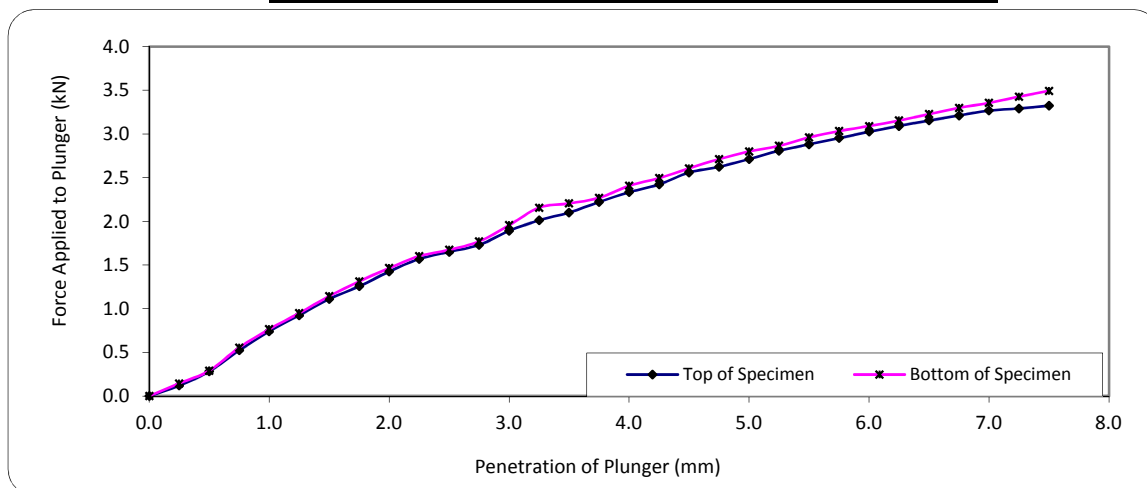
Top Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 1.65	kN
CBR Value @ 2.5mm Penetration	: 12	%
Load on Plunger @ 5.0mm Penetration	: 2.71	kN
CBR Value @ 5.0mm Penetration	: 14	%
Top Half Moisture Content	: 44	%

Bottom Half of CBR Test

Load on Plunger @ 2.5mm Penetration	: 1.67	kN
CBR Value @ 2.5mm Penetration	: 13	%
Load on Plunger @ 5.0mm Penetration	: 2.80	kN
CBR Value @ 5.0mm Penetration	: 14	%
Bottom Half Moisture Content	: 44	%

MEAN C.B.R VALUE: 14 %



REMARKS: Shear Vane - 76 KpA

Remaining sample will be retained for a minimum of 14 days from date of report.



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REPORT No.:	MH17-2992-2703-21	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4070	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	In Situ
SAMPLED BY:	D.Wilkins	MATERIAL:	Black Silty Clay
DATE RECEIVED:	27.03.2017	LOCATION:	Trial Pits
DATE TESTED:	18.04.2017	ACCEPT STD.:	Contract Specification
TESTED BY:	QTSE		

REPORT: DETERMINATION OF TRL 447, Tests 1, 2 & 4

pH	pH Units	7.2
Organic Matter	%	8.5
W/S Sulphur (as S)	%	0.123
Water Soluble Sulphate as SO ₄ (2:1)	g/l	1.840
Acid Soluble Sulphur (as S)	%	0.140
Acid Soluble Sulphate (as SO ₄)	%	0.430
Total Sulphur (as S)	%	0.510
Total Potential Sulphate (as SO ₄)	%	1.540
Oxidisable Sulphide (as SO ₄)	%	1.110

REMARKS:

Checked and verified by:
Jon Champion
General Manager



M & H Testing Limited

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REPORT No.:	MH17-2992-2703-20	CLIENT:	Beach Ground Engineering Ltd
SAMPLE No.:	4069	ADDRESS:	Unit 3 Heasewood Farm, Isaacs Lane, Haywards Heath
CLIENT REF:	-	SITE:	Pump Lane, Hayes
DATE SAMPLED:	27.03.2017	SUPPLIER:	In Situ
SAMPLED BY:	D.Wilkins	MATERIAL:	Brown Silty Clay
DATE RECEIVED:	27.03.2017	LOCATION:	Trial Pits
DATE TESTED:	18.04.2017	ACCEPT STD.:	Contract Specification
TESTED BY:	QTSE		

REPORT: DETERMINATION OF TRL 447, Tests 1, 2 & 4

pH	pH Units	7.4
Organic Matter	%	1.3
W/S Sulphur (as S)	%	0.008
Water Soluble Sulphate as SO ₄ (2:1)	g/l	0.120
Acid Soluble Sulphur (as S)	%	0.020
Acid Soluble Sulphate (as SO ₄)	%	0.060
Total Sulphur (as S)	%	0.020
Total Potential Sulphate (as SO ₄)	%	0.070
Oxidisable Sulphide (as SO ₄)	%	<0.01

REMARKS:

Checked and verified by:

Jon Champion

General Manager

APPENDIX D

Chemical Test Results

**Amir Abbasi**

Card Geotechnics Ltd
4 Godalming Business Centre
Woolsack Way
Godalming
Surrey
GU7 1XW

t: 01483 310600
f: 01483 527285
e: AmirA@cgl-uk.com

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 : 17-44697

Project / Site name:	Southall	Samples received on:	28/03/2017
Your job number:	CGN-3732D	Samples instructed on:	31/03/2017
Your order number:		Analysis completed by:	13/04/2017
Report Issue Number:	1	Report issued on:	13/04/2017
Samples Analysed:	8 leachate samples - 53 soil samples		

Signed: 

Emma Winter
Assistant 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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728975	728976	728977	728978	728979
Sample Reference				TP1C	TP2C	TP3C	TP4C	TP5C
Sample Number				ES1/D1	ES1/D1	ES1/D1	ES1/D1/B1	ES1/D1/B1
Depth (m)				0.50	0.40	0.40	0.40	0.30
Date Sampled				23/03/2017	23/03/2017	23/03/2017	23/03/2017	23/03/2017
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	-	-	-	30	< 0.1
Moisture Content	%	N/A	NONE	-	-	-	22	18
Total mass of sample received	kg	0.001	NONE	-	-	-	0.56	0.50

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	7.3
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	2
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	1200
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	-	0.086	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	0.13	-
Total Sulphur	%	0.005	MCERTS	-	-	-	0.049	-
Organic Matter	%	0.1	MCERTS	-	-	-	-	5.6

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	1.5
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	0.24
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	3.4
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	3.2
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	2.0
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	2.0
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	2.5
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	1.6
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	2.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	1.5
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	0.46
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	1.5
Coronene	mg/kg	0.05	NONE	-	-	-	-	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	-	-	-	-	22
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	-	-	-	6.1
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	31
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	350
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	-	1.6
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	2.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	0.5
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	-	-	-	< 1.2
Chromium (III)	mg/kg	1	NONE	-	-	-	-	30
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	190
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	930
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	6.0
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	26
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	57
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	290



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728975	728976	728977	728978	728979
Sample Reference				TP1C	TP2C	TP3C	TP4C	TP5C
Sample Number				ES1/D1	ES1/D1	ES1/D1	ES1/D1/B1	ES1/D1/B1
Depth (m)				0.50	0.40	0.40	0.40	0.30
Date Sampled				23/03/2017	23/03/2017	23/03/2017	23/03/2017	23/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728975	728976	728977	728978	728979
Sample Reference				TP1C	TP2C	TP3C	TP4C	TP5C
Sample Number				ES1/D1	ES1/D1	ES1/D1	ES1/D1/B1	ES1/D1/B1
Depth (m)				0.50	0.40	0.40	0.40	0.30
Date Sampled				23/03/2017	23/03/2017	23/03/2017	23/03/2017	23/03/2017
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
Toluene	ug/kg	1	MCERTS	-	-	-	-	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	-	-	-	-	< 1.0
p & m-xylene	ug/kg	1	MCERTS	-	-	-	-	< 1.0
o-xylene	ug/kg	1	MCERTS	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-	-	-	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
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	0.1	MCERTS	-	-	-	-	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
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	-	-	-	-	14
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	41
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	55

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728980	728981	728982	728983	728984
Sample Reference				TP7C	TP8C	TP9C	TP11C	TP12C
Sample Number				ES1/D1	ES1/D1/B1	ES1/D1/B1	ES1/D1/B1	ES1/D1/B1
Depth (m)				0.20	0.30	0.30	0.20	0.20
Date Sampled				23/03/2017	23/03/2017	23/03/2017	23/03/2017	23/03/2017
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	-	-
Moisture Content	%	N/A	NONE	-	-	15	-	-
Total mass of sample received	kg	0.001	NONE	-	-	0.54	-	-

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	7.3	-	-
Total Cyanide	mg/kg	1	MCERTS	-	-	< 1	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	520	-	-
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	-	-
Total Sulphur	%	0.005	MCERTS	-	-	-	-	-
Organic Matter	%	0.1	MCERTS	-	-	3.6	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	< 1.0	-	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	0.71	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	0.16	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	1.7	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	1.5	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	0.91	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	0.81	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	1.0	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	0.51	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	1.0	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	0.58	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	0.16	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.62	-	-
Coronene	mg/kg	0.05	NONE	-	-	< 0.05	-	-

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	-	-	9.7	-	-
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	-	1.5	-	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	13	-	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	120	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	0.75	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	1.6	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	-	< 1.2	-	-
Chromium (III)	mg/kg	1	NONE	-	-	22	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	23	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	55	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	120	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	0.9	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	20	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	< 1.0	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	39	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	140	-	-



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728980	728981	728982	728983	728984
Sample Reference				TP7C	TP8C	TP9C	TP11C	TP12C
Sample Number				ES1/D1	ES1/D1/B1	ES1/D1/B1	ES1/D1/B1	ES1/D1/B1
Depth (m)				0.20	0.30	0.30	0.20	0.20
Date Sampled				23/03/2017	23/03/2017	23/03/2017	23/03/2017	23/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728980	728981	728982	728983	728984
Sample Reference				TP7C	TP8C	TP9C	TP11C	TP12C
Sample Number				ES1/D1	ES1/D1/B1	ES1/D1/B1	ES1/D1/B1	ES1/D1/B1
Depth (m)				0.20	0.30	0.30	0.20	0.20
Date Sampled				23/03/2017	23/03/2017	23/03/2017	23/03/2017	23/03/2017
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	-	-
Toluene	ug/kg	1	MCERTS	-	-	< 1.0	-	-
Ethylbenzene	ug/kg	1	MCERTS	-	-	< 1.0	-	-
p & m-xylene	ug/kg	1	MCERTS	-	-	< 1.0	-	-
o-xylene	ug/kg	1	MCERTS	-	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-	< 1.0	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
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	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
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	-	-	23	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	29	-	-

