Office 11
Bartle House
Oxford Court
Manchester
M2 3WQ

Tel: 0161 914 9171
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk

3548/02 / A

28th September 2023

Prestbury Estates Ltd.
6 Gail Close,
Alderley Edge,
Cheshire,
England,
SK9 7PG

SLATE WHARF, MANCHESTER - SOIL VALIDATION REPORT

This Soil Validation Report has been prepared at the request of Prestbury Estates Ltd. Instructions to proceed with this report were received in September 2023.

The report is required to satisfy the planning permission (application number: 113617/FO/2016) Condition 6b:

'When the development commences, the development shall be carried out in accordance with the previously agreed Remediation Strategy and, on completion of the development and before the development is first occupied, a Completion/Verification Report shall be submitted to and approved in writing by the City Council as local planning authority.

In the event that ground contamination, groundwater contamination and/or ground gas, not previously identified, are found to be present on the site at any time before the development is occupied, then development shall cease and/or the development shall not be occupied until, a report outlining what measures, if any, are required to remediate the land (the Revised Remediation Strategy) is submitted to and approved in writing by the City Council as local planning authority and the development shall be carried out in accordance with the Revised Remediation Strategy, which shall take precedence over any Remediation Strategy or earlier Revised Remediation Strategy.'

Cover System Requirements

As noted above, the required cover system in public open space/ soft landscaped areas:

1. Excavate to 300mm bgl.
2. A 300mm clean cover system is required to be added to the soft landscaping areas consisting of topsoil and subsoil.
3. Validate in line with the below strategy in line with YALPAG guidance.

The cover system validation requirements included:

- Details of the source of the cover material and waste transfer notes to provide evidence of source.
- Chemical test results to demonstrate that the soil is free from contamination and 'suitable for use'.
- Details of the sampling density as detailed in YALPAG:

Appendix 1a – Sampling & Testing Matrix

Type	Number of Samples	Testing Schedule	Assessment Criteria
	Please note that these guidelines apply to a typical residential development, and relaxation of the guidelines or more stringent requirements may apply dependent on local and site specific factors. Therefore, all parameters need to be agreed with the Local Authority.		
Virgin Quarried Material	1 or 2 depending on the type of stone utilised, to confirm the inert nature of the material.	Standard metals/metalloids (should include as a minimum As, Cd, Cr, CrVI, Cu, Hg, Ni, Pb, Se, Zn)	The assessment criteria need to be UK based, e.g. LQM S4ULs, Defra C4SLs or other similarly derived GACs.
Crushed Hardcore, Stone, Brick (excluding asphalt)	Minimum 1 per 500m^3	Standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, total TPH. Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).	
Greenfield/ Manufactured Soils	Minimum 3 Dependent on source and receptor, between 1 per 50m^3 and 1 per 250m^3	Standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, pH and soil organic matter (SOM) (or calculated from total organic carbon (TOC)).	
Brownfield/ Screened Soils	Minimum 6 Dependent on source and receptor, between 1 per 50m^3 and 1 per 100m^3	Standard metals/ metalloids (as above), PAH (16 USEPA speciation), TPH (CWG banded), asbestos, pH and SOM (or calculated from TOC). Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).	

- Confirmation of cover depth by either measurement tape or topographical survey with photographs at a frequency of one pit per area.

A development site layout plan, showing the locations of the soft landscaping area, is contained in Figure 1, overleaf:



Figure 1: Location of verification pit within area of soft landscaping

Suitability of Topsoil

The topsoil was visually assessed and found to contain glass, redbrick and asphalt fragments, however these were encountered in concentrations of less than 5%. Samples were obtained from the site during the validation works and sent for chemical analysis by i2 Analytical and assessed by IGE Consulting.

The area of the gardens being validated equates to approximately 269m^2. Utilising a conservative average of 0.30m depth of topsoil equates to a volume of 81m^3 so 3 No. soil samples were taken, to exceed the above requirements (even worse case of 1 per 50m^3).

A wide range of contaminants were analysed and compared to GACs for a 'public open space - residential' end use and a 'residential – without home grown produce' end use. No concentrations were present in exceedance of their respective GACs. Therefore, the topsoil was deemed suitable for use. The chemical test results are included within the appendices.

A source test supplied by Huperade Ltd (8th August 2023) confirms the material complies with BS3882 (2015).

Suitability of Subsoil

Given 300mm cover system requirement, no subsoil was utilised, only 300mm topsoil.

Thickness of Clean Cover

The findings of this validatory pit are presented on the inspection sheet contained within attached appendices. The validatory pit recorded 300mm of topsoil.

