

APPENDIX S

CGL Technical Report on Lagoon Stockpile SP17 and Lagoon Basal Soils)



Providing Ground Solutions

Clark Smith Partnership

Western Access, Southall
*Technical Report on Lagoon Stockpile
SP17 and Lagoon Basal Soils*

March, 2019



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1. INTRODUCTION AND BACKGROUND

Following discussions regarding re-use of materials on Western Access, Southall, Card Geotechnics Limited (CGL), on behalf of Clark Smith Partnership (CSP) and FM Conway Limited (FMC), has compiled the below technical note regarding the chemical suitability of Stockpile SP17 and the existing lagoon basal soils for potential re-use within the Western Access and wider Southall Waterside scheme. This technical note is required to provide details on the stockpile and lagoon basal material composition, chemical suitability and quality for proposed re-use.

The Western Access scheme provides a new access road to the Southall Waterside development. The construction of the access road has included the merging of the River Crane and Yeading Brook and construction of two new bridges spanning the Grand Union Canal (GUC) and combined Yeading Brook channel. The site is located predominantly within the London Borough of Hillingdon, between Pump Lane and the GUC, with the eastern embankment, located at the western end of the main Southall Waterside site, within the London Borough of Ealing.

Landscaping soils are required across the development, including the slopes of the western and central embankment, flood compensation area (FCA), banks of the brook, and as fill behind the central embankment and eastern embankment retaining walls. In addition, general fill soils are required as backfill to the eastern embankment, east of the GUC and may also be required in the wider Southall Waterside scheme.

The design and specification of the landscaping has been undertaken by Hyland Edgar Driver (HED)¹, on behalf of Berkeley West Thames (BWT) and soils are required to meet their specification, in addition to being suitable from a human health and environmental perspective, as outlined in this technical note. Where available and suitable, it is the intention to re-use site won soils to form the cover soils to the west of the GUC with imported topsoil / subsoil to be used as cover soil to east GUC. General fill soils, for placement to east GUC, may be sourced from site won materials, where suitable.

This technical note is to be submitted to the Environmental Health Officers at the London Boroughs of Ealing and Hillingdon, together with the Environment Agency, as confirmation of the chemical suitability of the Stockpile SP17 and lagoon basal soils, for re-use within the Western Access and Southall Waterside scheme.

¹Hyland Edgar Driver (HED) (2018). *Southall Waterside – Western Access 100% Package, Soft Landscape Specification (Draft)*

2. SITE WORKS

2.1 Walkover and Visual Description

CGL attended site on Monday 10th and Tuesday 11th December 2018 to undertake trial pitting within the existing lagoon area and across Stockpile SP17, to obtain representative soil samples of both the stockpiled material and the underlying lagoon materials. The focus of the investigation of the lagoon basal soils was the imported 6F2, used as a drainage blanket, above the lagoon liner, as well as the shallow underlying soils. These underlying soils were sourced from the original bund material adjacent to Pump Lane, which was re-used as part of the enabling earthworks, to construct the lagoon stockpile area.

A walkover and visual assessment were first undertaken, which identified SP17 to be extensive across the lagoon area and comprising three separate stockpiles, termed SP17A, SP17B and SP17C, split between pedestrian access pathways and topographical mounds

The largest stockpile comprised stockpile SP17A, situated within the western part of the lagoon. SP17B was comparatively smaller and bounded by a pedestrian walkway along its western edge. The smallest stockpile, SP17C, is situated within the eastern part of the lagoon adjacent to CGL borehole BH3A.

2.2 Trial Pits

In total, six trial pits were excavated across the three stockpiles;

- Three trial pits within SP17A (HP3 to HP5);
- Two trial pits within SP17B (HP1, HP2); and
- A single trial pit within SP17C (HP6).

Composite, bulk samples were recovered from the upper (GL to 1.5m) and lower (1.5m to 4.2m) sections within each trial pit to provide a representative sample of the material.

In addition, the basal lagoon soils were excavated at eight accessible locations (TP1 – TP8) which extended through the 6F2 drainage blanket, underneath the liner and approximately 1m into the underlying basal soils. A total of 16 samples, eight from the 6F2 and eight from the underlying soils, were recovered for chemical laboratory testing.

The approximate locations of the trial pits are shown on the sketch plan in Appendix B.

2.3 Stockpile and Lagoon Soils Composition

The composition of the stockpile material was highly variable comprising of a loose dark grey brown to brown very silty gravelly sand, or soft to firm dark orange brown to brown mottled grey black sandy very gravelly clay. The sand was medium to coarse grained and gravel was subangular to well-rounded flint, concrete and brick. A number of deleterious items were identified including fragments of textile, metal, tile, ceramic, plastic, glass, timber and dredged organic matter.

A total of eight trial pits were excavated in the base of the lagoon to 1.0m below ground level (bgl) in areas not previously tested in recent trial pitting works undertaken by CA Blackwell. The lagoon basal material comprised a shallow imported capping layer of 6F2, the lagoon drainage blanket, of between 0.2m and 0.4m thick. The 6F2 drainage blanket was placed above the lagoon impermeable membrane, overlying a protective fleece layer. The basal soil, underlying the lagoon liner and fleece, comprised a soft to firm light grey to brown very gravelly sandy clay. Gravel was angular to rounded, fine to coarse of flint, brick and concrete. Limited perched water was noted on top of the membrane at the base of the 6F2 capping.

Observations from the trial pitting, including selected photos, are shown in the site visit records in Appendix C.

2.4 Chemical Laboratory Testing

A total of eight samples were recovered from the stockpiles, with a further 16 samples recovered from the trial pits within the lagoon base. The 16 lagoon base samples comprised eight samples from the 6F2 material and eight from the underlying soils. The samples were tested for a general chemical suite comprising the established Western Access re-use criteria plus determinands suitable for assessing re-use as cover soils and as general fill within the Southall Waterside development.

The laboratory results are provided in Appendix D.

3. RE-USE CRITERIA REQUIREMENTS

For the Southall Waterside scheme, the Atkins Remediation Scheme and Options Appraisal Addendum (RS&OA) No. 1², Table 2-2, sets out the requirements for re-use of soils, focusing on minimising impact to controlled waters, predominantly the Yeading Brook, which were considered the principal receptor. The RS&OA Addendum No. 1 established site-specific re-use criteria, protective of controlled waters and similar sets of criteria were established within the CGL Remediation Scheme Addendum³, including re-use criteria protective of controlled waters, together with generic criteria for import of general fill and cover soils, which were considered suitably protective of both controlled waters and human health receptors.

The established re-use criteria for the Western Access scheme and relevant criteria for Southall Waterside are represented in Appendix A.

Future human health receptors are considered to be limited in Western Access, particularly to the west of the GUC (or 'East Yeading Brook'), where access to the embankment slopes, FCA and banks of the Yeading Brook and River Crane is likely to be associated with future landscape and watercourse maintenance works and by occasional visitors. A hardstanding pathway, cycleway and verge are present along the length of the new Western Access roadway and the majority of pedestrian traffic is considered likely to use this route which provides entry to the Waterside development. The make-up of the hardstanding pavement, including sub-base, is a minimum 600mm thickness and is considered to provide a suitable pathway break to end users of the development from fill materials within the core of the embankment, noting that embankment fill materials have been verified and demonstrated to meet the established re-use criteria for the scheme^{4,5}. To the east GUC, a footpath is proposed across the landscaping fill to the north of the embankment, to allow access to the GUC towpath. Future access to other landscaped areas within the scheme is considered to be limited as noted above.

On this basis, the conceptual site model for risks to human health across the Western Access scheme is considered to most closely align with that of a public parks / open space land use.