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728985	728986	728987	728988	728989
Sample Reference				TP13C	TP14C	TP15C	TP16C	TP16C
Sample Number				ES1/D1/B1	ES1/D1	ES1/D1	ES1/D1	ES2/D2
Depth (m)				0.30	0.30	0.60	0.50	1.50
Date Sampled				24/03/2017	24/03/2017	24/03/2017	24/03/2017	24/03/2017
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	27	-	< 0.1	-	< 0.1
Moisture Content	%	N/A	NONE	20	-	9.6	-	17
Total mass of sample received	kg	0.001	NONE	1.4	-	0.58	-	1.5

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	7.6	-	10.2
Total Cyanide	mg/kg	1	MCERTS	-	-	< 1	-	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	500	-	2600
Total Sulphate as SO ₄	%	0.005	MCERTS	0.206	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.29	-	-	-	-
Total Sulphur	%	0.005	MCERTS	0.360	-	-	-	-
Organic Matter	%	0.1	MCERTS	-	-	2.6	-	1.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	< 0.10
Fluorene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	-	-	0.54	-	0.63
Anthracene	mg/kg	0.1	MCERTS	-	-	0.17	-	0.26
Fluoranthene	mg/kg	0.1	MCERTS	-	-	1.2	-	2.2
Pyrene	mg/kg	0.1	MCERTS	-	-	1.2	-	1.9
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	0.62	-	1.2
Chrysene	mg/kg	0.05	MCERTS	-	-	0.53	-	0.95
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	0.82	-	1.3
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	0.44	-	0.74
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	0.77	-	1.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	0.53	-	0.78
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	0.22
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.52	-	0.72
Coronene	mg/kg	0.05	NONE	-	-	< 0.05	-	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	-	-	7.3	-	12
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	16	-	14
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	81	-	90
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	0.69	-	0.92
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	0.2	-	2.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	< 0.2	-	0.3
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	-	< 1.2	-	< 1.2
Chromium (III)	mg/kg	1	NONE	-	-	26	-	30
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	26	-	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	28	-	39
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	43	-	59
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	20	-	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	45	-	47
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	83	-	99



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728985	728986	728987	728988	728989
Sample Reference				TP13C	TP14C	TP15C	TP16C	TP16C
Sample Number				ES1/D1/B1	ES1/D1	ES1/D1	ES1/D1	ES2/D2
Depth (m)				0.30	0.30	0.60	0.50	1.50
Date Sampled				24/03/2017	24/03/2017	24/03/2017	24/03/2017	24/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728985	728986	728987	728988	728989
Sample Reference				TP13C	TP14C	TP15C	TP16C	TP16C
Sample Number				ES1/D1/B1	ES1/D1	ES1/D1	ES1/D1	ES2/D2
Depth (m)				0.30	0.30	0.60	0.50	1.50
Date Sampled				24/03/2017	24/03/2017	24/03/2017	24/03/2017	24/03/2017
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
Toluene	ug/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
p & m-xylene	ug/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
o-xylene	ug/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	6.4
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	< 8.0	-	18
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	< 10	-	33
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	< 10	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	45	-	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	51	-	14

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728990	728991	728992	728993	728994
Sample Reference				TP17C	TP17C	TP19C	TP20C	TP22C
Sample Number				ES1/D1	ES2/D2	ES/D1/B1	ES1/D1/B1	ES1/D1/B1
Depth (m)				0.50	1.50	0.40	0.40	0.40
Date Sampled				24/03/2017	24/03/2017	24/03/2017	24/03/2017	24/03/2017
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
Moisture Content	%	N/A	NONE	12	-	-	22	19
Total mass of sample received	kg	0.001	NONE	1.9	-	-	1.4	1.5

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.9	-	-	7.6	8.0
Total Cyanide	mg/kg	1	MCERTS	< 1	-	-	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	770	-	-	1000	1200
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	-	-	0.118
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	-	0.18
Total Sulphur	%	0.005	MCERTS	-	-	-	-	0.063
Organic Matter	%	0.1	MCERTS	4.6	-	-	7.3	3.2

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	0.50	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	0.43	-	-	0.48	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	0.52	-	-	0.45	< 0.10
Fluorene	mg/kg	0.1	MCERTS	0.61	-	-	0.60	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	6.9	-	-	6.5	0.35
Anthracene	mg/kg	0.1	MCERTS	1.5	-	-	1.4	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	16	-	-	11	0.97
Pyrene	mg/kg	0.1	MCERTS	14	-	-	8.6	0.79
Benzo(a)anthracene	mg/kg	0.1	MCERTS	8.2	-	-	4.7	0.45
Chrysene	mg/kg	0.05	MCERTS	5.7	-	-	4.5	0.47
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	7.6	-	-	4.8	0.62
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	5.1	-	-	3.5	0.42
Benzo(a)pyrene	mg/kg	0.1	MCERTS	7.9	-	-	4.6	0.48
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	4.5	-	-	2.5	0.39
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	1.1	-	-	0.69	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	4.4	-	-	2.8	0.42
Coronene	mg/kg	0.05	NONE	1.5	-	-	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	85	-	-	57	5.4
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.7	-	-	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	-	-	26	6.2
Barium (aqua regia extractable)	mg/kg	1	MCERTS	270	-	-	160	120
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.96	-	-	1.2	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	2.6	-	-	4.7	6.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.5	-	-	2.0	2.6
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	-	-	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	37	-	-	40	45
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	-	-	40	45
Copper (aqua regia extractable)	mg/kg	1	MCERTS	140	-	-	90	53
Lead (aqua regia extractable)	mg/kg	1	MCERTS	210	-	-	510	66
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	-	3.4	0.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	-	-	28	26
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	40	-	-	60	66
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	300	-	-	260	120



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728990	728991	728992	728993	728994
Sample Reference				TP17C	TP17C	TP19C	TP20C	TP22C
Sample Number				ES1/D1	ES2/D2	ES/D1/B1	ES1/D1/B1	ES1/D1/B1
Depth (m)				0.50	1.50	0.40	0.40	0.40
Date Sampled				24/03/2017	24/03/2017	24/03/2017	24/03/2017	24/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728990	728991	728992	728993	728994
Sample Reference				TP17C	TP17C	TP19C	TP20C	TP22C
Sample Number				ES1/D1	ES2/D2	ES/D1/B1	ES1/D1/B1	ES1/D1/B1
Depth (m)				0.50	1.50	0.40	0.40	0.40
Date Sampled				24/03/2017	24/03/2017	24/03/2017	24/03/2017	24/03/2017
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
Toluene	ug/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	3.8	-	-	3.1	3.1
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	48	-	-	42	35
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	59	-	-	51	44
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	6.2	-	-	5.8	2.6
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	62	-	-	41	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	160	-	-	89	22
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	220	-	-	140	34

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728995	728996	728997	728998	728999
Sample Reference				TP23C	TP23C	TP25C	TP26C	TP27C
Sample Number				ES1/D1	ES2/D2	ES1/D1	ES1/D1	ES1/D1/B1
Depth (m)				0.20	0.80	1.00	2.50	2.50
Date Sampled				24/03/2017	24/03/2017	27/03/2017	27/03/2017	27/03/2017
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	26	27	18	30	31
Total mass of sample received	kg	0.001	NONE	1.2	1.5	1.8	1.8	1.2

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile- Loose fibres	-	Chrysotile- Loose fibres	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Detected	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.8	9.4	7.0	7.9	7.8
Total Cyanide	mg/kg	1	MCERTS	76	< 1	3	< 1	70
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1800	1200	7900	1700	2900
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	-	0.171	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	0.45	-
Total Sulphur	%	0.005	MCERTS	-	-	-	0.351	-
Organic Matter	%	0.1	MCERTS	6.8	2.7	4.6	6.3	11

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	2.2	< 0.05	0.46	3.3	0.96
Acenaphthylene	mg/kg	0.1	MCERTS	3.5	0.42	0.55	3.6	1.7
Acenaphthene	mg/kg	0.1	MCERTS	2.0	0.26	0.33	3.1	1.9
Fluorene	mg/kg	0.1	MCERTS	1.9	0.52	0.37	3.6	2.7
Phenanthrene	mg/kg	0.1	MCERTS	20	4.0	3.4	22	22
Anthracene	mg/kg	0.1	MCERTS	4.8	1.1	1.2	7.1	5.6
Fluoranthene	mg/kg	0.1	MCERTS	41	5.6	6.7	30	51
Pyrene	mg/kg	0.1	MCERTS	38	4.5	5.7	26	44
Benzo(a)anthracene	mg/kg	0.1	MCERTS	22	2.9	3.7	17	23
Chrysene	mg/kg	0.05	MCERTS	20	2.5	3.3	13	22
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	26	2.6	4.4	18	32
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	15	1.5	3.4	9.7	13
Benzo(a)pyrene	mg/kg	0.1	MCERTS	26	2.6	4.2	16	25
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	16	1.3	3.6	11	17
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	4.1	0.38	0.86	3.0	4.1
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	16	1.2	4.3	12	20
Coronene	mg/kg	0.05	NONE	4.8	< 0.05	1.5	4.3	6.1

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	260	31	48	200	290
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	14	< 1.0	4.4	12	14
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	57	23	22	48	59
Barium (aqua regia extractable)	mg/kg	1	MCERTS	670	140	250	430	370
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.8	1.2	1.2	1.7	2.3
Boron (water soluble)	mg/kg	0.2	MCERTS	5.3	3.1	3.7	11	8.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	94	< 0.2	9.5	53	33
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	490	41	100	170	280
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	490	41	100	170	280
Copper (aqua regia extractable)	mg/kg	1	MCERTS	1500	47	220	690	720
Lead (aqua regia extractable)	mg/kg	1	MCERTS	600	140	360	570	890
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	3.9	2.1	2.0	4.1	1.0
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	170	25	54	110	110
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	66	60	59	65	72
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	1500	93	610	800	1700