Photographs were taken of the cover system thicknesses in each of these areas, which were found to be equal to those required.

A development site layout plan, showing the location of the soft landscaping area presented above in Figure 1.

Cover System Validation Summary

On the basis of the information provided, it is confirmed that the clean cover system remediation objectives have been exceeded for the site.

If any additional information is needed, do not hesitate to ask.

Yours sincerely,

Andrew Edwards
Director

Appendix 1 – Verification Log
Appendix 2 – BS 3882 Testing
Appendix 3 – Chemical Testing Results and Screening

Office 11 Bartle House, Oxford Court,
Manchester, M2 3WQ
email: contact@igeconsulting.co.uk
web: www.igeconsulting.co.uk
tel: 0161 237 9310

Verification Log

Project Name:	Slate Wharf
Project Number:	3548
Location:	Manchester
Client:	Prestbury Estates Ltd

Remediation Requirements:

At least 300mm 'clean' topsoil in area of soft landscaping/ public open space.

Validation Requirements:

Plot thickness validation photographs at a rate of 1 pit per area and associated chemical testing.

Plot Number:	N/A
Grid reference:	E383061, N397498
Inspection date:	13/09/2023
Engineer:	AE

Photographs:





Photographs shows 300mm of topsoil.

This plot has PASSED / ~~FAILED*~~ verification

*Proposed further remedial works (if FAILED):

An additional inspection ~~IS~~ / IS NOT required for this plot

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

UKAS TESTING
2183

Final Report

Report No.:	23-25218-1
Initial Date of Issue:	08-Aug-2023
Re-Issue Details:	
Client	Huperade Ltd
Client Address:	Bridge House Farm Brooks Drive Timperley Cheshire WA15 7DQ
Contact(s):	Lesley Cox
Project	Soil Testing
Quotation No.:	
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	5
Date Approved:	08-Aug-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	27-Jul-2023
Date Instructed:	27-Jul-2023
Results Due:	02-Aug-2023
Subcon Results Due:	17-Aug-2023