Given that site-specific human health criteria have not been established for the Western Access scheme and based on the conceptual site model for cover soils within the scheme, it is considered that

² Atkins Limited, *Southall Waterside, Remediation Strategy and Options Appraisal Addendum No. 1 – Verification Criteria, Version 4.0, October 2016, Ref. 5138632.*

³ CGL (July 2017). *Western Access Remediation Scheme Addendum. CGL Ref: CGN3732I. Aconex Ref: A720-E05-IW-CGL-EW-RP-0003.*

⁴ CGL (October 2018). *Environmental Verification Report – London Borough of Hillingdon. Western Access, Southall. CG28308.*

⁵ CGL (October 2018). *Environmental Verification Report – London Borough of Ealing. Western Access, Southall. CG28308.*

generic criteria, for a public parks and open space land use category, in accordance with Land Quality Management (LQM) guidance⁶, are suitable for assessing compliance. In addition, soils are required to meet the Atkins RS&OA No.1 Table 2-2 criteria for protection of controlled waters, where they are to be used within this zone on the Waterside development.

⁶ Land Quality Management (LQM) (2015). *The LQM/CIEH S4ULs for Human Health Assessment*

4. ASSESSMENT OF SITE WON SOILS

CGL undertook sampling of Stockpile SP17 soils from machine excavated trial holes within the existing lagoon area, together with samples of the lagoon basal soils.

A total of eight samples of soils, obtained from varying depths from three stockpiles, were obtained and analysed for a suite of potential determinands. A further 16 soil samples were recovered from the lagoon basal soils, eight from the 6F2 drainage blanket and eight from the underlying soils, beneath the lagoon liner.

The resultant test data were screened against both the established Western Access re-use criteria and criteria for re-use within the main Southall Waterside site, as outlined in Section 3 above. A summary of the data screen is presented in the two tables in Appendix E. Generally, samples were found to meet the different criteria. Within the Stockpile SP17 soils tested, marginal exceedances of both the Atkins' Remedial Target Value (RTV) for cadmium in Zone A1 and Western Access re-use criteria, were recorded in two samples (SP17 HP101 and HP102, both in SP17B). In addition, trace asbestos was identified within the SP17 soils, though, with the exception of one sample from SP17B (HP101, concentration of 0.002% by weight), all quantities were less than the laboratory limit of detection (<0.001%).

Within the 6F2 capping, TPH Aromatic C12-C16 was recorded to exceed the Atkins RTV for Zone A1, in one soil sample tested (TP7-6F2).

Within the lagoon basal soils, cadmium was recorded to exceed the Atkins RTV for Zone A1 and Western Access re-use criteria in one soil sample (TP1-B: TP102B in the north eastern section of the lagoon). This sample was also noted to contain trace asbestos, though below the laboratory limit of detection (<0.001%).

On this basis the existing SP17 stockpiles within the lagoon are considered not to present an unacceptable risk to human health of future site users within areas of Public Open Space i.e. within Western Access, with the exception of the trace asbestos noted in SP17B HP101 sample, which should not be used in near surface (cover) soils. However, based on the cadmium recorded in two samples from SP17B, this material cannot currently be re-used within Western Access or Zone A1 of Southall Waterside due to potential risks to controlled waters. Further delineation of these exceedances may be undertaken, for example via leachate testing, to establish the extent of the elevated cadmium and whether these represent an actual risk to controlled waters. The remaining material from Stockpile SP17 i.e. SP17A and SP17C is considered suitable for use in Waterside Zone A1 or Western Access.

The 6F5 capping is suitable for use within Western Access, though one sample exceeded the Atkins' RTV criteria for TPH Aromatic C12-C16 for use in Zone A1. Further leachate analysis or delineation may be undertaken to establish if this material may be used in Zone A1 of the Waterside site.

The lagoon basal soils are suitable, from a human health perspective, for use within Public Open Space, however, the cadmium exceedance of the criteria protective of controlled waters in TP1 indicates that further testing / delineation is required to demonstrate these materials can be re-used within Western Access or Zone A1 of Southall Waterside. It is noted that TP1 is located within the north eastern section of the lagoon basal soils and may, p[potentially, be delineated via further testing in this area.

5. CONCLUSIONS

Based on review of the setting and the intended use of the Western Access scheme it is considered that, when assessing risks to human health, the site most closely aligns to a public parks and open space land use scenario and, as such, site won cover soils across the scheme should conform to these requirements. Soils re-used within Western Access needs to comply with the established criteria within the RSA, that are protective of controlled waters (in particular the Yeading Brook). Soils to be re-used on Southall Waterside should comply with the RTV criteria set out within the RS&OA Addendum No. 1, that are similarly protective of controlled waters.

Testing of site won soils within the lagoon, from both stockpiled materials (SP17) and lagoon basal soils has demonstrated that the material is suitable for inclusion in the Western Access scheme, from a human health perspective, under a Public Open Space scenario, with the exception of one sample containing trace asbestos (SP17B HP101), which should not be used in cover soils. However, exceedances of the criteria protective of controlled waters indicate that currently certain of the lagoon basal soils and the SP17B stockpile material is not suitable for re-use in Western Access or Zone A1 of the Southall Waterside site, without further testing or delineation to remove the impacted material. This is based on the presence of elevated cadmium and, to a lesser extent, TPH Aromatic C12-C16, in certain samples. Material in Stockpiles SP17A and SP17C, the western and eastern stockpiles, are considered suitable for re-use in both scenarios.

The 6F2 drainage blanket material is considered suitable for use in Western Access, as this meets both the criteria protective of controlled waters and human health.

Further leachate testing of the SP17B material and/or delineation of the basal soils, in the north eastern section of the lagoon, may support further re-use of the materials.

APPENDIX A

Soil Re-Use and Import Criteria

Atkins Southall Waterside Controlled Waters Remedial Target Values / Re-use Criteria

Table B-2 Revised controlled waters RTVs and Re-use Criteria for Soils Placed Above and Below the Marker Layer (replacing site specific assessment criteria provided in Arup DQRA, Appendix L)

Analyte	Controlled Waters Re-Use Criteria – Soils (mg/kg)								
	Zone A1	Zone A2	Zone A3	Zone A4	Zone A Soft Landscaping Large	Zone A Soft Landscaping Small	Zone B	Zone B Soft Landscaping	Zone C
Ammonium as N [†]	4.61E+02	5.50E+02	6.46E+02	1.54E+03	1.43E+02	3.57E+02	6.65E+02	5.59E+02	1.1E+03
Benzene	5.98E-01	2.90E+00	1.21E+00	1.44E+01	6.47E-02	2.55E-01	4.09E+08	1.98E+09	1.1E+04
Cadmium	1.18E+01	8.96E+00	1.28E+01	1.26E+01	8.12E+00	9.39E+00	6.11E+00	6.01E+00	7.20E+00
Cyanide	6.61E+01	8.30E+01	2.14E+02	9.07E+03	2.41E+02	3.31E+03	1.00E+18	9.38E+19	7.3E+09
Mercury	4.91E+00	4.24E+00	6.58+00	1.03E+01	2.66E+00	3.14E+00	4.43E+00	2.71E+00	1.0E+01
Benzo(a)pyrene	N/A	N/A	N/A	N/A	NA	NA	-*	-*	-*
Naphthalene	4.76E+01	8.86E+03	1.59E+02	2.65E+05	3.95E-01	1.31E+00	-*	-*	7.7E+18
Phenol	2.57E+01	5.12E+06	1.93E+02	1.02E+09	3.27E-01	2.29E+00	-*	-*	-*
Trichloroethene	5.16E-01	1.24E+00	8.92E-01	4.14E+00	1.57E-01	6.26E-01	3.77E+03	5.50E+03	7.5E+01
Phenanthrene	1.53E+01	1.65E+02	3.36E+01	1.41E+03	3.47E-01	9.79E-01	1.62E+16	4.89E+17	2.0E+09
TPH Aromatic C8-C10	5.11E+00	1.04E+01	8.31E+00	3.30E+01	1.79E+00	7.05E+00	4.64E+03	5.59E+03	2.8E+02
TPH Aromatic C10-C12	6.82E+00	1.18E+01	1.09E+01	3.66E+01	2.11E+00	8.42E+00	1.12E+03	1.20E+03	1.7E+02
TPH Aromatic C12-C16	1.53E+01	3.07E+01	2.47E+01	9.63E+01	5.27E+00	2.11E+01	9.85E+03	1.17E+04	7.2E+02
TPH Aliphatic C8-C10	9.70E+01	1.91E+02	1.58E+02	5.89E+02	3.28E+01	1.29E+02	4.69E+04	5.60E+04	4.0E+03
TPH Aliphatic C10-C12	6.09E+02	1.02E+03	1.05E+03	3.29E+03	1.94E+02	7.60E+02	6.50E+04	6.81E+04	1.3E+04
TPH Aliphatic C12-C16	2.46E+04	-*	5.38E+04	-*	2.28E+01	1.22E+02	-*	-*	-*

Criteria for Zones A1 to A4 have been based on a compliance point at Yeading Brook.