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728995	728996	728997	728998	728999
Sample Reference				TP23C	TP23C	TP25C	TP26C	TP27C
Sample Number				ES1/D1	ES2/D2	ES1/D1	ES1/D1	ES1/D1/B1
Depth (m)				0.20	0.80	1.00	2.50	2.50
Date Sampled				24/03/2017	24/03/2017	27/03/2017	27/03/2017	27/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				728995	728996	728997	728998	728999
Sample Reference				TP23C	TP23C	TP25C	TP26C	TP27C
Sample Number				ES1/D1	ES2/D2	ES1/D1	ES1/D1	ES1/D1/B1
Depth (m)				0.20	0.80	1.00	2.50	2.50
Date Sampled				24/03/2017	24/03/2017	27/03/2017	27/03/2017	27/03/2017
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	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	3.8	6.2	7.9
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	21	7.5	20	53	340
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	140	17	100	200	1500
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	930	13	690	980	6600
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	1100	38	820	1200	8500
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	1.3	9.9	3.2
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	25	< 2.0	12	88	150
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	210	19	75	500	1500
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	560	34	470	1500	4900
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	790	53	560	2000	6500

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729000	729001	729002	729003	729004
Sample Reference				TP28C	TP29C	TP30C	TP31C	TP32C
Sample Number				ES1/D1	ES1/D1	ES1/D1	ES1/D1	ES1/D1
Depth (m)				1.80	1.30	0.50	0.40	0.50
Date Sampled				27/03/2017	27/03/2017	27/03/2017	27/03/2017	27/03/2017
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	82	-	-
Moisture Content	%	N/A	NONE	27	25	4.6	-	-
Total mass of sample received	kg	0.001	NONE	1.1	0.53	1.4	-	-

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	2.7	-	-	-
Total Cyanide	mg/kg	1	MCERTS	7	10000	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	2300	100000	-	-	-
Total Sulphate as SO ₄	%	0.005	MCERTS	-	10.0	0.030	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	2.6	0.042	-	-
Total Sulphur	%	0.005	MCERTS	-	7.45	0.023	-	-
Organic Matter	%	0.1	MCERTS	5.9	7.0	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	2.9	-	-	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.82	6.8	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	0.77	2.1	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	1.6	0.40	-	-	-
Fluorene	mg/kg	0.1	MCERTS	1.6	0.69	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	11	6.0	-	-	-
Anthracene	mg/kg	0.1	MCERTS	3.5	1.7	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	23	14	-	-	-
Pyrene	mg/kg	0.1	MCERTS	19	13	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	12	9.5	-	-	-
Chrysene	mg/kg	0.05	MCERTS	10	9.8	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	13	13	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	8.4	8.3	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	11	9.2	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	6.2	8.1	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	1.7	1.8	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	6.8	6.8	-	-	-
Coronene	mg/kg	0.05	NONE	1.8	2.0	-	-	-

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	130	110	-	-	-
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	10	1.5	-	-	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	67	42	-	-	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	420	46	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	4.3	0.33	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	6.7	5.3	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	24	1.2	-	-	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	-	-	-
Chromium (III)	mg/kg	1	NONE	130	40	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	130	40	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	710	460	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	800	290	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.7	< 0.3	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	94	9.1	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	86	47	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	1700	340	-	-	-



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729000	729001	729002	729003	729004
Sample Reference				TP28C	TP29C	TP30C	TP31C	TP32C
Sample Number				ES1/D1	ES1/D1	ES1/D1	ES1/D1	ES1/D1
Depth (m)				1.80	1.30	0.50	0.40	0.50
Date Sampled				27/03/2017	27/03/2017	27/03/2017	27/03/2017	27/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729000	729001	729002	729003	729004
Sample Reference				TP28C	TP29C	TP30C	TP31C	TP32C
Sample Number				ES1/D1	ES1/D1	ES1/D1	ES1/D1	ES1/D1
Depth (m)				1.80	1.30	0.50	0.40	0.50
Date Sampled				27/03/2017	27/03/2017	27/03/2017	27/03/2017	27/03/2017
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	-	-	-
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	6.8	4.7	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	74	23	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	410	71	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	1800	410	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	2300	510	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	11	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	62	33	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	670	120	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	2100	470	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	2900	630	-	-	-

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729005	729006	729389	729390	729391
Sample Reference				TP33C	C1	TP1C	TP3C	TP3C
Sample Number				ES/D1	ES1/D1	B1	B1	B2
Depth (m)				0.30	None Supplied	1.00	1.00	1.70
Date Sampled				27/03/2017	24/03/2017	23/03/2017	23/03/2017	23/03/2017
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	38	26	59
Moisture Content	%	N/A	NONE	-	57	11	20	6.6
Total mass of sample received	kg	0.001	NONE	-	1.2	2.0	2.0	2.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile- Loose fibres	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	7.8	-	-	-
Total Cyanide	mg/kg	1	MCERTS	-	1	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	2000	-	-	-
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	0.043	0.038	0.034
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	0.049	0.053	0.060
Total Sulphur	%	0.005	MCERTS	-	-	0.025	0.019	0.016
Organic Matter	%	0.1	MCERTS	-	8.1	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	-	-	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	0.27	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	1.5	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	0.45	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	4.0	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	4.0	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	1.6	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	2.1	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	2.6	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	1.8	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	1.8	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	1.6	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	0.36	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	2.1	-	-	-
Coronene	mg/kg	0.05	NONE	-	< 0.05	-	-	-

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	-	24	-	-	-
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	2.1	-	-	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	13	-	-	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	190	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	0.88	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	3.9	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	1.6	-	-	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	1.7	-	-	-
Chromium (III)	mg/kg	1	NONE	-	43	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	45	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	110	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	190	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	27	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	-	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	54	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	360	-	-	-



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729005	729006	729389	729390	729391
Sample Reference				TP33C	C1	TP1C	TP3C	TP3C
Sample Number				ES/D1	ES1/D1	B1	B1	B2
Depth (m)				0.30	None Supplied	1.00	1.00	1.70
Date Sampled				27/03/2017	24/03/2017	23/03/2017	23/03/2017	23/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729005	729006	729389	729390	729391
Sample Reference				TP33C	C1	TP1C	TP3C	TP3C
Sample Number				ES/D1	ES1/D1	B1	B1	B2
Depth (m)				0.30	None Supplied	1.00	1.00	1.70
Date Sampled				27/03/2017	24/03/2017	23/03/2017	23/03/2017	23/03/2017
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	-	-	-
Toluene	ug/kg	1	MCERTS	-	< 1.0	-	-	-
Ethylbenzene	ug/kg	1	MCERTS	-	< 1.0	-	-	-
p & m-xylene	ug/kg	1	MCERTS	-	< 1.0	-	-	-
o-xylene	ug/kg	1	MCERTS	-	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	< 1.0	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	2.8	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	63	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	240	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	1000	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	1300	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	39	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	200	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	870	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	1100	-	-	-

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729392	729393	729394	729395	729396
Sample Reference				TP4C	TP5C	TP6C	TP8C	TP8C
Sample Number				B2	B2	B1	B2	B3
Depth (m)				2.00	0.50	0.50	0.45	0.80
Date Sampled				23/03/2017	23/03/2017	23/03/2017	23/03/2017	23/03/2017
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	45	23	49	42	50
Moisture Content	%	N/A	NONE	7.2	15	12	15	6.4
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	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	-
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	%	0.005	MCERTS	0.055	0.045	0.033	0.076	0.033
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.087	0.012	0.025	0.020	0.032
Total Sulphur	%	0.005	MCERTS	0.019	0.028	0.020	0.048	0.025
Organic Matter	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Coronene	mg/kg	0.05	NONE	-	-	-	-	-

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	-	-	-	-	-
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	-	-	-	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	-	-	-	-
Chromium (III)	mg/kg	1	NONE	-	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729392	729393	729394	729395	729396
Sample Reference				TP4C	TP5C	TP6C	TP8C	TP8C
Sample Number				B2	B2	B1	B2	B3
Depth (m)				2.00	0.50	0.50	0.45	0.80
Date Sampled				23/03/2017	23/03/2017	23/03/2017	23/03/2017	23/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729392	729393	729394	729395	729396
Sample Reference				TP4C	TP5C	TP6C	TP8C	TP8C
Sample Number				B2	B2	B1	B2	B3
Depth (m)				2.00	0.50	0.50	0.45	0.80
Date Sampled				23/03/2017	23/03/2017	23/03/2017	23/03/2017	23/03/2017
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	-	-	-	-	-
Toluene	ug/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	ug/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	ug/kg	1	MCERTS	-	-	-	-	-
o-xylene	ug/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729397	729398	729399	729400	729401
Sample Reference				TP11C	TP12C	TP12C	TP13C	TP17C
Sample Number				B3	B1	D3	B3	B1
Depth (m)				1.50	0.50	1.40	1.40	0.30
Date Sampled				23/03/2017	23/03/2017	23/03/2017	24/03/2017	24/03/2017
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	20	57	34	29	-
Moisture Content	%	N/A	NONE	19	5.2	18	9.0	-
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	-

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	-
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	%	0.005	MCERTS	0.131	0.012	0.114	0.035	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.52	0.020	0.46	0.037	-
Total Sulphur	%	0.005	MCERTS	0.369	0.029	0.707	0.014	-
Organic Matter	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Coronene	mg/kg	0.05	NONE	-	-	-	-	-

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	-	-	-	-	-
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	-	-	-	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	-	-	-	-
Chromium (III)	mg/kg	1	NONE	-	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729397	729398	729399	729400	729401
Sample Reference				TP11C	TP12C	TP12C	TP13C	TP17C
Sample Number				B3	B1	D3	B3	B1
Depth (m)				1.50	0.50	1.40	1.40	0.30
Date Sampled				23/03/2017	23/03/2017	23/03/2017	24/03/2017	24/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729397	729398	729399	729400	729401
Sample Reference				TP11C	TP12C	TP12C	TP13C	TP17C
Sample Number				B3	B1	D3	B3	B1
Depth (m)				1.50	0.50	1.40	1.40	0.30
Date Sampled				23/03/2017	23/03/2017	23/03/2017	24/03/2017	24/03/2017
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	-	-	-	-	-
Toluene	ug/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	ug/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	ug/kg	1	MCERTS	-	-	-	-	-
o-xylene	ug/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729402	729403	729404	729405	729408
Sample Reference				TP16C	TP20C	TP23C	TP24C	TP30C
Sample Number				B1	B2	B1	B1	B1
Depth (m)				1.50	1.40	0.40	1.00	1.00
Date Sampled				24/03/2017	24/03/2017	24/03/2017	24/03/2017	27/03/2017
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	37	36	26	28	70
Moisture Content	%	N/A	NONE	34	26	20	19	3.8
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	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	-
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	%	0.005	MCERTS	0.176	0.081	0.085	0.255	0.022
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.24	0.092	0.11	0.41	0.025
Total Sulphur	%	0.005	MCERTS	0.294	0.036	0.035	0.157	0.008
Organic Matter	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Coronene	mg/kg	0.05	NONE	-	-	-	-	-