Results - Topsoil Report

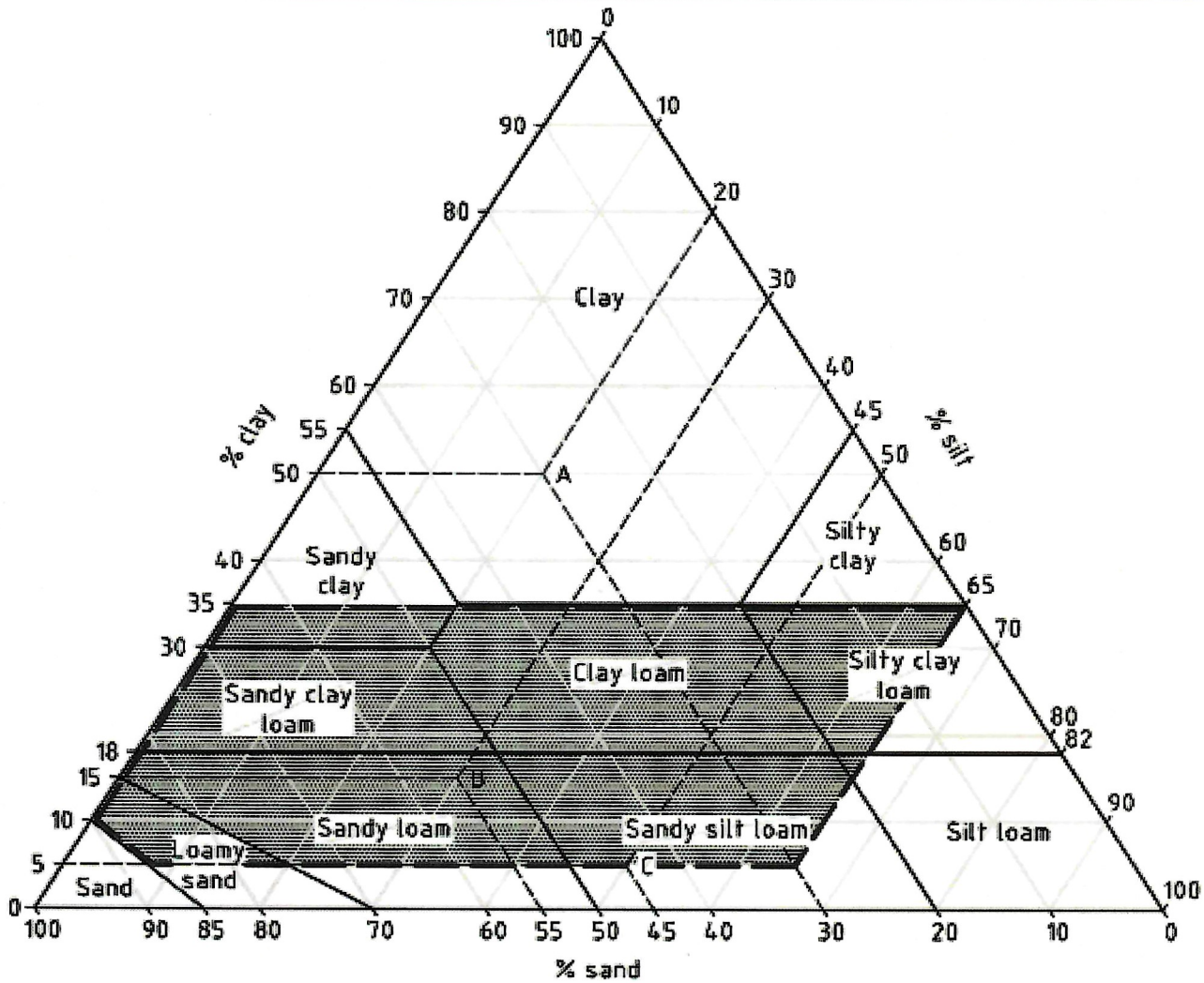
BS3882:2015

Chemtest Job No.: 23-25218
Chemtest Sample ID.: 1679653
Client Sample Ref.:
Sample Location:
Client Sample ID.: 1
Top Depth (m):
Bottom Depth (m):
Date Sampled:
Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
Texture					Acid	Low F	Calc.
Clay content (Sub Contracted)	%		7.7				
Silt content (Sub Contracted)	%		26				
Sand content (Sub Contracted)	%		66				
Soil texture class		See Attached Chart	Sandy Loam	YES			
Mass Loss on Ignition							
Clay 5-20%		3.0-20	4.9	YES	YES	YES	YES
Clay 20-35%		5.0-20					
Stone Content	% m/m						
>2mm (Sub Contracted)		0-30	13	YES			
>20mm (Sub Contracted)		0-10	0.20	YES			
>50mm (Sub Contracted)		0	< 0.10	YES			
Soil pH value		5.5-8.5	[A] 8.0	YES	NO	YES	YES
Carbonate (Calcareous only)	%		1.8				YES
Electrical Conductivity	µS/cm	If >3300 do ESP	[A] 2500	YES			
Available Nutrient Content							
Nitrogen %		>0.15	0.25	YES	YES		YES
Extractable phosphorus	mg/l	16-140	16	YES	YES	YES	YES
Extractable potassium	mg/l	121-1500	140	YES	YES		YES
Extractable magnesium	mg/l	51-600	73	YES	YES		YES
Carbon : Nitrogen Ratio		<20:1	11.3/1	YES	YES	YES	YES
Exchangeable sodium	%	<15	4.0				
Available Calcium	mg/l		390				
Available Sodium	mg/l		100				
Phytotoxic Contaminants (by soil pH)		< 6.0 | 6.0-7.0 | > 7.0					
Zinc (Nitric Acid extract)	mg/kg	<200 | <200 | <300	77	YES			
Copper (Nitric Acid extract)	mg/kg	<100 | <135 | <200	30	YES			
Nickel (Nitric Acid extract)	mg/kg	<60 | <75 | <110	12	YES			
Visible Contaminants	% mm						
>2mm		<0.5	0.000	YES			
..... of which plastics		<0.25	0.000	YES			
..... man-made sharps		zero in 1kg	0.000	YES			

Topsoil:
Texture Classification Chart

BS3882:2015



Key

Area within which the texture of topsoil is required to fall

NOTE Examples of textural classification are as follows.

- *Soil A with 30% sand, 20% silt and 50% clay is in the "clay" textural class.*
- *Soil B with 55% sand, 30% silt and 15% clay is in the "sandy loam" textural class.*
- *Soil C with 45% sand, 50% silt and 5% clay is in the "sandy silt loam" textural class.*

Permission to reproduce extracts from BS 3882:2015 is granted by BSI.
British Standards can be obtained in PDF or hard copy formats from the BSI online shop: www.bsigroup.com/Shop or by contacting BSI Customer Services for hardcopies only: Tel: +44 (0)20 8996 9001, Email: cservices@bsigroup.com.