Criteria for Zones B and C have been based on a 250 m compliance point.

* No numerical target. Must not show any indication of gross contamination

N/A Not applicable

[†] Re-Use criteria for Ammonium as N are discussed further in the Atkins Remediation DQRA Addendum No. 1 (Appendix B of this report). These criteria may be revised following further discussions with the Regulators as further information becomes available.

Values in grey have been provided for information only. Travel times to the receptor of over 1000 years and therefore CoC not considered to present an unacceptable risk to controlled water receptor.

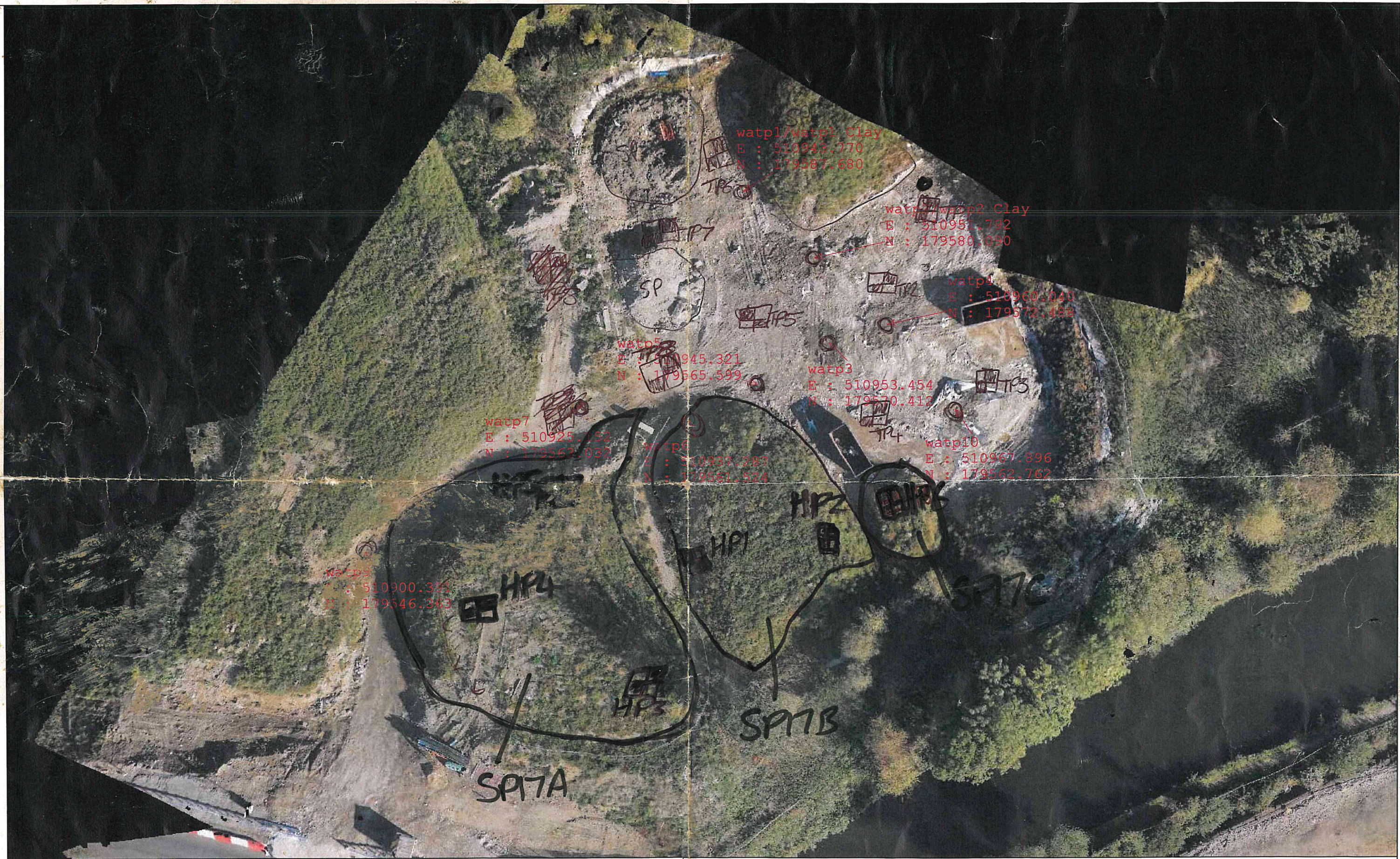
Material to be placed in the top 600 mm above the marker layer must meet these criteria in addition to those specified in Table 12-1 of Atkins DQRA (Appendix A) relating to Human Health (Recreated in Table 2.1 in this report)

Contaminant	Environmental Quality Standard Value (mg/l)	Level 3 Soil Re-use Criteria (mg/kg) [mg/l]
Total Ammonia	0.6	161 [120]
Benzene	0.01	2.22 [2.01]
Benzo(a)pyrene	0.00002	12.96 [0.004]
Cadmium	0.00025	12.05 [0.050]
Chromium VI	0.0034	23.99 [0.683]
Free Cyanide	0.001	0.085 (0.5)* [0.212]
Lead	0.0012	1,050.5 [0.241]
Mercury	0.00007	7.03 [0.0141]
Naphthalene	0.002	13.03 [0.403]
Phenol	0.0077	1.32 [1.59]

Note: * Free cyanide re-use criteria limited by the limit of detection of commercially available laboratories and has been set at 0.5mg/kg

APPENDIX B

Stockpile Locations and Drawings



H
BLACKWELL
R

7

CA Blackwell
Coggeshall Rd
Earls Colne
Colchester
CO6 2JX
01787 223131

St James
Southalll Waterside
Lagoon Testing

x 10 Shallow trial pits in lagoon
x 4/5 trial pits in SP12
x 24 Samples (KFD) (base)
x 10 x 10 x 4 (SP17)

Printed 15 OCT 18 17:14

Scale 1:200

13/09/18

01

APPENDIX C

Site Visit Record with Photos

Site Observation Report Form



SITE:	Southall Western Access	JOB NO:	CG/28308
Date and time:	10/12/2018 09:30 to 16:00	VISIT BY:	CRG
WEATHER:			
Time	Description		
09:30 to 16:00	Dry, sunny and warm with light winds		

Site operations

Work in hand

CGL to undertake trial pitting in SP17 to provide suitable soil samples for environmental testing.

Summary of works

CGL attended site on Monday 10th December 2018 to undertake 1 day's trial pitting across SP17 to obtain suitable soil samples at depth within the stockpiled material for environmental testing.

On visual inspection of the stockpiled material, it was clear that SP17 was more extensive than previously understood and comprises three separate stockpiles, referenced herein as SP17A, SP17B and SP17C respectively. SP17A was the largest stockpile located furthest west in the lagoon where no:3 trial pits were excavated to cover its full extent. SP17B was comparatively smaller and bounded by a pedestrian walkway along its western edge, no:2 trial pits were excavated in this stockpile to cover its full extent. SP17C was the smallest of the stockpiles, located furthest east adjacent to CGLs BH3A, a single pit was excavated in this stockpile.

In total no:5 trial pits were excavated across the three stockpiles and a sample was obtained from the upper (GL to 1.5m) and lower (1.5m to 4.2m) sections in each pit to provide a good representative sample of the material.

The composition of the stockpile material was highly variable comprising of a loose dark grey brown to brown very silty gravelly SAND or soft to firm dark orange brown to brown mottled grey black sandy very gravelly CLAY. The sand was medium to coarse grained and gravel was subangular to well-rounded flint, concrete and brick. A number of deleterious items were identified including fragments of textile, metal, tile, ceramic, plastic, glass, timber and dredged organic matter.