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	-	-	-	-	-
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	-	-	-	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	-	-	-	-
Chromium (III)	mg/kg	1	NONE	-	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729402	729403	729404	729405	729408
Sample Reference				TP16C	TP20C	TP23C	TP24C	TP30C
Sample Number				B1	B2	B1	B1	B1
Depth (m)				1.50	1.40	0.40	1.00	1.00
Date Sampled				24/03/2017	24/03/2017	24/03/2017	24/03/2017	27/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729402	729403	729404	729405	729408
Sample Reference				TP16C	TP20C	TP23C	TP24C	TP30C
Sample Number				B1	B2	B1	B1	B1
Depth (m)				1.50	1.40	0.40	1.00	1.00
Date Sampled				24/03/2017	24/03/2017	24/03/2017	24/03/2017	27/03/2017
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	-	-	-	-	-
Toluene	ug/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	ug/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	ug/kg	1	MCERTS	-	-	-	-	-
o-xylene	ug/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729409	729410	729411	729412	
Sample Reference				TP32C	TP32C	TP21C	TP27	
Sample Number				B1	B2	B	B	
Depth (m)				1.00	2.00	0.70	0.50	
Date Sampled				27/03/2017	27/03/2017	24/03/2017	27/03/2017	
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	55	67	35	40	
Moisture Content	%	N/A	NONE	11	5.0	18	22	
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	
Total Sulphate as SO ₄	%	0.005	MCERTS	0.289	0.141	0.069	0.332	
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.89	0.51	0.085	0.75	
Total Sulphur	%	0.005	MCERTS	0.185	0.076	0.027	0.161	
Organic Matter	%	0.1	MCERTS	-	-	-	-	

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	
Coronene	mg/kg	0.05	NONE	-	-	-	-	

Total PAH

Total WAC-17 PAHs	mg/kg	1.6	NONE	-	-	-	-	
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	-	-	-	
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	-	
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	-	-	-	
Chromium (III)	mg/kg	1	NONE	-	-	-	-	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729409	729410	729411	729412	
Sample Reference				TP32C	TP32C	TP21C	TP27	
Sample Number				B1	B2	B	B	
Depth (m)				1.00	2.00	0.70	0.50	
Date Sampled				27/03/2017	27/03/2017	24/03/2017	27/03/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729409	729410	729411	729412	
Sample Reference				TP32C	TP32C	TP21C	TP27	
Sample Number				B1	B2	B	B	
Depth (m)				1.00	2.00	0.70	0.50	
Date Sampled				27/03/2017	27/03/2017	24/03/2017	27/03/2017	
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	-	-
Toluene				ug/kg	1	MCERTS	-	-
Ethylbenzene				ug/kg	1	MCERTS	-	-
p & m-xylene				ug/kg	1	MCERTS	-	-
o-xylene				ug/kg	1	MCERTS	-	-
MTBE (Methyl Tertiary Butyl Ether)				ug/kg	1	MCERTS	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6				mg/kg	0.1	MCERTS	-	-
TPH-CWG - Aliphatic >EC6 - EC8				mg/kg	0.1	MCERTS	-	-
TPH-CWG - Aliphatic >EC8 - EC10				mg/kg	0.1	MCERTS	-	-
TPH-CWG - Aliphatic >EC10 - EC12				mg/kg	1	MCERTS	-	-
TPH-CWG - Aliphatic >EC12 - EC16				mg/kg	2	MCERTS	-	-
TPH-CWG - Aliphatic >EC16 - EC21				mg/kg	8	MCERTS	-	-
TPH-CWG - Aliphatic >EC21 - EC35				mg/kg	8	MCERTS	-	-
TPH-CWG - Aliphatic (EC5 - EC35)				mg/kg	10	MCERTS	-	-
TPH-CWG - Aromatic >EC5 - EC7				mg/kg	0.1	MCERTS	-	-
TPH-CWG - Aromatic >EC7 - EC8				mg/kg	0.1	MCERTS	-	-
TPH-CWG - Aromatic >EC8 - EC10				mg/kg	0.1	MCERTS	-	-
TPH-CWG - Aromatic >EC10 - EC12				mg/kg	1	MCERTS	-	-
TPH-CWG - Aromatic >EC12 - EC16				mg/kg	2	MCERTS	-	-
TPH-CWG - Aromatic >EC16 - EC21				mg/kg	10	MCERTS	-	-
TPH-CWG - Aromatic >EC21 - EC35				mg/kg	10	MCERTS	-	-
TPH-CWG - Aromatic (EC5 - EC35)				mg/kg	10	MCERTS	-	-



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729007	729008	729009	729010	729011
Sample Reference				TP9C	TP20C	TP22C	TP23C	TP25C
Sample Number				ES1/D1/B1	ES1/D1/B1	ES1/D1/B1	ES1/D1	ES1/D1
Depth (m)				0.30	0.40	0.40	0.20	1.00
Date Sampled				23/03/2017	24/03/2017	24/03/2017	24/03/2017	24/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	7.5	7.6	7.9	7.5	7.3
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	12	21	< 1.0
Sulphate as SO ₄	µg/l	100	ISO 17025	2220	6320	68400	25300	747000
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	12.7	11.8	15.0	26.0	16.5

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	5.0	3.0	< 1.0	3.7
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Speciated PAHs

Naphthalene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	1.9	2.2	< 1.7	24	5.3
Arsenic (dissolved)	µg/l	1.1	ISO 17025	2.8	5.4	4.6	20	2.5
Barium (dissolved)	µg/l	0.05	ISO 17025	31	16	22	67	52
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron (dissolved)	µg/l	10	ISO 17025	40	93	520	300	180
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	6.8	2.1
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	3.7	2.1	1.4	14	< 1.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	3.7	2.1	1.4	14	0.9
Copper (dissolved)	µg/l	0.7	ISO 17025	38	35	28	250	37
Lead (dissolved)	µg/l	1	ISO 17025	11	8.8	2.1	18	< 1.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	3.8	6.0	4.1	25	9.9
Selenium (dissolved)	µg/l	4	ISO 17025	7.4	7.0	12	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	7.5	6.2	< 1.7	10	3.5
Zinc (dissolved)	µg/l	0.4	ISO 17025	19	14	12	81	61
Calcium (dissolved)	mg/l	0.012	ISO 17025	13	15	42	35	300



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729007	729008	729009	729010	729011
Sample Reference				TP9C	TP20C	TP22C	TP23C	TP25C
Sample Number				ES1/D1/B1	ES1/D1/B1	ES1/D1/B1	ES1/D1	ES1/D1
Depth (m)				0.30	0.40	0.40	0.20	1.00
Date Sampled				23/03/2017	24/03/2017	24/03/2017	24/03/2017	24/03/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10



Analytical Report Number: 17-44697

Project / Site name: Southall

Lab Sample Number				729012	729013	729014		
Sample Reference				TP27C	TP28C	TP29C		
Sample Number				ES1/D1/B1	ES1/D1	ES1/D1		
Depth (m)				2.50	1.80	1.30		
Date Sampled				27/03/2017	27/03/2017	27/03/2017		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	7.9	7.8	2.6		
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	8.4	4.1	11		
Sulphate as SO ₄	µg/l	100	ISO 17025	118000	88400	2350000		
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	42.0	18.3	27.1		

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	4.0	2.0	8.7		
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Speciated PAHs

Naphthalene	µg/l	0.01	NONE	< 0.01	0.17	< 0.01		
Acenaphthylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	NONE	< 0.01	0.11	< 0.01		
Fluorene	µg/l	0.01	NONE	< 0.01	0.08	< 0.01		
Phenanthrene	µg/l	0.01	NONE	< 0.01	0.32	< 0.01		
Anthracene	µg/l	0.01	NONE	< 0.01	0.18	< 0.01		
Fluoranthene	µg/l	0.01	NONE	< 0.01	1.3	< 0.01		
Pyrene	µg/l	0.01	NONE	< 0.01	1.1	< 0.01		
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01	0.44	< 0.01		
Chrysene	µg/l	0.01	NONE	< 0.01	0.57	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01	0.35	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01	0.38	< 0.01		
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01	0.40	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	0.15	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	0.15	< 0.01		

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	5.7	< 0.2		
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	26	21	< 1.7		
Arsenic (dissolved)	µg/l	1.1	ISO 17025	23	11	7.2		
Barium (dissolved)	µg/l	0.05	ISO 17025	74	150	48		
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	6.8		
Boron (dissolved)	µg/l	10	ISO 17025	950	680	120		
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	51		
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	13		
Chromium (III)	µg/l	1	NONE	2.5	1.7	120		
Chromium (dissolved)	µg/l	0.4	ISO 17025	2.5	1.7	130		
Copper (dissolved)	µg/l	0.7	ISO 17025	18	24	760		
Lead (dissolved)	µg/l	1	ISO 17025	4.4	4.5	17		
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5		
Nickel (dissolved)	µg/l	0.3	ISO 17025	16	7.5	430		
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0		
Vanadium (dissolved)	µg/l	1.7	ISO 17025	2.1	6.0	110		
Zinc (dissolved)	µg/l	0.4	ISO 17025	13	110	23000		
Calcium (dissolved)	mg/l	0.012	ISO 17025	62	37	530		