Amy Ellams
IGE Consulting
Office 11
Bartle House
Oxford Court
Manchester
M2 3WQ

e: amyellams@igeconsulting.co.uk

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 23-56430

Project / Site name:	Slate Wharf	**Samples received on:**	13/09/2023
Your job number:	3548	**Samples instructed on/ Analysis started on:**	13/09/2023
Your order number:	3548-130923	**Analysis completed by:**	20/09/2023
Report Issue Number:	1	**Report issued on:**	20/09/2023
Samples Analysed:	3 soil samples		

Signed:

Adam Fenwick
Technical Reviewer
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.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-56430
Project / Site name: Slate Wharf
Your Order No: 3548-130923

Lab Sample Number				2810841	2810842	2810843
Sample Reference				HP01	HP02	HP03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.20	0.15
Date Sampled				13/09/2023	13/09/2023	13/09/2023
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	%	0.01	NONE	6.4	15	13
Total mass of sample received	kg	0.001	NONE	0.8	0.7	0.8
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	PDO	PDO	PDO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.4	7.4	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	270	80	60
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.133	0.0399	0.0299
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	133	39.9	29.9
Organic Matter (automated)	%	0.1	MCERTS	3	4.7	4
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	3.5	10	7.6
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0	5.1	< 5.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.19	0.14	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.31	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1.4	0.4	0.08
Fluorene	mg/kg	0.05	MCERTS	0.97	0.29	0.05
Phenanthrene	mg/kg	0.05	MCERTS	6.2	1.9	0.59
Anthracene	mg/kg	0.05	MCERTS	2	0.53	0.16
Fluoranthene	mg/kg	0.05	MCERTS	12	3.1	1.1
Pyrene	mg/kg	0.05	MCERTS	11	2.6	0.99
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.4	1.4	0.55
Chrysene	mg/kg	0.05	MCERTS	4.9	1.4	0.53
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3.1	2	0.81
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.7	0.69	0.28
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.4	1.7	0.65
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.1	0.92	0.36
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.22	0.21	0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.5	0.95	0.36

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	62.6	18.1	6.55

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6	11	10
Barium (aqua regia extractable)	mg/kg	1	MCERTS	140	120	97
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.5	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.5	0.4
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	12	20	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23	45	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	59	54
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-56430
Project / Site name: Slate Wharf
Your Order No: 3548-130923

Lab Sample Number				2810841	2810842	2810843
Sample Reference				HP01	HP02	HP03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.20	0.15
Date Sampled				13/09/2023	13/09/2023	13/09/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	19	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	20	29	25
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	51	67	60
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 ## $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 ## $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 ## $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	3.1	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	9.8	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	110	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	110	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	130	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	230	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	1.4	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	13	5.1	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	91	20	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	320	58	22
TPH-CWG - Aromatic > EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	260	59	34
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	420	84	26
TPH-CWG - Aromatic (EC5 - EC44) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	680	140	60

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-56430
Project / Site name: Slate Wharf

* 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 *
2810841	HP01	None Supplied	0.3	Brown clay and sand with gravel and glass
2810842	HP02	None Supplied	0.2	Brown clay and sand with gravel and plastic.
2810843	HP03	None Supplied	0.15	Brown clay and sand with gravel.