Chemical testing of SP17 was increased from 4 to 8 to accommodate the additional stockpiles and provide suitable coverage of the material.

Handwritten labels on the map include:

- SP
- HP1
- HP2
- HP3
- HP4
- SP7A
- SP7B
- SP7C
- TR1
- TR2
- TR3
- TR4
- TR5
- TR6
- TR7

Red text annotations provide coordinates and names for specific locations:

- Watp1: Watp1 Clay
E : 510925.774
N : 179587.880
- Watp2: Watp2 Clay
E : 510981.742
N : 179583.890
- Watp3: Watp3
E : 510953.454
N : 179580.412
- Watp4: Watp4
E : 510947.598
N : 179582.762
- Watp5: Watp5
E : 510945.321
N : 179565.399
- Watp6: Watp6
E : 510900.311
N : 179486.343
- Watp7: Watp7
E : 510935.152
N : 179561.529

[illegible]

Site Observation Report Form



SITE:	Southall Western Access	JOB NO:	CG/28308
Date and time:	11/12/2018 09:30 to 16:00	VISIT BY:	CRG
WEATHER:			
Time	Description		
09:30 to 16:00	Warm dry and sunny day with cloudy intervals in the afternoon		

Site operations

Work in hand	CGL to undertake trial pitting the in lagoon basal material and underlying strata.
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Summary of works

CGL attended site on Tuesday 11th December 2018 to undertake 1 day's trial pitting of the lagoon's basal material and underlying strata and obtain suitable soil samples for chemical analysis.

A total of 8 trial pits were excavated in the base of the lagoon to 1.0m below ground level (bgl) in areas not previously tested in recent trial pitting works undertaken by Blackwell. The lagoon basal material comprised of a shallow imported capping layer of 6F2 of between 0.2m and 0.4m thick. 6F2 was placed on a layer of terram membrane of which was installed by Butek. An environmental sample of the lagoon basal layer was taken in each of the 8 trial pits (TP1– TP8). Excavation continued in each trial pit to a maximum depth of 1.0m bgl to enable sampling of the underlying basal material (B) where samples of the underlying material were taken (TP1– TP8).

The basal material underlying the lagoon was comprised of a soft to firm light grey to brown very gravelly sandy clay. Gravel was angular to rounded, fine to coarse of flint, brick and concrete. Limited perched water was noted on top of the membrane at the base of the 6F2 capping.

Each trial pit was sampled, photographed and back filled on completion.

Trial pit location plan



Summary photos

	
TP1 location overview	TP1 excavation to 1.0m bgl
	
TP2 location overview	TP2 excavation to 1.0m bgl

	
TP3 location overview	TP3 excavation to 1.0m bgl
	
TP4 location overview	TP4 excavation to 1.0m bgl
	
TP5 location overview	TP5 excavation to 1.0m bgl
	
TP6 location overview	TP6 excavation to 1.0m bgl
	
TP7 location overview	TP7 excavation to 1.0m bgl

	
TP8 location overview at lagoon entrance	TP8 excavation to 1.0m bgl

APPENDIX D

Laboratory Results

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Analytical Report Number : 18-22014

Project / Site name:	Southall	Samples received on:	11/12/2018
Your job number:	CG-28308	Samples instructed on:	11/12/2018
Your order number:		Analysis completed by:	21/12/2018
Report Issue Number:	1	Report issued on:	21/12/2018
Samples Analysed:	8 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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

Analytical Report Number: 18-22014

Project / Site name: Southall

Lab Sample Number	1112515	1112516	1112517	1112518	1112519
Sample Reference	SP17B	SP17B	SP17A	SP17A	SP17A
Sample Number	HP101	HP102	HP305	HP306	HP407
Depth (m)	1.00	3.50	1.10	4.20	1.00
Date Sampled	10/12/2018	10/12/2018	10/12/2018	10/12/2018	10/12/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	19	21
Total mass of sample received	kg	0.001	NONE	1.2	1.2

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile & Crocidolite	Chrysotile & Crocidolite & Anthophyllite	Amosite	Amosite	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.002	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	0.002	< 0.001	< 0.001	< 0.001	< 0.001

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.4	7.7	8.0	8.2	8.4
Total Cyanide	mg/kg	1	MCERTS	4	7	1	1	2
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	4900	10000	3300	2200	2400
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.8	2.0	1.1	0.83	1.0
Ammonia as NH ₃	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	7.7	4.4
Ammonium as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	8.1	4.7
Organic Matter	%	0.1	MCERTS	5.9	4.7	3.3	1.8	3.0

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	1.3	1.7	0.62	0.34	0.63
Acenaphthylene	mg/kg	0.05	MCERTS	0.95	0.86	0.51	0.25	0.37
Acenaphthene	mg/kg	0.05	MCERTS	0.87	0.61	0.32	0.21	0.29
Fluorene	mg/kg	0.05	MCERTS	0.89	0.76	0.38	0.25	0.35
Phenanthrene	mg/kg	0.05	MCERTS	10	7.9	3.9	2.1	3.4
Anthracene	mg/kg	0.05	MCERTS	2.7	2.3	0.99	0.50	0.91
Fluoranthene	mg/kg	0.05	MCERTS	19	17	8.0	4.1	5.7
Pyrene	mg/kg	0.05	MCERTS	16	15	6.8	3.5	4.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	10	12	4.3	2.2	2.9
Chrysene	mg/kg	0.05	MCERTS	8.1	10	3.7	1.8	2.6
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	12	13	5.3	2.7	3.4
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	5.9	6.2	2.5	1.3	1.9
Benzo(a)pyrene	mg/kg	0.05	MCERTS	11	12	5.3	2.6	3.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	7.8	6.6	3.3	1.6	2.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.7	1.5	0.73	0.36	0.47
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	9.0	7.7	3.9	1.9	2.7
Coronene	mg/kg	0.05	NONE	3.4	2.2	< 0.05	< 0.05	0.81

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	120	120	50	26	37
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Analytical Report Number: 18-22014

Project / Site name: Southall

Lab Sample Number	1112515	1112516	1112517	1112518	1112519
Sample Reference	SP17B	SP17B	SP17A	SP17A	SP17A
Sample Number	HP101	HP102	HP305	HP306	HP407
Depth (m)	1.00	3.50	1.10	4.20	1.00
Date Sampled	10/12/2018	10/12/2018	10/12/2018	10/12/2018	10/12/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	12	17	5.6	4.0	8.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	46	73	19	19	23
Barium (aqua regia extractable)	mg/kg	1	MCERTS	380	380	210	140	190
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.8	1.8	0.97	1.3	1.3
Boron (water soluble)	mg/kg	0.2	MCERTS	6.3	8.2	4.2	3.6	4.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	18	13	5.6	1.9	3.9
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	120	93	50	50	53
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	130	93	50	50	54
Copper (aqua regia extractable)	mg/kg	1	MCERTS	590	430	140	110	130
Lead (aqua regia extractable)	mg/kg	1	MCERTS	440	600	190	100	190
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.3	1.9	1.1	1.6	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	68	62	44	31	40
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.5	2.7	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	68	63	57	60	48
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	900	1000	420	230	350

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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	1.0	1.3	1.1
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	14	6.4	9.7	9.1	12
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	76	53	37	22	36
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	360	270	190	83	140
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	450	330	240	120	190

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	1.2	2.5	2.5	< 1.0	3.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	8.1	7.7	4.6	3.1	11
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	68	61	31	14	32
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	310	220	120	35	100
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	390	290	160	52	150



Analytical Report Number: 18-22014

Project / Site name: Southall

Lab Sample Number				1112515	1112516	1112517	1112518	1112519
Sample Reference				SP17B	SP17B	SP17A	SP17A	SP17A
Sample Number				HP101	HP102	HP305	HP306	HP407
Depth (m)				1.00	3.50	1.10	4.20	1.00
Date Sampled				10/12/2018	10/12/2018	10/12/2018	10/12/2018	10/12/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

VOCs

Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-22014

Project / Site name: Southall

Lab Sample Number				1112520	1112521	1112522		
Sample Reference				SP17A	SP17A	SP17B		
Sample Number				HP408	HP510	HP611		
Depth (m)				2.50	2.40	1.00		
Date Sampled				10/12/2018	10/12/2018	10/12/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	17	21	18		
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.2		