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Lab Sample Number				729012	729013	729014		
Sample Reference				TP27C	TP28C	TP29C		
Sample Number				ES1/D1/B1	ES1/D1	ES1/D1		
Depth (m)				2.50	1.80	1.30		
Date Sampled				27/03/2017	27/03/2017	27/03/2017		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10		
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	54	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	180	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	230	< 10		
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10		
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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* 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 *
728975	TP1C	ES1/D1	0.50	-
728976	TP2C	ES1/D1	0.40	-
728977	TP3C	ES1/D1	0.40	-
728978	TP4C	ES1/D1/B1	0.40	Brown loam and clay with gravel and vegetation.
728979	TP5C	ES1/D1/B1	0.30	Brown loam and clay with vegetation.
728980	TP7C	ES1/D1	0.20	-
728981	TP8C	ES1/D1/B1	0.30	-
728982	TP9C	ES1/D1/B1	0.30	Brown clay and loam with gravel and vegetation.
728983	TP11C	ES1/D1/B1	0.20	-
728984	TP12C	ES1/D1/B1	0.20	-
728985	TP13C	ES1/D1/B1	0.30	Brown loam and clay with gravel.
728986	TP14C	ES1/D1	0.30	-
728987	TP15C	ES1/D1	0.60	Brown clay and sand with gravel and vegetation.
728988	TP16C	ES1/D1	0.50	-
728989	TP16C	ES2/D2	1.50	Brown clay with gravel and vegetation.
728990	TP17C	ES1/D1	0.50	Brown loam and clay with gravel and vegetation.
728991	TP17C	ES2/D2	1.50	-
728992	TP19C	ES1/D1/B1	0.40	-
728993	TP20C	ES1/D1/B1	0.40	Brown clay and loam with vegetation.
728994	TP22C	ES1/D1/B1	0.40	Brown clay with vegetation.
728995	TP23C	ES1/D1	0.20	Brown loam and clay with vegetation.
728996	TP23C	ES2/D2	0.80	Brown clay with vegetation.
728997	TP25C	ES1/D1	1.00	Brown loam and clay with gravel and vegetation.
728998	TP26C	ES1/D1	2.50	Brown clay.
728999	TP27C	ES1/D1/B1	2.50	Brown clay.
729000	TP28C	ES1/D1	1.80	Brown clay.
729001	TP29C	ES1/D1	1.30	Brown clay with gravel.
729002	TP30C	ES1/D1	0.50	Brown gravelly sand.
729003	TP31C	ES1/D1	0.40	-
729004	TP32C	ES1/D1	0.50	-
729005	TP33C	ES/D1	0.30	-
729006	C1	ES1/D1	None Supplied	Brown silt with vegetation.**
729389	TP1C	B1	1.00	Brown clay and sand with gravel.
729390	TP3C	B1	1.00	Brown clay and sand with gravel.
729391	TP3C	B2	1.70	Brown clay and sand with gravel.
729392	TP4C	B2	2.00	Light grey clay and sand with gravel.
729393	TP5C	B2	0.50	Brown loam and clay with gravel.
729394	TP6C	B1	0.50	Brown clay and loam with gravel and vegetation.
729395	TP8C	B2	0.45	Brown loam and clay with gravel and vegetation.
729396	TP8C	B3	0.80	Brown clay and sand with gravel and vegetation.
729397	TP11C	B3	1.50	Brown clay and sand.
729398	TP12C	B1	0.50	Brown sand with gravel.
729399	TP12C	D3	1.40	Brown clay and sand.
729400	TP13C	B3	1.40	Brown sand with gravel.
729401	TP17C	B1	0.30	-
729402	TP16C	B1	1.50	Grey clay and sand.
729403	TP20C	B2	1.40	Brown clay and sand.
729404	TP23C	B1	0.40	Brown clay and sand with gravel and vegetation.
729405	TP24C	B1	1.00	Brown loam and clay with gravel and vegetation.
729408	TP30C	B1	1.00	Light brown sand with gravel.
729409	TP32C	B1	1.00	Brown clay and sand with gravel and vegetation.
729410	TP32C	B2	2.00	Light brown sand with gravel.
729411	TP21C	B	0.70	Brown clay and sand with vegetation.
729412	TP27	B	0.50	Brown loam and clay with gravel.

**Non MCerts matrix

Analytical Report Number : 17-44697

Project / Site name: Southall

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

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 in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	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
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	W	NONE
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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L023-PL	W	NONE
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
Hexavalent chromium in soil (Lower Level)	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 by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
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
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed 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
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	MCERTS
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS

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The results included within the report are representative of the samples submitted for analysis.

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Project / Site name: Southall

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated WAC-17 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	NONE
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
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
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
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests"	L038	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038	W	MCERTS
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-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.

Table - Soil risks to human health (commercial land use) – MADE GROUND

Determinand	GAC SOM = 6%	Measured range	US ₉₅	US ₉₅ > Assessment Criteria? (Y/N) #- outlier detected
		(mg/kg)	(mg/kg)	
Antimony	*	< 1.0 – 14	11.38	*
Arsenic	310	13 – 67	42.55	N
Barium	*	46 – 430	312.12	N
Beryllium	360	0.33 – 4.3	2.88	N
Boron	*	< 0.2 – 11	6	*
Cadmium	220	< 0.2 – 53	34.67	N
Chromium (III)	9,100	23 – 280	190.11	N
Chromium (VI)	32	< 1.2	< 1.2	N
Copper	71,000	28 – 720	646.82	N
Lead ¹	2,300	43 – 930	586.31	N
Mercury (inorganic)	3,600	< 0.3 – 6	4.25	N
Nickel	1,300	9.1 – 110	98.13	N
Selenium	13,000	< 1.0	< 1.0	N
Vanadium	18,000	39 – 86	63.99	N
Zinc	330,000	83 – 1700	1357.31	N
Benzene	90	< 1.0	< 1.0	N
Toluene	4,400	< 1.0	< 1.0	N
Ethyl benzene	2,800	< 1.0	< 1.0	N
m-xylene ²	3,500	< 1.0	< 1.0	N
o-xylene	2,600	< 1.0	< 1.0	N
p-xylene	3,200	< 1.0	< 1.0	N
Phenol ³	3,200	< 1.0 – 2.9	1.92	N#
Cyanide ⁴	34	< 1.0 – 10,000	4877	N#
TPH aliphatic EC5-6	1,200	< 0.1	< 0.1	N
TPH aliphatic EC>6-8	790	< 0.1	< 0.1	N
TPH aliphatic EC>8-10	93,000	< 0.1	< 0.1	N
TPH aliphatic EC>10-12	95,000	< 1.0 – 7.9	6.83	N
TPH aliphatic EC>12-16	95,000	< 2.0 – 340	179.34	N
TPH aliphatic EC>16-35	1,900,000	16 – 2210	1652.94	N
TPH aromatic EC5-7	90	< 0.1	< 0.1	N
TPH aromatic EC>7-8	4,400	< 0.1	< 0.1	N
TPH aromatic EC>8-10	34,000	< 0.1	< 0.1	N
TPH aromatic EC>10-12	38,000	< 1.0	7.9	N
TPH aromatic EC>12-16	38,000	< 2.0 – 150	96.58	N
TPH aromatic EC>16-21	29,000	< 10 – 1500	882.91	N
TPH aromatic EC>21-35	29,000	< 10 – 4900	2858.32	N
Naphthalene	22,000	< 0.05 – 6.8	3.92	N
Acenaphthene	100,000	< 0.1 – 3.1	2.07	N
Fluorene	71,000	< 0.1 – 3.6	2.51	N
Anthracene	540,000	< 0.1 – 7.1	5.15	N
Fluoranthene	73,000	1.2 – 51	34.4	N
Pyrene	55,000	1.2 – 44	29.7	N
Benzo(a)anthracene	140	0.62 – 23	11.42	N
Chrysene	1,400	0.56 – 22	15.25	N
Benzo(b)fluoranthene	140	0.82 – 32	21.47	N
Benzo(k)fluoranthene	140	0.44 – 13	7.19	N
Benzo(a)pyrene	36	0.77 – 25	17.4	N
Indeno(1,2,3-cd)perylene	140	0.53 – 17	11.91	N
Dibenzo(a,h)anthracene	14	< 0.1 – 4.1	2.97	N
Benzo(g,h,i)perylene	1,400	0.52 – 20	13.28	N

¹ Published C4SL.

² Concentrations for total xylenes should be compared against m-xylene for fresh spills and to o-xylene for all other cases.

³ GAC relates to phenol (C₆H₅OH) only.

⁴ Assessment criteria for cyanide derived by Atkins based on acute exposure for a 0-6 year old child.

Table - Soil risks to human health (commercial land use) – TOPSOIL

Determinand	GAC SOM = 6%	Measured range	Measured Range > Assessment Criteria? (Y/N)
		(mg/kg)	
Antimony	*	< 1.0 – 14	*
Arsenic	310	26 – 57	N
Barium	*	160 – 670	*
Beryllium	360	1.2 – 1.8	N
Boron	*	4.7 – 5.3	*
Cadmium	220	2.0 – 94	N
Chromium (III)	9,100	40 – 490	N
Chromium (VI)	32	< 1.2	N
Copper	71,000	90 – 1,500	N
Lead ¹	2,300	510 – 600	N
Mercury (inorganic)	3,600	3.4 – 3.9	N
Nickel	1,300	28 – 170	N
Selenium	13,000	< 1.0	N
Vanadium	18,000	60 – 66	N
Zinc	330,000	260 – 1,500	N
Benzene	90	< 1.0	N
Toluene	4,400	< 1.0	N
Ethyl benzene	2,800	< 1.0	N
m-xylene ²	3,500	< 1.0	N
o-xylene	2,600	< 1.0	N
p-xylene	3,200	< 1.0	N
Phenol ³	3,200	< 1.0	N
Cyanide ⁴	34	< 1.0	N
TPH aliphatic EC5-6	1,200	< 0.1	N
TPH aliphatic EC>6-8	790	< 0.1	N
TPH aliphatic EC>8-10	93,000	< 0.1	N
TPH aliphatic EC>10-12	95,000	< 1.0	N
TPH aliphatic EC>12-16	95,000	3.1 – 21	N
TPH aliphatic EC>16-35	1,900,000	50 – 1,070	N
TPH aromatic EC5-7	90	< 0.1	N
TPH aromatic EC>7-8	4,400	< 0.1	N
TPH aromatic EC>8-10	34,000	< 0.1	N
TPH aromatic EC>10-12	38,000	< 1.0	N
TPH aromatic EC>12-16	38,000	5.8 – 25	N
TPH aromatic EC>16-21	29,000	41 – 210	N
TPH aromatic EC>21-35	29,000	89 – 790	N
Naphthalene	22,000	0.5 – 2.2	N
Acenaphthene	100,000	0.45 – 2.0	N
Fluorene	71,000	0.6 – 1.9	N
Anthracene	540,000	1.4 – 4.8	N
Fluoranthene	73,000	11 – 48	N
Pyrene	55,000	8.6 – 38	N
Benzo(a)anthracene	140	4.7 – 22	N
Chrysene	1,400	4.5 – 20	N
Benzo(b)fluoranthene	140	4.8 – 26	N
Benzo(k)fluoranthene	140	3.5 – 15	N
Benzo(a)pyrene	36	4.6 – 26	N
Indeno(1,2,3-cd)perylene	140	2.5 – 16	N
Dibenzo(a,h)anthracene	14	0.69 – 4.1	N
Benzo(g,h,i)perylene	1,400	2.8 – 4.8	N

¹ Published C4SL.