Analytical Report Number : 23-56430
Project / Site name: Slate Wharf

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE

Analytical Report Number : 23-56430
Project / Site name: Slate Wharf

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised

Project: Slate Wharf

Job No: 3548

Lab Sample Number			2810841	2810842	2810843	Statistical Analysis					GAC - S4UL unless stated				C4SL		
Sample Reference			HP01	HP02	HP03						Statistical Results						
Sample Number			None Supplied	None Supplied	None Supplied												
Depth (m)			0.30	0.20	0.15												
Date Sampled			13/09/2023	13/09/2023	13/09/2023												
Analytical Parameter (Soil Analysis)	**Units**	**LoD**	None Supplied	None Supplied	None Supplied	Count	Standard Deviation	Minimum	Maximum	Average	Maximum	**2.5% Public Open Space - Resi**	Pass/ Fail	Exceedances	**Public Open Space - Resi**	Pass/ Fail	Exceedances
Stone Content	%	0.1	< 0.1	< 0.1	< 0.1	0	-	0.0	0.0	-	0.0						
Moisture Content	%	0.01	6.4	15	13	3	4.50	6.40	15.00	11.47	15.00						
Total mass of sample received	kg	0.001	0.8	0.7	0.8	3	0.06	0.700	0.800	0.767	0.800						
Asbestos in Soil Screen	Type	N/A	Not-detected	Not-detected	Not-detected	0	-	-	-	-							
General Inorganics																	
pH - Automated	pH Units	N/A	9.4	7.4	7.9	3	1.04	7.40	9.40	-							
Total Cyanide	mg/kg	1	1	1	1	3	0.00	1.00	1.00	-	1.00	**60**	Pass	0			
Free Cyanide	mg/kg	1	1	1	1	3	0.00	1.00	1.00	1.00	1.00	**60**	Pass	0			
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.50	270	80	60	3	115.90	60.00	270.00	136.67							
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	0.133	0.0399	0.0299	3	0.05686	0.02990	0.13300	0.06760							
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	133	39.9	29.9	3	56.86	29.90	133.00	67.60							
Organic Matter (automated)	%	0.1	3	4.7	4	3	0.85	3.00	4.70	**3.90**							
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	3.5	10	7.6	3	3.29	3.50	10.00	7.03							
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	5	5.1	5	3	0.06	5.00	5.10	5.03							
Speciated PAHs																	
Naphthalene	mg/kg	0.05	0.19	0.14	0.05	3	0.07	0.05	0.19	0.13	0.19	**4900**	Pass	0			
Acenaphthylene	mg/kg	0.05	0.31	0.05	0.05	3	0.15	0.05	0.31	0.14	0.31	**15000**	Pass	0			
Acenaphthene	mg/kg	0.05	1.4	0.4	0.08	3	0.69	0.08	1.40	0.63	1.40	**15000**	Pass	0			
Fluorene	mg/kg	0.05	0.97	0.29	0.05	3	0.48	0.05	0.97	0.44	0.97	**9900**	Pass	0			
Phenanthrene	mg/kg	0.05	6.2	1.9	0.59	3	2.93	0.59	6.20	2.90	6.20	**3100**	Pass	0			
Anthracene	mg/kg	0.05	2	0.53	0.16	3	0.97	0.16	2.00	0.90	2.00	**74000**	Pass	0			
Fluoranthene	mg/kg	0.05	12	3.1	1.1	3	5.80	1.10	12.00	5.40	12.00	**3100**	Pass	0			
Pyrene	mg/kg	0.05	11	2.6	0.99	3	5.38	0.99	11.00	4.86	11.00	**7400**	Pass	0			
Benzo(a)anthracene	mg/kg	0.05	5.4	1.4	0.55	3	2.59	0.55	5.40	2.45	5.40	**29.00**	Pass	0			
Chrysene	mg/kg	0.05	4.9	1.4	0.53	3	2.31	0.53	4.90	2.28	4.90	**57**	Pass	0			
Benzo(b)fluoranthene	mg/kg	0.05	5.4	2	0.81	3	2.38	0.81	5.40	2.74	5.40	**7.20**	Pass	0			
Benzo(k)fluoranthene	mg/kg	0.05	2.7	0.69	0.28	3	1.30	0.28	2.70	1.22	2.70	**190**	Pass	0			
Benzo(a)pyrene	mg/kg	0.05	2.4	1.7	0.65	3	0.88	0.65	2.40	1.58	2.40	**5.70**	Pass	0	**10.00**	Pass	0
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	3.1	0.92	0.36	3	1.45	0.36	3.10	1.46	3.10	**82**	Pass	0			
Dibenz(a,h)anthracene	mg/kg	0.05	0.22	0.21	0.05	3	0.10	0.05	0.22	0.16	0.22	**0.57**	Pass	0			
Benzo(ghi)perylene	mg/kg	0.05	3.5	0.95	0.36	3	1.67	0.36	3.50	1.60	3.50	**640**	Pass	0			
Total PAH																	
Speciated Total EPA-16 PAHs	mg/kg	0.8	62.6	18.1	6.55	2	8.17	6.55	18.10	12.33							
Heavy Metals / Metalloids																	
Arsenic (aqua regia extractable)	mg/kg	1	6	11	10	3	2.65	6.00	11.00	9.00	11.00	**79**	Pass	0			