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	< 0.001		
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	< 0.001		

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.9	8.2	9.4		
Total Cyanide	mg/kg	1	MCERTS	2	< 1	4		
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Total Sulphate as SO ₄	mg/kg	50	MCERTS	2700	3600	10000		
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.75	1.3	1.8		
Ammonia as NH ₃	mg/kg	0.5	MCERTS	12	27	< 0.5		
Ammonium as NH ₄	mg/kg	0.5	MCERTS	13	29	< 0.5		
Organic Matter	%	0.1	MCERTS	2.7	3.3	4.3		

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	0.64	0.50	0.50		
Acenaphthylene	mg/kg	0.05	MCERTS	0.47	0.46	0.55		
Acenaphthene	mg/kg	0.05	MCERTS	0.64	0.32	0.36		
Fluorene	mg/kg	0.05	MCERTS	0.61	0.40	0.55		
Phenanthrene	mg/kg	0.05	MCERTS	5.1	3.6	5.0		
Anthracene	mg/kg	0.05	MCERTS	1.4	0.78	1.3		
Fluoranthene	mg/kg	0.05	MCERTS	8.8	6.6	9.4		
Pyrene	mg/kg	0.05	MCERTS	7.4	5.7	7.9		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.7	3.6	5.1		
Chrysene	mg/kg	0.05	MCERTS	3.6	2.8	4.5		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	4.6	4.7	6.6		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	3.1	1.7	2.6		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	5.1	4.3	6.0		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.2	2.7	4.0		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.65	0.48	0.88		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.6	3.2	4.8		
Coronene	mg/kg	0.05	NONE	1.1	< 0.05	1.6		

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	55	42	62		
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Analytical Report Number: 18-22014

Project / Site name: Southall

Lab Sample Number				1112520	1112521	1112522		
Sample Reference				SP17A	SP17A	SP17B		
Sample Number				HP408	HP510	HP611		
Depth (m)				2.50	2.40	1.00		
Date Sampled				10/12/2018	10/12/2018	10/12/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	7.4	5.6	8.1		
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	26	22		
Barium (aqua regia extractable)	mg/kg	1	MCERTS	150	190	260		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0	1.1	1.2		
Boron (water soluble)	mg/kg	0.2	MCERTS	5.8	4.3	3.6		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	3.9	6.3	11		
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2		
Chromium (III)	mg/kg	1	NONE	47	57	77		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	48	57	77		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	120	170	270		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	180	200	260		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1.3	1.2		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	47	42	45		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.0	< 1.0	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	45	54	48		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	280	360	640		

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	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	4.7	1.7	1.8		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	22	14	16		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	40	38	66		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	120	150	290		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	180	200	380		

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	1.9		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	2.6	3.1	7.1		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	19	16	52		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	38	40	170		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	59	59	230		



Analytical Report Number: 18-22014

Project / Site name: Southall

Lab Sample Number				1112520	1112521	1112522		
Sample Reference				SP17A	SP17A	SP17B		
Sample Number				HP408	HP510	HP611		
Depth (m)				2.50	2.40	1.00		
Date Sampled				10/12/2018	10/12/2018	10/12/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		



Analytical Report Number: 18-22014

Project / Site name: Southall

Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1112515	SP17B	1.00	123	Loose Fibres	Chrysotile & Crocidolite	0.002	0.002
1112516	SP17B	3.50	126	Loose Fibres	Chrysotile & Crocidolite & Anthophyllite	< 0.001	< 0.001
1112517	SP17A	1.10	134	Loose Fibres	Amosite	< 0.001	< 0.001
1112518	SP17A	4.20	119	Loose Fibres	Amosite	< 0.001	< 0.001
1112519	SP17A	1.00	125	Loose Fibres	Chrysotile	< 0.001	< 0.001
1112522	SP17B	1.00	129	Loose Fibres	Chrysotile	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.



Analytical Report Number : 18-22014

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 *
1112515	SP17B	HP101	1.00	Brown clay and loam with gravel and vegetation.
1112516	SP17B	HP102	3.50	Brown loam and clay with gravel and vegetation.
1112517	SP17A	HP305	1.10	Brown clay and loam with gravel and vegetation.
1112518	SP17A	HP306	4.20	Brown clay with gravel.
1112519	SP17A	HP407	1.00	Brown clay with gravel.
1112520	SP17A	HP408	2.50	Brown clay with gravel.
1112521	SP17A	HP510	2.40	Brown clay with gravel.
1112522	SP17B	HP611	1.00	Brown clay and loam with gravel.

Analytical Report Number : 18-22014

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
Ammonia as NH ₃ in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Free cyanide in soil	Determination of free 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
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
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 (Automated) 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 ^{***}	L009-PL	D	MCERTS
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
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. MCERTS accredited except Coronene.	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, 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

Iss No 18-22014-1 Southall CG-28308

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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 : 18-22014

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
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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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Analytical Report Number : 18-22293

Project / Site name:	Southall	Samples received on:	12/12/2018
Your job number:	CG-28308	Samples instructed on:	12/12/2018
Your order number:		Analysis completed by:	27/12/2018
Report Issue Number:	1	Report issued on:	27/12/2018
Samples Analysed:	16 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number	1114489	1114490	1114491	1114492	1114493
Sample Reference	TP1-6F2	TP1-B	TP2-6F2	TP2-B	TP3-6F2
Sample Number	TP101F	TP102B	TP201	TP202	TP301
Depth (m)	0.10	0.70	0.10	1.00	0.10
Date Sampled	11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	63	< 0.1
Moisture Content	%	N/A	NONE	10	13
Total mass of sample received	kg	0.001	NONE	1.8	1.4

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.9	7.8	10.6	8.2	10.0
Total Cyanide	mg/kg	1	MCERTS	< 1	15	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	8300	1400	8500	1300	6000
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.67	0.057	0.81	0.28	0.72
Ammonia as NH ₃	mg/kg	0.5	MCERTS	0.6	37	3.7	6.6	< 0.5
Ammonium as NH ₄	mg/kg	0.5	MCERTS	0.7	40	4.0	7.0	< 0.5
Organic Matter	%	0.1	MCERTS	0.3	6.7	0.3	1.1	0.6

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	< 0.05	0.31	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.80	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.27	< 0.05	0.68	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.37	< 0.05	0.67	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.33	5.0	0.69	7.5	0.94
Anthracene	mg/kg	0.05	MCERTS	< 0.05	1.4	0.19	2.1	0.26
Fluoranthene	mg/kg	0.05	MCERTS	0.75	14	1.1	7.9	2.0
Pyrene	mg/kg	0.05	MCERTS	0.68	11	0.96	6.6	1.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.51	7.8	0.71	4.0	1.2
Chrysene	mg/kg	0.05	MCERTS	0.43	7.3	0.61	3.3	0.93
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.83	14	0.98	4.2	1.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.24	5.1	0.32	1.8	0.66
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.57	11	0.66	3.6	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.36	7.6	0.40	1.8	0.81
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	1.6	< 0.05	0.40	0.19
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.41	8.3	0.40	1.9	0.89
Coronene	mg/kg	0.05	NONE	< 0.05	2.9	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	5.1	98	7.0	46	13
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Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number	1114489	1114490	1114491	1114492	1114493
Sample Reference	TP1-6F2	TP1-B	TP2-6F2	TP2-B	TP3-6F2
Sample Number	TP101F	TP102B	TP201	TP202	TP301
Depth (m)	0.10	0.70	0.10	1.00	0.10
Date Sampled	11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	14	14	6.4	1.4	15
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	48	7.2	12	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	170	540	150	74	200
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.45	1.8	0.56	0.89	0.55
Boron (water soluble)	mg/kg	0.2	MCERTS	2.7	3.8	3.6	2.1	6.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.6	21	2.1	< 0.2	2.0
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	36	110	33	28	40
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	36	110	33	28	40
Copper (aqua regia extractable)	mg/kg	1	MCERTS	320	330	440	37	280
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	790	96	43	100
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	3.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	71	16	25	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.6	< 1.0	2.5
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	27	80	28	37	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	520	1100	260	82	500