² Concentrations for total xylenes should be compared against m-xylene for fresh spills and to o-xylene for all other cases.

³ GAC relates to phenol (C₆H₅OH) only.

⁴ Assessment criteria for cyanide derived by Atkins based on acute exposure for a 0-6 year old child.

Table 8a. Risks to controlled waters (soil leachate) - Freshwater

Contaminant	Freshwater EQS ¹ (µg/l)	EC Drinking Water Value (µg/l)	Bioavailable Concentration (µg/l)	Measured range (µg/l)	No. of samples exceeding EQS	No. of samples exceeding Drinking Water Value
Arsenic	50	10		2.5 – 50	0	3
Cadmium	0.08 - 0.25 ²	5		< 0.08 – 51	3	2
Chromium VI	3.4	50 ³		< 5.0 – 8	1	0
Chromium III	4.7	50 ³		< 1.0 – 120	2	1
Lead	1.2	10		< 1.0 – 18	7	3
Mercury	0.07	1		< 0.05	0	0
Selenium	* ⁴	10		< 4.0 – 12	*	0
Boron	*	1,000		40 – 950	*	0
Copper	1 ⁵	2,000	0.71 – 53.69	28 – 760	1	0
Nickel	4 ⁵	20	0.62 – 40.45	3.8 – 430	1	1
Zinc	10.9 ^{5,6}	(5,000) ⁷	1.61 – 1398.25	12 – 23,000	3	1
Barium	*	(1,000) ⁷		16 – 150	*	0
Beryllium	(15) ⁸	*		< 0.2 – 6.8	0	*
Phenols	7.7	(0.5) ⁷		< 1.0 – 8.7	1	6
Free Cyanide	1	50 ⁹		< 1.0 – 21	5	0
Sulphate (mg/l)	*	250		2.2 – 2,350	*	2
TPH	*	(10) ⁷		<10	*	0
PAH	*	0.1 ¹⁰		< 0.2 – 5.7	*	1
Anthracene	0.1	*		< 0.01 – 0.18	1	*
Benzo(a)pyrene	0.02 ¹¹	0.01		< 0.01 – 0.4	1	1
Fluoranthene	0.1 ¹¹	*		< 0.01 – 1.3	1	*
Naphthalene	2	*		< 0.01 – 0.17	0	*
Benzene	10	1		*	*	*
Toluene	74	*		*	*	*
Total ammonia/ ammoniacal nitrogen as NH ₄	*	500		*	*	*
Hardness (mg CaCO ₃ /l)	*	*		13 - 530	*	*
pH	6.0 - 9.0	6.5 - 10.0		2.6 – 7.3	1	1

¹ Annual Averages prescribed within The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

² EQS varies with water hardness where range given. Evaluated against appropriate band.

³ This value relates to total chromium.

⁴ * = No values defined or given.

⁵ Screened against the bioavailable fraction of the dissolved concentration of copper, nickel and zinc. “bioavailable” means the fraction of the dissolved concentration of zinc, nickel and copper likely to result in toxic effects as determined using the UKTAG Metal Bioavailability Assessment Tool.

⁶ 10.9 µg/l bioavailable plus ambient background concentration (µg/l) dissolved. Ambient background concentrations for dissolved zinc in freshwaters in England and Wales to be used in conjunction with item 6.

⁷ Concentration formerly prescribed within the Water Supply (Water Quality) Regulations 1989.

⁸ Dutch Indication Level of Serious Contamination.

⁹ Drinking water standard based on total cyanide.

¹⁰ Sum concentration of 4 PAH comprising benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene and indeno(1,2,3-cd)pyrene.

¹¹ The previous published value for benzo(a)pyrene and fluoranthene is given in the table, and the current published value is given in square brackets. The square brackets value must be used if the waters in question could feed into an area where fishery products are produced.

APPENDIX E

WAC Test Results

**Amir Abbasi**

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Surrey
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Business Park,
Watford,
Herts,
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Analytical Report Number : 17-44699

Project / Site name:	Southall	Samples received on:	28/03/2017
Your job number:	CGN-3732D	Samples instructed on:	31/03/2017
Your order number:		Analysis completed by:	11/04/2017
Report Issue Number:	1	Report issued on:	11/04/2017
Samples Analysed:	7 10:1 WAC Samples		

Signed:

Dr Irma Doyle
Senior Account 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

Excel copies of reports are only valid when accompanied by this PDF certificate.

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Waste Acceptance Criteria Analytical Results							
Report No:	17-44699						
					Client: CARDGEO		
Location	Southall						
Lab Reference (Sample Number)	729031 / 729032				Landfill Waste Acceptance Criteria		
					Limits		
Sampling Date	23/03/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	TP9C ES1/D1/B1						
Depth (m)	0.30						
Solid Waste Analysis							
TOC (%)**	2.1				3%	5%	6%
Loss on Ignition (%) **	6.6				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	13				100	--	--
pH (units)**	7.4				--	>6	--
Acid Neutralisation Capacity (mol / kg)	1.1				--	To be evaluated	To be evaluated
Eluate Analysis							
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:01	Limit values for compliance leaching test		
	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0062			0.0311	0.5	2	25
Barium *	0.0224			0.113	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0008			0.0041	0.5	10	70
Copper *	0.025			0.13	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0082			0.0412	0.5	10	30
Nickel *	0.0036			0.018	0.4	10	40
Lead *	0.0062			0.031	0.5	10	50
Antimony *	0.0029			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.011			0.054	4	50	200
Chloride *	1.9			9.7	800	4000	25000
Fluoride	1.0			5.2	10	150	500
Sulphate *	2.5			13	1000	20000	50000
TDS	49			250	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	8.20			41.4	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.54						
Dry Matter (%)	85						
Moisture (%)	15						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = UKAS accredited (liquid eluate analysis only)			
				** = MCFRTS accredited			

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results							
Report No:	17-44699						
					Client: CARDGEO		
Location	Southall						
Lab Reference (Sample Number)	729033 / 729034				Landfill Waste Acceptance Criteria		
Sampling Date	24/03/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	TP15C ES1/D1						
Depth (m)	0.60						
Solid Waste Analysis							
TOC (%)**	1.6				3%	5%	6%
Loss on Ignition (%) **	6.9				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	5.7				100	--	--
pH (units)**	7.8				--	>6	--
Acid Neutralisation Capacity (mol / kg)	3.3				--	To be evaluated	To be evaluated
Eluate Analysis					Limit values for compliance leaching test		
					using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:01			
	mg/l			mg/kg			
Arsenic *	0.0067			0.0554	0.5	2	25
Barium *	0.0088			0.0729	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0008			0.0067	0.5	10	70
Copper *	0.016			0.13	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0027			0.0221	0.5	10	30
Nickel *	0.0013			0.011	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	0.0033			0.027	0.06	0.7	5
Selenium *	0.0071			0.059	0.1	0.5	7
Zinc *	0.0056			0.046	4	50	200
Chloride *	3.4			28	800	4000	25000
Fluoride	0.37			3.1	10	150	500
Sulphate *	1.6			13	1000	20000	50000
TDS	40			330	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	6.07			50.3	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.58						
Dry Matter (%)	90						
Moisture (%)	9.6						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
					*= UKAS accredited (liquid eluate analysis only)		
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation					** = MCERTS accredited		

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Waste Acceptance Criteria Analytical Results

Report No:	17-44699					
				Client: CARDGEO		
Location	Southall					
Lab Reference (Sample Number)	729035 / 729036			Landfill Waste Acceptance Criteria		
Sampling Date	24/03/2017			Limits		
Sample ID	TP16C ES2/D2			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Depth (m)	1.50					
Solid Waste Analysis						
TOC (%)**	0.9			3%	5%	6%
Loss on Ignition (%) **	8.0			--	--	10%
BTEX (µg/kg) **	< 10			6000	--	--
Sum of PCBs (mg/kg) **	< 0.007			1	--	--
Mineral Oil (mg/kg)	25			500	--	--
Total PAH (WAC-17) (mg/kg)	11			100	--	--
pH (units)**	7.7			--	>6	--
Acid Neutralisation Capacity (mol / kg)	14			--	To be evaluated	To be evaluated
Eluate Analysis						
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1		10:01	Limit values for compliance leaching test		
	mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0013		< 0.0110	0.5	2	25
Barium *	0.0255		0.196	20	100	300
Cadmium *	< 0.0001		< 0.0008	0.04	1	5
Chromium *	0.0039		0.030	0.5	10	70
Copper *	0.018		0.14	2	50	100
Mercury *	< 0.0005		< 0.0050	0.01	0.2	2
Molybdenum *	0.0022		0.0171	0.5	10	30
Nickel *	0.0027		0.021	0.4	10	40
Lead *	0.0078		0.060	0.5	10	50
Antimony *	< 0.0017		< 0.017	0.06	0.7	5
Selenium *	< 0.0040		< 0.040	0.1	0.5	7
Zinc *	0.012		0.092	4	50	200
Chloride *	2.3		18	800	4000	25000
Fluoride	0.72		5.5	10	150	500
Sulphate *	6.4		49	1000	20000	50000
TDS	77		600	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010		< 0.10	1	-	-
DOC	5.58		42.9	500	800	1000
Leach Test Information						
Stone Content (%)	< 0.1					
Sample Mass (kg)	1.5					
Dry Matter (%)	80					
Moisture (%)	20					
Results are expressed on a dry weight basis, after correction for moisture content where applicable.						
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = UKAS accredited (liquid eluate analysis only)		
				** = MCERTS accredited		