Barium (aqua regia extractable)	mg/kg	1	140	120	97	3	21.52	97.00	140.00	119.00	140.00	**-**	Pass	0			
Boron (water soluble)	mg/kg	0.2	1	1	0	3	0.15	0.30	0.60	0.47	0.60	**21000**	Pass	0			
Cadmium (aqua regia extractable)	mg/kg	0.2	1	1	0	3	0.06	0.40	0.50	0.47	0.50	**120**	Pass	0	**220**	Pass	0
Chromium (hexavalent)	mg/kg	1.2	1	1	1	3	0.00	1.20	1.20	1.20	1.20	**8**	Pass	0	**21**	Pass	0
Chromium (aqua regia extractable)	mg/kg	1	12	20	18	3	4.16	12.00	20.00	16.67	20.00	**1500**	Pass	0			
Copper (aqua regia extractable)	mg/kg	1	23	45	25	3	12.17	23.00	45.00	31.00	45.00	**12000**	Pass	0			
Lead (aqua regia extractable)	mg/kg	1	29	59	54	3	16.07	29.00	59.00	47.33	59.00	**630**	Pass	0	**630**	Pass	0
Mercury (aqua regia extractable)	mg/kg	0.3	0	0	0	3	0.00	0.30	0.30	0.30	0.30	**120**	Pass	0			
Nickel (aqua regia extractable)	mg/kg	1	11	19	15	3	4.00	11.00	19.00	15.00	19.00	**230**	Pass	0			
Selenium (aqua regia extractable)	mg/kg	1	1	1	1	3	0.00	1.00	1.00	1.00	1.00	**1100**	Pass	0			
Vanadium (aqua regia extractable)	mg/kg	1	20	29	25	3	4.51	20.00	29.00	24.67	29.00	**2000**	Pass	0			
Zinc (aqua regia extractable)	mg/kg	1	51	67	60	3	8.02	51.00	67.00	59.33	67.00	**81000**	Pass	0			
Monoaromatics & Oxygenates																	
Benzene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**72000**	Pass	0	**79000**	Pass	0
Toluene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**56000000**	Pass	0			
Ethylbenzene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**24000000**	Pass	0			
p & m-xylene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**42000000**	Pass	0			
o-xylene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**42000000**	Pass	0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	5	5	5	3	0.00	5	5	5.00							
Petroleum Hydrocarbons																	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**590000**	Pass	0			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**610000**	Pass	0			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**13000**	Pass	0			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	1.0	1.0	1.0	3	0.00	1.00	1.00	1.00	1.00	**13000**	Pass	0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	3.1	2.0	2.0	3	0.64	2.00	3.10	2.37	3.10	**13000**	Pass	0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	9.8	8.0	8.0	3	1.04	8.00	9.80	8.60	9.80	**-**					
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	110.0	8.0	8.0	3	58.89	8.00	110.00	42.00	110.00	**250000**	Pass	0			
TPH-CWG - Aliphatic >EC35 - EC44	mg/kg	8.4	110.0	8.4	8.4	3	58.66	8.40	110.00	42.27	110.00	**250000**	Pass	0			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	130.0	10.0	10.0	3	69.28	10.00	130.00	50.00							
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	230.0	10.0	10.0	3	127.02	10.00	230.00	83.33							
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**56000**	Pass	0			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**56000**	Pass	0			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**5000**	Pass	0			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	1.0	1.4	1.0	3	0.23	1.00	1.40	1.13	1.40	**5000**	Pass	0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	13.0	5.1	2.0	3	5.67	2.00	13.00	6.70	13.00	**5100**	Pass	0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	91.0	20.0	10.0	3	44.16	10.00	91.00	40.33	91.00	**3800**	Pass	0			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	320.0	58.0	22.0	3	162.66	22.00	320.00	133.33	320.00	**3800**	Pass	0			
TPH-CWG - Aromatic >EC35 - EC44	mg/kg	8.4	260.0	59.0	34.0	3	123.90	34.00	260.00	117.67	260.00	**3800**	Pass	0			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	420.0	84.0	26.0	3	212.72	26.00	420.00	176.67							
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	680.0	140.0	60.0	3	337.24	60.00	680.00	293.33							