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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	3.7	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	22	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	460	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	490	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	3.2	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	14	9.5	18	9.4
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	130	27	63	23
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	16	690	88	69	100
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	25	840	130	150	130



Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number	1114489	1114490	1114491	1114492	1114493
Sample Reference	TP1-6F2	TP1-B	TP2-6F2	TP2-B	TP3-6F2
Sample Number	TP101F	TP102B	TP201	TP202	TP301
Depth (m)	0.10	0.70	0.10	1.00	0.10
Date Sampled	11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

VOCs

Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114494	1114495	1114496	1114497	1114498
Sample Reference				TP3-B	TP4-6F2	TP4-B	TP5-6F2	TP5-B
Sample Number				TP302	TP401	TP402	TP501	TP502
Depth (m)				0.90	0.20	1.10	0.30	0.60
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	16	12	16	11	14
Total mass of sample received	kg	0.001	NONE	1.5	1.7	1.6	1.7	1.6

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
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3	10.2	8.2	10.3	9.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1800	14000	1800	10000	3000
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.50	1.8	0.51	1.0	0.99
Ammonia as NH ₃	mg/kg	0.5	MCERTS	4.2	0.9	6.8	1.4	3.8
Ammonium as NH ₄	mg/kg	0.5	MCERTS	4.4	0.9	7.2	1.5	4.0
Organic Matter	%	0.1	MCERTS	1.4	0.7	1.4	0.8	1.0

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	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.7	1.1	0.70	0.75	0.45
Anthracene	mg/kg	0.05	MCERTS	0.53	0.33	0.20	0.22	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	4.6	2.4	1.8	2.1	1.2
Pyrene	mg/kg	0.05	MCERTS	3.9	2.1	1.5	1.9	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.4	1.4	1.1	1.2	0.72
Chrysene	mg/kg	0.05	MCERTS	1.6	1.1	0.73	0.77	0.59
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.0	1.8	1.3	1.7	1.1
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.74	0.49	0.39	0.43	0.29
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.3	1.3	1.0	1.2	0.89
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.2	0.66	0.55	0.63	0.47
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.29	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.3	0.75	0.60	0.61	0.51
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	24	13	9.9	11	7.5
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Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114494	1114495	1114496	1114497	1114498
Sample Reference				TP3-B	TP4-6F2	TP4-B	TP5-6F2	TP5-B
Sample Number				TP302	TP401	TP402	TP501	TP502
Depth (m)				0.90	0.20	1.10	0.30	0.60
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	13	3.7	16	4.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	7.6	15	15	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	180	99	200	120
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	0.53	1.3	0.66	0.99
Boron (water soluble)	mg/kg	0.2	MCERTS	2.7	7.5	2.6	5.3	2.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	1.5	< 0.2	2.3	0.4
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	35	36	38	42	30
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	36	38	42	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	47	420	59	210	55
Lead (aqua regia extractable)	mg/kg	1	MCERTS	63	160	62	150	65
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	23	33	36	30
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.4	< 1.0	< 1.0	< 1.0	1.4
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	56	25	47	34	50
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	640	120	490	160

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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	2.0	1.8	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	2.7	4.4	2.4	7.3	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	17	24	< 8.0	23	13
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	80	82	14	99	66
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	99	110	21	130	80

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	4.5	< 2.0	< 2.0	3.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	41	24	< 10	28	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	99	120	15	120	11
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	140	150	20	150	13



Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114494	1114495	1114496	1114497	1114498
Sample Reference				TP3-B	TP4-6F2	TP4-B	TP5-6F2	TP5-B
Sample Number				TP302	TP401	TP402	TP501	TP502
Depth (m)				0.90	0.20	1.10	0.30	0.60
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number	1114499	1114500	1114501	1114502	1114503
Sample Reference	TP6-6F2	TP6-B	TP7-6F2	TP7-B	TP8-6F2
Sample Number	TP601	TP602	TP701	TP702	TP801
Depth (m)	0.60	1.30	0.30	1.20	0.50
Date Sampled	11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	15
Total mass of sample received	kg	0.001	NONE	1.7	1.7

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
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.2	8.6	11.0	8.4	11.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	11000	1800	14000	1300	13000
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.0	0.40	0.63	0.21	0.46
Ammonia as NH ₃	mg/kg	0.5	MCERTS	1.0	5.3	3.1	3.7	1.4
Ammonium as NH ₄	mg/kg	0.5	MCERTS	1.1	5.6	3.3	3.9	1.5
Organic Matter	%	0.1	MCERTS	1.4	1.2	1.4	0.4	1.2

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	< 0.05	< 0.05	0.66	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.72	< 0.05	0.32
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.38	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.4	< 0.05	0.29
Phenanthrene	mg/kg	0.05	MCERTS	1.6	0.47	9.3	< 0.05	2.7
Anthracene	mg/kg	0.05	MCERTS	0.45	0.15	2.7	< 0.05	0.77
Fluoranthene	mg/kg	0.05	MCERTS	3.7	1.1	12	0.38	4.8
Pyrene	mg/kg	0.05	MCERTS	3.4	0.98	9.4	0.30	4.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.4	0.55	6.6	0.21	2.6
Chrysene	mg/kg	0.05	MCERTS	1.6	0.52	3.4	0.18	1.8
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.8	0.82	5.1	0.25	2.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.3	0.30	2.3	0.13	0.90
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.4	0.68	4.5	0.24	2.0
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.3	0.35	2.3	< 0.05	1.3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.22	< 0.05	0.78	< 0.05	0.41
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.4	0.41	2.5	< 0.05	1.3
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	23	6.3	64	1.7	26
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Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114499	1114500	1114501	1114502	1114503
Sample Reference				TP6-6F2	TP6-B	TP7-6F2	TP7-B	TP8-6F2
Sample Number				TP601	TP602	TP701	TP702	TP801
Depth (m)				0.60	1.30	0.30	1.20	0.50
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	8.8	2.0	6.3	1.7	8.3
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	12	13	9.5	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	180	92	160	75	150
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.73	1.0	0.68	1.0	0.65
Boron (water soluble)	mg/kg	0.2	MCERTS	6.0	2.3	4.6	1.5	3.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.4	0.4	1.0	< 0.2	1.5
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	42	39	28	36	33
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	42	39	28	36	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	380	51	160	28	120
Lead (aqua regia extractable)	mg/kg	1	MCERTS	100	73	77	24	86
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1.7	< 0.3	< 0.3	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29	30	18	35	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	3.6	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	35	43	31	50	34
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	300	110	250	89	300

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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	4.8	< 2.0	15	< 2.0	7.8
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	26	< 8.0	55	< 8.0	32
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	160	< 8.0	220	< 8.0	150
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	200	< 10	290	< 10	190

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	5.0	< 1.0	1.8
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.1	< 2.0	40	< 2.0	11
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	32	12	250	< 10	61
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	130	18	720	< 10	200
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	160	30	1000	< 10	280



Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114499	1114500	1114501	1114502	1114503
Sample Reference				TP6-6F2	TP6-B	TP7-6F2	TP7-B	TP8-6F2
Sample Number				TP601	TP602	TP701	TP702	TP801
Depth (m)				0.60	1.30	0.30	1.20	0.50
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114504				
Sample Reference				TP8-B				
Sample Number				TP802				
Depth (m)				1.40				
Date Sampled				11/12/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	12				
Total mass of sample received	kg	0.001	NONE	1.5				

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-				
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected				
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-				
Asbestos Quantification Total	%	0.001	ISO 17025	-				

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.8				
Total Cyanide	mg/kg	1	MCERTS	< 1				
Free Cyanide	mg/kg	1	MCERTS	< 1				
Total Sulphate as SO ₄	mg/kg	50	MCERTS	3700				
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.93				
Ammonia as NH ₃	mg/kg	0.5	MCERTS	20				
Ammonium as NH ₄	mg/kg	0.5	MCERTS	21				
Organic Matter	%	0.1	MCERTS	1.8				