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Waste Acceptance Criteria Analytical Results							
Report No:	17-44699						
				Client: CARDGEO			
Location	Southall						
Lab Reference (Sample Number)	729037 / 729038			Landfill Waste Acceptance Criteria			
Sampling Date	24/03/2017			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Sample ID	TP17C ES1/D1						
Depth (m)	0.50						
Solid Waste Analysis							
TOC (%)**	2.7				3%	5%	6%
Loss on Ignition (%) **	8.5				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	58				500	--	--
Total PAH (WAC-17) (mg/kg)	75				100	--	--
pH (units)**	7.0				--	>6	--
Acid Neutralisation Capacity (mol / kg)	0.0000				--	To be evaluated	To be evaluated
Eluate Analysis							
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:01	Limit values for compliance leaching test		
	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0028			0.0209	0.5	2	25
Barium *	0.0292			0.220	20	100	300
Cadmium *	0.0001			< 0.0008	0.04	1	5
Chromium *	0.0031			0.024	0.5	10	70
Copper *	0.048			0.36	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0032			0.0238	0.5	10	30
Nickel *	0.0039			0.029	0.4	10	40
Lead *	0.0085			0.064	0.5	10	50
Antimony *	0.0034			0.026	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.022			0.17	4	50	200
Chloride *	3.0			22	800	4000	25000
Fluoride	1.0			7.7	10	150	500
Sulphate *	6.2			47	1000	20000	50000
TDS	38			290	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	7.98			60.2	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.9						
Dry Matter (%)	86						
Moisture (%)	14						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = UKAS accredited (liquid eluate analysis only)			
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Waste Acceptance Criteria Analytical Results							
Report No:	17-44699						
					Client: CARDGEO		
Location	Southall						
Lab Reference (Sample Number)	729039 / 729040				Landfill Waste Acceptance Criteria		
Sampling Date	24/03/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	TP23C ES1/D1						
Depth (m)	0.20						
Solid Waste Analysis							
TOC (%)**	3.9				3%	5%	6%
Loss on Ignition (%) **	14				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	1300				500	--	--
Total PAH (WAC-17) (mg/kg)	150				100	--	--
pH (units)**	7.1				--	>6	--
Acid Neutralisation Capacity (mol / kg)	1.3				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:01	Limit values for compliance leaching test		
	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0215			0.145	0.5	2	25
Barium *	0.0400			0.270	20	100	300
Cadmium *	0.0052			0.0353	0.04	1	5
Chromium *	0.020			0.13	0.5	10	70
Copper *	0.20			1.3	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0071			0.0480	0.5	10	30
Nickel *	0.018			0.12	0.4	10	40
Lead *	0.034			0.23	0.5	10	50
Antimony *	0.015			0.10	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.071			0.48	4	50	200
Chloride *	3.9			26	800	4000	25000
Fluoride	0.44			2.9	10	150	500
Sulphate *	8.0			54	1000	20000	50000
TDS	100			670	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	17.1			115	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.2						
Dry Matter (%)	74						
Moisture (%)	26						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = UKAS accredited (liquid eluate analysis only)			
				** = MCERTS accredited			

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Waste Acceptance Criteria Analytical Results							
Report No:	17-44699						
					Client: CARDGEO		
Location	Southall						
Lab Reference (Sample Number)	729041 / 729042				Landfill Waste Acceptance Criteria		
Sampling Date	27/03/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	TP29C ES1/D1						
Depth (m)	1.30						
Solid Waste Analysis							
TOC (%)**	5.6				3%	5%	6%
Loss on Ignition (%) **	14				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	3100				500	--	--
Total PAH (WAC-17) (mg/kg)	57				100	--	--
pH (units)**	2.6				--	>6	--
Acid Neutralisation Capacity (mol / kg)	-110				--	To be evaluated	To be evaluated
Eluate Analysis							
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:01	Limit values for compliance leaching test		
	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.0011			< 0.0110	0.5	2	25
Barium *	0.0310			0.259	20	100	300
Cadmium *	0.0208			0.174	0.04	1	5
Chromium *	0.065			0.54	0.5	10	70
Copper *	0.81			6.8	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	< 0.0004			< 0.0040	0.5	10	30
Nickel *	0.18			1.5	0.4	10	40
Lead *	0.0024			0.020	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	11			93	4	50	200
Chloride *	2.7			22	800	4000	25000
Fluoride	0.30			2.5	10	150	500
Sulphate *	2100			17000	1000	20000	50000
TDS	1800			15000	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	14.3			119	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.53						
Dry Matter (%)	82						
Moisture (%)	18						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = UKAS accredited (liquid eluate analysis only)			
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Waste Acceptance Criteria Analytical Results

Report No:	17-44699					
				Client: CARDGEO		
				Landfill Waste Acceptance Criteria Limits Inert Waste Landfill Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill Hazardous Waste Landfill		
Location	Southall					
Lab Reference (Sample Number)	729043 / 729044					
Sampling Date	23/03/2017					
Sample ID	C1 ES1/D1					
Depth (m)						
Solid Waste Analysis						
TOC (%)**	4.7			3%	5%	6%
Loss on Ignition (%) **	12			--	--	10%
BTEX (µg/kg) **	< 10			6000	--	--
Sum of PCBs (mg/kg) **	< 0.007			1	--	--
Mineral Oil (mg/kg)	1700			500	--	--
Total PAH (WAC-17) (mg/kg)	27			100	--	--
pH (units)**	7.4			--	>6	--
Acid Neutralisation Capacity (mol / kg)	2.2			--	To be evaluated	To be evaluated
Eluate Analysis				Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1		10:01	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l		mg/kg			
Arsenic *	0.0044		0.0376	0.5	2	25
Barium *	0.0999		0.861	20	100	300
Cadmium *	< 0.0001		< 0.0008	0.04	1	5
Chromium *	0.0008		0.0072	0.5	10	70
Copper *	0.021		0.18	2	50	100
Mercury *	< 0.0005		< 0.0050	0.01	0.2	2
Molybdenum *	0.0117		0.101	0.5	10	30
Nickel *	0.0029		0.025	0.4	10	40
Lead *	< 0.0010		< 0.010	0.5	10	50
Antimony *	0.034		0.29	0.06	0.7	5
Selenium *	< 0.0040		< 0.040	0.1	0.5	7
Zinc *	0.011		0.093	4	50	200
Chloride *	9.2		80	800	4000	25000
Fluoride	0.30		2.6	10	150	500
Sulphate *	32		280	1000	20000	50000
TDS	180		1600	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010		< 0.10	1	-	-
DOC	20.1		173	500	800	1000
Leach Test Information						
Stone Content (%)	< 0.1					
Sample Mass (kg)	1.2					
Dry Matter (%)	37					
Moisture (%)	63					

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Analytical Report Number : 17-44699

Project / Site name: Southall

* 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 *
729031	TP9C	ES1/D1/B1	0.30	Brown clay and loam with gravel and vegetation.
729033	TP15C	ES1/D1	0.60	Brown clay and sand with gravel and vegetation.
729035	TP16C	ES2/D2	1.50	Brown clay and sand with gravel.
729037	TP17C	ES1/D1	0.50	Brown loam and sand with gravel and vegetation.
729039	TP23C	ES1/D1	0.20	Brown loam and clay with vegetation.
729041	TP29C	ES1/D1	1.30	Grey clay and sand with gravel.
729043	C1	ES1/D1	None Supplied	Grey sludge.**

**Non Mcerts Matrix

Analytical Report Number : 17-44699

Project / Site name: Southall

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance"	L046-UK	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
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
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated WAC-17 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	NONE
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
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	MCERTS

Iss No 17-44699-1 Southall CGN-3732D

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The results included within the report are representative of the samples submitted for analysis.

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Analytical Report Number : 17-44699

Project / Site name: Southall

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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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.

APPENDIX B

Groundwater Monitoring Results

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e: reception@i2analytical.com

Analytical Report Number : 17-50186

Project / Site name:	Southall	Samples received on:	02/06/2017
Your job number:	CGN-03732L	Samples instructed on:	02/06/2017
Your order number:		Analysis completed by:	13/06/2017
Report Issue Number:	1	Report issued on:	13/06/2017
Samples Analysed:	5 water samples		

Signed:

Rexona Rahman
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: 17-50186

Project / Site name: Southall

Lab Sample Number				759433	759434	759435	759436	759437
Sample Reference				BH1A	BH2A	BH3A	BH3B	BH4B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				02/06/2017	02/06/2017	02/06/2017	02/06/2017	02/06/2017
Time Taken				None Supplied	None Supplied	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	7.2	7.3	7.0	7.7	7.3
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	130	< 1.0	49	31	< 1.0
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	-	< 1	< 1	-
Sulphate as SO ₄	µg/l	45	ISO 17025	799000	865000	1560000	1160000	20800
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	25000	15000	1000	300	13000
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	36.3	39.6	36.9	30.6	5.79
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	1420	1380	1710	1450	332

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	0.24	< 0.01	< 0.01	< 0.01	0.42
Acenaphthylene	µg/l	0.01	ISO 17025	0.16	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	0.40	< 0.01	< 0.01	< 0.01	6.69
Fluorene	µg/l	0.01	ISO 17025	0.25	< 0.01	< 0.01	< 0.01	1.35
Phenanthrene	µg/l	0.01	ISO 17025	1.59	< 0.01	< 0.01	< 0.01	0.58
Anthracene	µg/l	0.01	ISO 17025	0.41	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	3.89	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	3.14	< 0.01	< 0.01	< 0.01	0.13
Benzo(a)anthracene	µg/l	0.01	ISO 17025	1.60	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	1.82	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	1.81	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	1.00	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	1.46	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	0.69	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	0.36	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	NONE	18.8	< 0.16	< 0.16	< 0.16	9.17
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	0.8	2.5	1.1	1.4	< 0.4
Arsenic (dissolved)	µg/l	0.15	ISO 17025	3.05	7.80	2.04	2.34	4.86
Barium (dissolved)	µg/l	0.06	ISO 17025	160	170	57	56	340
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron (dissolved)	µg/l	10	ISO 17025	840	1700	1100	760	400
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.32	1.4	0.19	0.03
Calcium (dissolved)	mg/l	0.012	ISO 17025	400	420	540	450	110
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	1.6	3.3	< 1.0	1.2	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	1.6	3.3	0.7	1.2	0.4
Copper (dissolved)	µg/l	0.5	ISO 17025	2.4	13	5.2	10	1.9
Lead (dissolved)	µg/l	0.2	ISO 17025	1.0	11	1.9	2.4	0.3
Magnesium (dissolved)	mg/l	0.005	ISO 17025	100	78	89	81	13
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	18	33	9.7	9.1	7.6
Selenium (dissolved)	µg/l	0.6	ISO 17025	8.2	5.7	9.6	4.2	0.8
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.7	3.0	0.8	2.5	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	8.8	26	500	5.9	4.3



Analytical Report Number: 17-50186

Project / Site name: Southall

Lab Sample Number				759433	759434	759435	759436	759437
Sample Reference				BH1A	BH2A	BH3A	BH3B	BH4B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				02/06/2017	02/06/2017	02/06/2017	02/06/2017	02/06/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 17-50186

Project / Site name: Southall

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
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
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
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-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
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	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	L0102B-PL	W	NONE
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
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-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.