GAC used: LQM/CIEH Suitable 4 Use Levels for Human Health Risk Assessment (3rd edition, 2015)

Category 4 Screening Levels (March 2014) used for Arsenic

In-house methodology used for Cyanide - no GAC currently available

Exceeded GAC & C4SL

Exceeded GAC but not C4SL

Recorded below laboratory detection limit

This spreadsheet has been developed by IGE Consulting Ltd

Project: Slate Wharf

Job No: 3548

Lab Sample Number			2810841	2810842	2810843	Statistical Analysis					GAC - S4UL unless stated				C4SL		
Sample Reference			HP01	HP02	HP03						**Statistical Results**						
Sample Number			None Supplied	None Supplied	None Supplied												
Depth (m)			0.30	0.20	0.15												
Date Sampled			13/09/2023	13/09/2023	13/09/2023	Count	Standard Deviation	Minimum	Maximum	Average	Maximum	**2.5% Residential without Home Grown Produce**	Pass/ Fail	Exceedances	**Residential without home grown produce**	Pass/ Fail	Exceedances
Analytical Parameter (Soil Analysis)	**Units**	**LoD**	None Supplied	None Supplied	None Supplied												
Stone Content	%	0.1	< 0.1	< 0.1	< 0.1	0	-	0.0	0.0	-	0.0						
Moisture Content	%	0.01	6.4	15	13	3	4.50	6.40	15.00	11.47	15.00						
Total mass of sample received	kg	0.001	0.8	0.7	0.8	3	0.06	0.700	0.800	0.767	0.800						
Asbestos																	
Asbestos in Soil Screen	Type	N/A	Not-detected	Not-detected	Not-detected	0	-	-	-	-							
Asbestos Quantification (Stage 2)	%	0.001				0	-	0.00	0.00	-							
Asbestos Quantification Total	%	0.001				0	-	0.00	0.00	-							
General Inorganics																	
pH - Automated	pH Units	N/A	9.4	7.4	7.9	3	1.04	7.40	9.40	8.23							
Total Cyanide	mg/kg	1	1	1	1	3	0.00	1.00	1.00	1.00	1.00	**60**	Pass	0			
Free Cyanide	mg/kg	1	1	1	1	3	0.00	1.00	1.00	1.00	1.00	**60**	Pass	0			
Water Soluble Sulfate as SO4 16hr extraction (2:1)	mg/kg	2.50	270	80	60	3	115.90	60.00	270.00	136.67							
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	0.133	0.0399	0.0299	3	0.05686	0.02990	0.13300	0.06760							
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	133	39.9	29.9	3	56.86	29.90	133.00	67.60							
Organic Matter (automated)	%	0.10	3	4.7	4	3	0.85	3.00	4.70	**3.90**							
Total Organic Carbon (automated)	%	0.001				3	3.29	3.50	10.00	7.03							
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	3.5	10	7.6	3	0.06	5.00	5.10	5.03							
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	5	5.1	5	0	-	0.00	0.00	-							
Speciated PAHs																	
Naphthalene	mg/kg	0.05	0.19	0.14	0.05	3	0.07	0.05	0.19	0.13	0.19	**5.60**	Pass	0			
Acenaphthylene	mg/kg	0.05	0.31	0.05	0.05	3	0.15	0.05	0.31	0.14	0.31	**4600**	Pass	0			
Acenaphthene	mg/kg	0.05	1.4	0.4	0.08	3	0.69	0.08	1.40	0.63	1.40	**4700**	Pass	0			
Fluorene	mg/kg	0.05	0.97	0.29	0.05	3	0.48	0.05	0.97	0.44	0.97	**3800**	Pass	0			
Phenanthrene	mg/kg	0.05	6.2	1.9	0.59	3	2.93	0.59	6.20	2.90	6.20	**1500**	Pass	0			
Anthracene	mg/kg	0.05	2	0.53	0.16	3	0.97	0.16	2.00	0.90	2.00	**35000**	Pass	0			
Fluoranthene	mg/kg	0.05	12	3.1	1.1	3	5.80	1.10	12.00	5.40	12.00	**1600**	Pass	0			
Pyrene	mg/kg	0.05	11	2.6	0.99	3	5.38	0.99	11.00	4.86	11.00	**3800**	Pass	0			
Benzo(a)anthracene	mg/kg	0.05	5.4	1.4	0.55	3	2.59	0.55	5.40	2.45	5.40	**14.00**	Pass	0			
Chrysene	mg/kg	0.05	4.9	1.4	0.53	3	2.31	0.53	4.90	2.28	4.90	**31**	Pass	0			
Benzo(b)fluoranthene	mg/kg	0.05	3.4	2	0.81	3	2.38	0.81	5.40	2.74	5.40	**4.00**	Pass	0			
Benzo(k)fluoranthene	mg/kg	0.05	2.7	0.69	0.28	3	1.30	0.28	2.70	1.22	2.70	**110**	Pass	0			
Benzo(a)pyrene	mg/kg	0.05	2.4	1.7	0.65	0	0.88	0.65	2.40	1.58	2.40	**3.20**	Pass	0	**5.30**	Pass	0
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	3.1	0.92	0.36	3	1.45	0.36	3.10	1.46	3.10	**46**	Pass	0			
Dibenz(a,h)anthracene	mg/kg	0.05	0.22	0.21	0.05	3	0.10	0.05	0.22	0.16	0.22	**0.32**	Pass	0			
Benzo(ghi)perylene	mg/kg	0.05	3.5	0.95	0.36	3	1.67	0.36	3.50	1.60	3.50	**360**	Pass	0			
Total PAH																	
Speciated Total EPA-16 PAHs	mg/kg	0.8	62.6	18.1	6.55	2	8.17	6.55	18.10	12.33							
Heavy Metals / Metalloids																	
Arsenic (aqua regia extractable)	mg/kg	1	6	11	10	3	2.65	6.00	11.00	9.00	11.00	**40**	Pass	0			