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	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	0.91				
Anthracene	mg/kg	0.05	MCERTS	0.25				
Fluoranthene	mg/kg	0.05	MCERTS	2.1				
Pyrene	mg/kg	0.05	MCERTS	1.8				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.2				
Chrysene	mg/kg	0.05	MCERTS	0.88				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.7				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.53				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.79				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.84				
Coronene	mg/kg	0.05	NONE	< 0.05				

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	12				
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Project / Site name: Southall

Lab Sample Number				1114504				
Sample Reference				TP8-B				
Sample Number				TP802				
Depth (m)				1.40				
Date Sampled				11/12/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	5.2				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15				
Barium (aqua regia extractable)	mg/kg	1	MCERTS	130				
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0				
Boron (water soluble)	mg/kg	0.2	MCERTS	3.5				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.8				
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2				
Chromium (III)	mg/kg	1	NONE	39				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	96				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220				

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	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	2.9				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	24				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	160				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	190				

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	3.5				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	7.6				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	26				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	100				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	140				

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Project / Site name: Southall

Lab Sample Number				1114504				
Sample Reference				TP8-B				
Sample Number				TP802				
Depth (m)				1.40				
Date Sampled				11/12/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0				
Chloroethane	µg/kg	1	NONE	< 1.0				
Bromomethane	µg/kg	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/kg	1	NONE	< 1.0				
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0				
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloromethane	µg/kg	1	MCERTS	< 1.0				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0				
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0				
Benzene	µg/kg	1	MCERTS	< 1.0				
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloroethene	µg/kg	1	MCERTS	< 1.0				
Dibromomethane	µg/kg	1	MCERTS	< 1.0				
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/kg	1	NONE	< 1.0				
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0				
Chlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-Xylene	µg/kg	1	MCERTS	< 1.0				
Styrene	µg/kg	1	MCERTS	< 1.0				
Tribromomethane	µg/kg	1	NONE	< 1.0				
o-Xylene	µg/kg	1	MCERTS	< 1.0				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0				
Bromobenzene	µg/kg	1	MCERTS	< 1.0				
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0				



Analytical Report Number: 18-22293

Project / Site name: Southall

Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1114490	TP1-B	0.70	158	Loose Fibres	Chrysotile	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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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 *
1114489	TP1-6F2	TP101F	0.10	Light brown loam and sand with stones and gravel.
1114490	TP1-B	TP102B	0.70	Brown loam and sand with vegetation and gravel.
1114491	TP2-6F2	TP201	0.10	Light brown loam and sand with gravel and rubble.
1114492	TP2-B	TP202	1.00	Brown loam and clay with stones and gravel
1114493	TP3-6F2	TP301	0.10	Light grey loam and sand with gravel and vegetation.
1114494	TP3-B	TP302	0.90	Brown clay and loam with vegetation and gravel
1114495	TP4-6F2	TP401	0.20	Light grey loam and sand with gravel and glass.
1114496	TP4-B	TP402	1.10	Brown clay and sand with gravel and vegetation.
1114497	TP5-6F2	TP501	0.30	Brown loam and sand with gravel and brick.
1114498	TP5-B	TP502	0.60	Brown loam and clay with gravel and vegetation.
1114499	TP6-6F2	TP601	0.60	Brown loam and sand with vegetation and gravel.
1114500	TP6-B	TP602	1.30	Brown clay and sand with vegetation and gravel
1114501	TP7-6F2	TP701	0.30	Brown loam and sand with gravel and glass.
1114502	TP7-B	TP702	1.20	Brown clay and sand with gravel and vegetation.
1114503	TP8-6F2	TP801	0.50	Brown loam and sand with rubble and gravel
1114504	TP8-B	TP802	1.40	Brown clay and sand with gravel and rubble.

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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
Ammonia as NH ₃ in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Free cyanide in soil	Determination of free 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
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
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 (Automated) 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 ^{***}	L009-PL	D	MCERTS
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
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. MCERTS accredited except Coronene.	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, 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

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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) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

APPENDIX E

Data Assessment Summary

Appendix E2: Data assessment summary – potential soil risks – Lagoon Basal Soils and 6F2

Determinand	Western Access Re-Use Criteria Level 3 Soil Re-use Criteria	Atkins RTV Zone A1	S4UL ¹ Public Park [C4SL Public Park] GAC (1% SOM)	Measured range (mg/kg)	Number of Exceedances Western Access Level 3 Re-Use Criteria	Number of Exceedances of Atkins RTV	Number of Exceedances of S4UL Public Park
Antimony		-	NA ²	1.4 to 16		-	-
Arsenic		-	NA	7.2 to 48		-	-
Barium		-	NA	74 to 540		-	-
Beryllium		-	NA	0.45 to 1.8		-	-
Boron (water soluble)		-	NA	1.5 to 7.5		-	-
Cadmium	12.05	11.8	NA	0.3 to 21	1 of 16 (TP1-B: TP102B) – Basal soil	1 of 16 (TP1-B: TP102B) – Basal soil	-
Chromium (III)		-	NA	28 to 110		-	-
Chromium (VI)	23.99	-	NA	<1.2		-	-
Copper		-	44,000	28 to 440		-	0 of 16
Lead ³	1050.5	-	1300 ⁴	24 to 790		-	0 of 16
Mercury (inorganic)	7.03	4.91	NA	0.5 to 3.3	0 of 16	0 of 16	-
Nickel		-	NA	16 to 71		-	-
Selenium		-	NA	1.4 to 3.6		-	-
Vanadium		-	NA	25 to 80		-	-
Zinc		-	170,000	82 to 1100		-	0 of 16
Benzene	2.22	0.598	NA	<1.0	0 of 16	0 of 16	-
Toluene		-	NA	<1.0		-	-
Ethylbenzene		-	NA	<1.0		-	-
m-xylene ⁵		-	NA	<1.0		-	-
o-xylene		-	NA	<1.0		-	-
p-xylene		-	NA	<1.0		-	-
Phenol ⁶	1.32	25.7	NA	<1.0	0 of 16	0 of 16	-
Cyanide ⁷	0.085	66.1	- ⁸	<1 to 15	0 of 16	0 of 16	-
Trichloroethene		0.516		<1.0		0 of 16	-
TPH aliphatic EC5-6		-	95,000	<0.001		-	0 of 16
TPH aliphatic EC>6-8		-	150,000	<0.001		-	0 of 16
TPH aliphatic EC>8-10		97.0	14,000	<0.001		0 of 16	0 of 16
TPH aliphatic EC>10-12		-	21,000	1.8 to 2.0		-	0 of 16
TPH aliphatic EC>12-16		-	25,000	2.4 to 25		-	0 of 16
TPH aliphatic EC>16-35		-	450,000	27 to 515		-	0 of 16
TPH aromatic EC5-7		-	76,000	<0.001		-	0 of 16
TPH aromatic EC>7-8		-	87,000	<0.001		-	0 of 16
TPH aromatic EC>8-10		5.11	7,200	<0.001		0 of 16	0 of 16
TPH aromatic EC>10-12		6.82	9,200	1.8 to 5		0 of 16	0 of 16
TPH aromatic EC>12-16		15.3	10,000	<2.0 to 40		1 of 16	0 of 16
TPH aromatic EC>16-21		-	7,600	11 to 720		-	0 of 16
TPH aromatic EC>21-35		-	7,800	13 to 1000		-	0 of 16
Naphthalene	13.03	47.6	6,200	0.31 to 0.66	0 of 16	0 of 16	0 of 16
Benzo(a)pyrene	12.96	n/a	11	0.24 to 11	0 of 16	n/a	0 of 16
Acenaphthylene		-	29,000	0.32 to 0.8		-	0 of 16
Acenaphthene		-	29,000	0.27 to 0.68		-	0 of 16
Fluorene		-	20,000	0.29 to 1.4		-	0 of 16
Phenanthrene		15.3	6,200	0.33 to 9.3		0 of 16	0 of 16
Anthracene		-	150,000	0.15 to 2.7		-	0 of 16
Fluoranthene		-	6,300	0.38 to 14		-	0 of 16

¹ Land Quality Management, (2015). *The LQM/CIEH S4ULs for Human Health Risk Assessment*. Land Quality Press, Nottingham.

² Not applicable as below CGL residential without plant uptake GAC and therefore not assess further

³ Published C4SL.