Iss No 17-50186-1 Southall CGN-03732L

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The results included within the report are representative of the samples submitted for analysis.

Page 4 of 4

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Analytical Report Number : 17-52916

Project / Site name:	Southall	Samples received on:	28/06/2017
Your job number:	CGN-03732L	Samples instructed on:	28/06/2017
Your order number:	4402	Analysis completed by:	07/07/2017
Report Issue Number:	1	Report issued on:	07/07/2017
Samples Analysed:	5 water samples		

Signed:

Dr Irma Doyle
Senior Account 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: 17-52916

Project / Site name: Southall

Your Order No: 4402

Lab Sample Number				774323	774324	774325	774326	774327
Sample Reference				BH1A	BH2A	BH3A	BH3B	BH4B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Time Taken				None Supplied	None Supplied	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	7.0	7.1	7.2	7.6	7.3
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	43	< 1.0	32	31	< 1.0
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	-	< 1	< 1	-
Sulphate as SO ₄	µg/l	45	ISO 17025	278000	980000	1530000	941000	8250
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	28000	14000	6900	76	14000
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	45.4	66.6	40.2	32.1	5.22
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	1580	1570	1540	1380	292

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	0.17	< 0.01	< 0.01	< 0.01	0.55
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	0.28
Acenaphthene	µg/l	0.01	ISO 17025	0.69	< 0.01	< 0.01	< 0.01	14.6
Fluorene	µg/l	0.01	ISO 17025	0.49	< 0.01	< 0.01	< 0.01	2.06
Phenanthrene	µg/l	0.01	ISO 17025	0.97	< 0.01	< 0.01	< 0.01	0.75
Anthracene	µg/l	0.01	ISO 17025	0.19	< 0.01	< 0.01	< 0.01	0.16
Fluoranthene	µg/l	0.01	ISO 17025	0.42	< 0.01	< 0.01	< 0.01	0.11
Pyrene	µg/l	0.01	ISO 17025	0.27	< 0.01	< 0.01	< 0.01	0.27
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	NONE	3.20	< 0.16	< 0.16	< 0.16	18.7
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	2.8
Arsenic (dissolved)	µg/l	1	ISO 17025	26	8.5	11	9.6	8.2
Barium (dissolved)	µg/l	0.05	ISO 17025	160	150	93	71	350
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron (dissolved)	µg/l	10	ISO 17025	1300	1800	820	830	440
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	6.0	1.1	< 0.08	< 0.08
Calcium (dissolved)	mg/l	0.012	ISO 17025	440	500	500	410	98
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	1.3	1.2	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.3	1.2	0.4	0.5	< 0.4
Copper (dissolved)	µg/l	0.7	ISO 17025	2.5	49	8.5	11	1.4
Lead (dissolved)	µg/l	1	ISO 17025	4.1	5.1	3.7	5.9	< 1.0
Magnesium (dissolved)	mg/l	0.005	ISO 17025	120	81	71	88	11
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	30	52	12	12	9.1
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	4.1	< 1.7	< 1.7
Zinc (dissolved)	µg/l	0.4	ISO 17025	10	39	110	6.9	5.1



Analytical Report Number: 17-52916

Project / Site name: Southall

Your Order No: 4402

Lab Sample Number				774323	774324	774325	774326	774327
Sample Reference				BH1A	BH2A	BH3A	BH3B	BH4B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	41
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	41

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 17-52916

Project / Site name: Southall

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
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
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
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-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
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	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	L0102B-PL	W	NONE
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
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-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.

Iss No 17-52916-1 Southall CGN-03732L

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The results included within the report are representative of the samples submitted for analysis.

Page 4 of 4

GROUNDWATER MONITORING RECORD SHEET

JOB DETAILS			
Site:	Southall additional BHs and Monitoring	Job No:	CGN/03732L
Date:	02/06/2017	Engineer:	OJR
Time:	All day	Client	Berkley Homes
Weather:	Sunny, light wind, heavy rain showers in afternoon		

MONITORING & SAMPLING DETAILS								
Well / Borehole reference:	BH3B	BH4B	BH1A	BH2A	BH3A			
Monitoring details								
Ground elevation (+mOD)								
Groundwater depth (mbgl)	1.22	0.45	2.45	0.98	1.16			
Groundwater elevation (+mOD)								
Depth to base of well (mbgl)	3	2.3	6.8	3.03	5.87			
Diameter of well (m)	0.05	0.05	0.05	0.05	0.05			
Condition of well	Good	Good	Good	Good	Good			
Top of response zone (mbgl)								
Base of response zone (mbgl)								
Free product thickness (m)	0	0	0	0	0			
Hydrocarbon sheen noted (Y/N)	N	N	N	N	N			
Purging details								
Purge method	BAIL	BAIL	BAIL	BAIL	BAIL			
Purged volume (litres)	11	24	27	13	29			
Recharge (good / poor)	Good	Good	Good	Good	Good			
Sampling details								
Sampling method	BAIL	BAIL	BAIL	BAIL	BAIL			
Volume of water sample taken (litres)	2B, 2V	2B, 2V	2B, 2V	2B, 2V	2B, 2V			
Volume of free product sample taken (litres)	NA	NA	NA	NA	NA			
Colour / odours noted*	Pale brown, silty, no odour	Pale brown, silty, no odour	Pale orange brown, silty, no odour	Pale grey brown, silty, no odour	Pale orange brown, silty, no odour			
In-situ measurements								
pH	7.53	7.2	7.01	6.94	6.89			
Temperature (°C)	12.8	15.4	13.5	12.9	13.3			
Dissolved oxygen (mg/l)	-	-	-	-	-			
Redox potential (mV)	141	-114	-45	-91	10			
Electrical conductivity (µS/cm)	1978	887	2328	2120	2294			
Total dissolved solids (ppm)	989	443	1164	1060	1147			
* Respiratory protective equipment to be worn if odours are noted during initial monitoring & on sites which are potentially contaminated								

NOTES
Dissolved oxygen meter faulty, will not turn on.

GROUNDWATER MONITORING RECORD SHEET

JOB DETAILS			
Site:	Southall additional BHs and Monitoring	Job No:	CGN/03732L
Date:	27/06/2017	Engineer:	OJR
Time:	All day	Client	Berkley Homes
Weather:	Overcast, light wind. Heavy rain in afternoon		

MONITORING & SAMPLING DETAILS								
Well / Borehole reference:	BH1A	BH2A	BH3A	BH3B	BH4B	BH1Bx	BH2Bx	
Monitoring details								
Ground elevation (+mOD)								
Groundwater depth (mbgl)	2.55	1.09	1.55	1.44	0.57	DRY	DRY	
Groundwater elevation (+mOD)								
Depth to base of well (mbgl)	6.76	3.04	5.87	2.97	4.27	2.00	2.60	
Diameter of well (m)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
Condition of well	Good	Good	Good	Good	Good	Good	Good	
Top of response zone (mbgl)								
Base of response zone (mbgl)								
Free product thickness (m)	0	0	0	0	0	-	-	
Hydrocarbon sheen noted (Y/N)	N	N	N	N	N	-	-	
Purging details								
Purge method	Peristaltic	Peristaltic	Peristaltic	Peristaltic	Peristaltic	-	-	
Purged volume (litres)	4	4	2	3	2	-	-	
Recharge (good / poor)	Good	Good	Good	Good	Good	-	-	
Sampling details								
Sampling method	BAIL	BAIL	BAIL	BAIL	BAIL	-	-	
Volume of water sample taken (litres)	2B, 2V	2B, 2V	2B, 2V	2B, 2V	2B, 2V	-	-	
Volume of free product sample taken (litres)	NA	NA	NA	NA	NA	-	-	
Colour / odours noted*	Pale grey brown	Pale grey brown	Pale grey brown	Pale grey brown	Pale grey brown	-	-	
In-situ measurements								
pH	6.9	6.98	7.08	7.42	7.35	-	-	
pH (mV)	0.1	-4.3	-10.2	-31.1	-25.2	-	-	
Temperature (°C)	12.7	14.6	13	13.7	14.9	-	-	
Dissolved oxygen (%)	3.8	3.1	6.2	8.6	7.8	-	-	
Redox potential (mV)	-88.2	-62.6	-24.8	7.2	-159.1	-	-	
Specific conductivity (µS/cm)	3250	2735	2991	2412	1030	-	-	
* Respiratory protective equipment to be worn if odours are noted during initial monitoring & on sites which are potentially contaminated								

NOTES

Our Ref: EXR/240585 (Ver. 1)

Your Ref: UK11-21406MT

May 15, 2017



Environmental Chemistry

ESG

Bretby Business Park

Ashby Road

Burton-on-Trent

Staffordshire

DE15 0YZ

Telephone: 01283 554400

Facsimile: 01283 554422

Charles Collins
Ramboll Environ
Artillery House
11-19 Artillery Row
London
SW7P 7RT

For the attention of Charles Collins

Dear Charles Collins

Sample Analysis - UK11-21406MT Minet Tip

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

A handwritten signature in black ink, appearing to read 'D Goddard', written over a faint, stylized line.

D Goddard
Project Co-ordinator
01283 554362