Barium (aqua regia extractable)	mg/kg	1	140	120	97	3	21.52	97.00	140.00	119.00	140.00	**1300.00**	Pass	0			
Boron (water soluble)	mg/kg	0.2	0.6	0.5	0.3	3	0.15	0.30	0.60	0.47	0.60	**11000**	Pass	0			
Cadmium (aqua regia extractable)	mg/kg	0.2	0.5	0.5	0.4	3	0.06	0.40	0.50	0.47	0.50	**85**	Pass	0	**150**	Pass	0
Chromium (hexavalent)	mg/kg	1.2	1.2	1.2	1.2	3	0.00	1.20	1.20	1.20	1.20	**6**	Pass	0	**21**	Pass	0
Chromium (aqua regia extractable)	mg/kg	1	12	20	18	3	4.16	12.00	20.00	16.67	20.00	**910**	Pass	0			
Copper (aqua regia extractable)	mg/kg	1	23	45	25	3	12.17	23.00	45.00	31.00	45.00	**7100**	Pass	0			
Lead (aqua regia extractable)	mg/kg	1	29	59	54	3	16.07	29.00	59.00	47.33	59.00	**310**	Pass	0	**310**	Pass	0
Mercury (aqua regia extractable)	mg/kg	0.3	0.3	0.3	0.3	3	0.00	0.30	0.30	0.30	0.30	**56**	Pass	0			
Nickel (aqua regia extractable)	mg/kg	1	11	19	15	3	4.00	11.00	19.00	15.00	19.00	**180**	Pass	0			
Selenium (aqua regia extractable)	mg/kg	1	1	1	1	3	0.00	1.00	1.00	1.00	1.00	**430**	Pass	0			
Vanadium (aqua regia extractable)	mg/kg	1	20	29	25	3	4.51	20.00	29.00	24.67	29.00	**1200**	Pass	0			
Zinc (aqua regia extractable)	mg/kg	1	51	67	60	3	8.02	51.00	67.00	59.33	67.00	**40000**	Pass	0			
Monoaromatics & Oxygenates																	
Benzene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**700**	Pass	0	**3300**	Pass	0
Toluene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**1900000**	Pass	0			
Ethylbenzene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**190000**	Pass	0			
p & m-xylene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**180000**	Pass	0			
o-xylene	µg/kg	5	5	5	5	3	0.00	5	5	5.00	5	**210000**	Pass	0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	5	5	5	3	0.00	5	5	5.00		**-**					
Petroleum Hydrocarbons																	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**78**	Pass	0			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**230**	Pass	0			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**65**	Pass	0			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	1	1	1	3	0.00	1.00	1.00	1.00	1.00	**330**	Pass	0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	3.1	2	2	3	0.64	2.00	3.10	2.37	3.10	**2400**	Pass	0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	9.8	8	8	3	1.04	8.00	9.80	8.60	9.80	**-**					
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	110	8	8	3	58.89	8.00	110.00	42.00	110.00	**92000**	Pass	0			
TPH-CWG - Aliphatic >EC35 - EC44	mg/kg	8.4	110	8.4	8.4	3	58.66	8.40	110.00	42.27	110.00	**92000**	Pass	0			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	130	10	10	3	69.28	10.00	130.00	50.00		**-**					
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	230	10	10	3	127.02	10.00	230.00	83.33		**-**					
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**690**	Pass	0			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**1800**	Pass	0			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	0.1	0.1	0.1	3	0.000	0.100	0.100	0.100	0.100	**110**	Pass	0			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	1	1.4	1	3	0.23	1.00	1.40	1.13	1.40	**590**	Pass	0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	13	5.1	2	3	5.67	2.00	13.00	6.70	13.00	**2300**	Pass	0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	91	20	10	3	44.16	10.00	91.00	40.33	91.00	**1900**	Pass	0			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	320	58	22	3	162.66	22.00	320.00	133.33	320.00	**1900**	Pass	0			
TPH-CWG - Aromatic >EC35 - EC44	mg/kg	8.4	260	59	34	3	123.90	34.00	260.00	117.67	260.00	**1900**	Pass	0			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	420	84	26	3	212.72	26.00	420.00	176.67		**-**					
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	680	140	60	3	337.24	60.00	680.00	293.33		**-**					

GAC used: LQM/CIEH Suitable 4 Use Levels for Human Health Risk Assessment (3rd edition, 2015)

Category 4 Screening Levels (March 2014) used for Arsenic

In-house methodology used for Cyanide - no GAC currently available

Exceeded GAC & C4SL

Exceeded GAC but not C4SL

Recorded below laboratory detection limit

This spreadsheet has been developed by IGE Consulting Ltd