⁴ As no S4UL is available for assessment of lead concentrations, comparisons have been made to the data to the Defra C4SL for a public open space (parks)

⁵ Concentrations for total xylenes should be compared against m-xylene for fresh spills and to o-xylene for all other cases.

⁶ GAC relates to phenol (C₆H₅OH) only.

⁷ Assessment criteria for cyanide derived by Atkins based on acute exposure for a 0-6 year old child.

⁸ No S4UL values published for cyanide

WESTERN ACCESS, SOUTHALL
Proposed Landscape Cover Soils



Determinand	Western Access Re-Use Criteria Level 3 Soil Re- use Criteria	Atkins RTV Zone A1	S4UL ¹ Public Park [C4SL Public Park] GAC (1% SOM)	Measured range (mg/kg)	Number of Exceedances Western Access Level 3 Re-Use Criteria	Number of Exceedances of Atkins RTV	Number of Exceedances of S4UL Public Park
Pyrene		-	15,000	0.3 to 11		-	0 of 16
Benzo(a)anthracene		-	49	0.21 to 7.8		-	0 of 16
Chrysene		-	93	0.18 to 7.3		-	0 of 16
Benzo(b)fluoranthene		-	13	0.25 to 14		-	0 of 16
Benzo(k)fluoranthene		-	370	0.13 to 5.1		-	0 of 16
Indeno(1,2,3-		-	150	0.35 to 7.6		-	0 of 16
Dibenzo(a,h)anthracen		-	1.10	0.19 to 1.6		-	0 of 16
Benzo(g,h,i)perylene		-	1,400	0.4 to 8.3		-	0 of 16

Appendix E1: Data assessment summary – potential soil risks – Stockpile 17

Determinand	Western Access Re-Use Criteria Level 3 Soil Re- use Criteria	Atkins RTV Zone A1	S4UL ¹ Public Park [C4SL Public Park] GAC (1% SOM)	Measured range (mg/kg)	Number of Exceedances of Western Access Level 3 Soil Re Use Criteria	Number of Exceedances of Atkins RTV	Number of Exceedances of S4UL ² Public Park [C4SL Public Park] GAC (1% SOM)
Antimony		-	NA ³	4 to 17	-	-	0 of 8
Arsenic		-	NA	19 to 73	-	-	0 of 8
Barium		-	NA	140 to 380	-	-	0 of 8
Beryllium		-	NA	0.97 to 1.9	-	-	0 of 8
Boron (water soluble)		-	NA	3.6 to 8.2	-	-	0 of 8
Cadmium	12.05	11.8	NA	1.9 to 18	2 of 8 (HP01 and HP02)	2 of 8 (HP01 and HP02)	0 of 8
Chromium (III)		-	NA	50 to 120	-	-	0 of 8
Chromium (VI)	23.99	-	NA	<1.2	0 of 8	-	0 of 8
Copper		-	44,000	110 to 590	-	-	0 of 8
Lead ⁴	1050.5	-	1300 ⁵	100 to 600	0 of 8	-	0 of 8
Mercury (inorganic)	7.03	4.91	NA	<0.3 to 2.3	0 of 8	0 of 8	0 of 8
Nickel		-	NA	31 to 68	-	-	0 of 8
Selenium		-	NA	<1.0 to 2.7	-	-	0 of 8
Vanadium		-	NA	48 to 68	-	-	0 of 8
Zinc		-	170,000	230 to 1000	-	-	0 of 8
Benzene	2.22	0.598	NA	<1.0	0 of 8	0 of 8	0 of 8
Toluene		-	NA	<1.0	-	-	0 of 8
Ethylbenzene		-	NA	<1.0	-	-	0 of 8
m-xylene ⁶		-	NA	<1.0	-	-	0 of 8
o-xylene		-	NA	<1.0	-	-	0 of 8
p-xylene		-	NA	<1.0	-	-	0 of 8
Phenol ⁷	1.32	25.7	NA	<1.0	0 of 8	0 of 8	0 of 8
Cyanide ⁸	0.085	66.1	NA ⁹	1 to 7	0 of 8	0 of 8	0 of 8
Trichloroethene		0.516	-	<1.0		0 of 8	-
TPH aliphatic EC5-6		-	95,000	<0.001	-	-	0 of 8
TPH aliphatic EC>6-8		-	150,000	<0.001	-	-	0 of 8
TPH aliphatic EC>8-10		97.0	14,000	<0.001	-	0 of 8	0 of 8
TPH aliphatic EC>10-12		-	21,000	<1.0 to 1.3	-	-	0 of 8
TPH aliphatic EC>12-16		-	25,000	6.4 to 14	-	-	0 of 8
TPH aliphatic EC>16-35		-	450,000	105 to 446	-	-	0 of 8
TPH aromatic EC5-7		-	76,000	<0.001	-	-	0 of 8
TPH aromatic EC>7-8		-	87,000	<0.001	-	-	0 of 8
TPH aromatic EC>8-10		5.11	7,200	<0.001	-	0 of 8	0 of 8
TPH aromatic EC>10-12		6.82	9,200	<1.0 to 3.0	-	0 of 8	0 of 8
TPH aromatic EC>12-16		15.3	10,000	3.1 to 11	-	0 of 8	0 of 8
TPH aromatic EC>16-21		-	7,600	13 to 68	-	-	0 of 8
TPH aromatic EC>21-35		-	7,800	35 to 310	-	-	0 of 8
Naphthalene	13.03	47.6	6,200	0.34 to 1.7	0 of 8	0 of 8	0 of 8
Benzo(a)pyrene	12.96	n/a	11	2.6 to 12	0 of 8	n/a	0 of 8
Acenaphthylene		-	29,000	0.25 to 0.95	-	-	0 of 8
Acenaphthene		-	29,000	0.21 to 0.87	-	-	0 of 8
Fluorene		-	20,000	0.25 to 0.89	-	-	0 of 8
Phenanthrene		15.3	6,200	2.1 to 10	-	0 of 8	0 of 8
Anthracene		-	150,000	0.5 to 2.7	-	-	0 of 8

¹ Land Quality Management, (2015). *The LQM/CIEH S4ULs for Human Health Risk Assessment*. Land Quality Press, Nottingham.

² Land Quality Management, (2015). *The LQM/CIEH S4ULs for Human Health Risk Assessment*. Land Quality Press, Nottingham.

³ Not applicable as below CGL residential without plant uptake GAC and therefore not assess further

⁴ Published C4SL.

⁵ As no S4UL is available for assessment of lead concentrations, comparisons have been made to the data to the Defra C4SL for a public open space (parks)

⁶ Concentrations for total xylenes should be compared against m-xylene for fresh spills and to o-xylene for all other cases.

⁷ GAC relates to phenol (C₆H₅OH) only.

⁸ Assessment criteria for cyanide derived by Atkins based on acute exposure for a 0-6 year old child.

⁹ No S4UL values published for cyanide

Determinand	Western Access Re-Use Criteria Level 3 Soil Re- use Criteria	Atkins RTV Zone A1	S4UL ¹ Public Park [C4SL Public Park] GAC (1% SOM)	Measured range (mg/kg)	Number of Exceedances of Western Access Level 3 Soil Re Use Criteria	Number of Exceedances of Atkins RTV	Number of Exceedances of S4UL ² Public Park [C4SL Public Park] GAC (1% SOM)
Fluoranthene		-	6,300	4.1 to 19	-	-	0 of 8
Pyrene		-	15,000	3.5 to 16	-	-	0 of 8
Benzo(a)anthracene		-	49	2.2 to 12	-	-	0 of 8
Chrysene		-	93	1.8 to 10	-	-	0 of 8
Benzo(b)fluoranthene		-	13	2.7 to 13	-	-	0 of 8
Benzo(k)fluoranthene		11.8	370	1.3 to 6.2	-	-	0 of 8
Indeno(1,2,3-		-	150	1.6 to 7.8	-	-	0 of 8
Dibenzo(a,h)anthracen		-	1.10	0.36 to 1.7	-	-	0 of 8
Benzo(g,h,i)perylene		-	1,400	1.9 to 9.0	-	-	0 of 8