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Analytical Test Report: L21/0476/CAS/001

Your Project Reference:	Hill Farm Botcheston	Samples Received on:	15/02/2021
Your Order Number:	Kevin	Testing Instruction Received:	15/02/2021
Report Issue Number:	1	Sample Tested:	15/02 to 01/03/2021
Samples Analysed:	8 soil samples	Report issued:	01/03/2021

Signed

Peter Swanston
Environmental Laboratories Manager
Nicholls Colton Group

Notes:

General

Please refer to Methodologies tab for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

Moisture Content was determined in accordance with NC method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with NC method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Concentrations are reported as a percentage mass of the dry soil passing the 10mm BS test sieve. As received samples have been corrected for moisture content but not stone content.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Asbestos

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

Deviating Samples

Samples were received in suitable containers **Yes**

A date and time of sampling was provided **Yes**

Sample holding times were exceeded prior to analysis of determinants **No**

Where samples do not meet one or more of the above criteria they will be classed as deviating, this means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of issue 10/12/2020

Owned by Emily Billett - Customer Services Supervisor

Authorised by James Gane - Commercial Manager

J:\Public\Projects\2021\L21\CAS - Castledine\L21-0476-CAS\L21-0476-CAS-001.XLSX\TPH Codes

L21/0476/CAS/001

Project Reference - Hill Farm Botcheston

Analytical Test Results - Soil

NC Reference			142025	142026	142027	142028	142029	142030
Client Sample ID			TP01	TP02	TP03	TP03	TP04	TP05
Client Sample Location			TP01	TP02	TP03	TP03	TP04	TP05
Client Sample Type			ES	ES	ES	ES	ES	ES
Client Sample Number			1	1	1	2	1	1
Depth - Top (m)			0.10	0.20	0.20	0.40	0.20	0.10
Depth - Bottom (m)			0.10	0.20	0.20	0.40	0.20	0.10
Date of Sampling			15/02/2021	15/02/2021	15/02/2021	15/02/2021	15/02/2021	15/02/2021
Time of Sampling			11:07	10:52	11:30	11:32	11:23	12:15
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay
Determinant	Units	Accreditation						
Arsenic	(mg/kg)	MCERTS	26	130	24	18	< 10	< 10
Cadmium	(mg/kg)	MCERTS	2.3	4.1	3.1	3.9	0.4	0.4
Chromium (Total)	(mg/kg)	UKAS	41	130	33	32	13	13
Copper	(mg/kg)	MCERTS	820	890	220	340	25	26
Lead	(mg/kg)	MCERTS	790	1700	1200	1100	43	40
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	32	61	41	30	16	17
Zinc	(mg/kg)	MCERTS	1400	5100	1700	2700	97	95
Total Phenols	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (Hexavalent)	(mg/kg)	u	< 1.0	16	< 1.0	< 1.0	< 1.0	< 1.0
pH	pH Units	MCERTS	7.7	7.9	7.8	7.7	7.4	6.9
Acenaphthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.20	< 0.20	< 0.02	< 0.02
Acenaphthylene	(mg/kg)	UKAS	0.03	< 0.02	< 0.20	< 0.20	< 0.02	< 0.02
Anthracene	(mg/kg)	UKAS	0.08	0.05	0.82	0.38	< 0.02	< 0.02
Benzo (a) anthracene	(mg/kg)	MCERTS	0.26	0.24	3.8	1.5	< 0.02	0.05
Benzo (a) pyrene	(mg/kg)	MCERTS	0.30	0.30	3.2	1.8	< 0.02	0.06
Benzo (b) fluoranthene	(mg/kg)	MCERTS	0.63	0.56	6.2	3.0	0.03	0.09
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	0.31	0.30	2.2	1.6	< 0.02	0.04
Benzo (k) fluoranthene	(mg/kg)	MCERTS	0.19	0.19	2.2	1.1	< 0.02	0.03
Chrysene	(mg/kg)	MCERTS	0.28	0.24	4.1	1.4	< 0.02	0.05
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	0.05	0.05	0.54	0.24	< 0.02	< 0.02
Fluoranthene	(mg/kg)	MCERTS	0.38	0.35	7.2	2.4	0.04	0.06
Fluorene	(mg/kg)	MCERTS	< 0.02	< 0.02	0.26	< 0.20	< 0.02	< 0.02
Indeno (1, 2, 3-cd) pyrene	(mg/kg)	MCERTS	0.29	0.31	2.3	1.6	< 0.02	0.04
Naphthalene	(mg/kg)	MCERTS	0.08	0.05	0.83	< 0.20	< 0.02	< 0.02
Phenanthrene	(mg/kg)	MCERTS	0.19	0.15	4.5	0.93	< 0.02	0.03
Pyrene	(mg/kg)	MCERTS	0.37	0.34	6.2	2.5	0.03	0.09
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	3.5	3.2	45	19	0.44	0.70
Asbestos	-	UKAS	No asbestos detected	No asbestos detected	No asbestos detected	-	No asbestos detected	-
Pesticide Screen	(mg/kg)	u	Undetected <1mg/kg	-	-	-	-	-

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Project Reference - Hill Farm Botcheston

Analytical Test Results - Soil

NC Reference			142031	142032
Client Sample ID			TP06	TP07
Client Sample Location			TP06	TP07
Client Sample Type			ES	ES
Client Sample Number			1	1
Depth - Top (m)			0.10	0.20
Depth - Bottom (m)			0.10	0.20
Date of Sampling			15/02/2021	15/02/2021
Time of Sampling			12:05	12:00
Sample Matrix			Clay	Sand
Determinant	Units	Accreditation		
Arsenic	(mg/kg)	MCERTS	< 10	110
Cadmium	(mg/kg)	MCERTS	0.4	1.5
Chromium (Total)	(mg/kg)	UKAS	11	37
Copper	(mg/kg)	MCERTS	26	190
Lead	(mg/kg)	MCERTS	120	84
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	15	190
Zinc	(mg/kg)	MCERTS	120	120
Total Phenols	(mg/kg)	MCERTS	< 1.0	< 1.0
Chromium (Hexavalent)	(mg/kg)	u	1.3	< 1.0
pH	pH Units	MCERTS	6.7	8.0
Acenaphthene	(mg/kg)	MCERTS	< 0.02	< 0.02
Acenaphthylene	(mg/kg)	UKAS	< 0.02	< 0.02
Anthracene	(mg/kg)	UKAS	< 0.02	< 0.02
Benzo (a) anthracene	(mg/kg)	MCERTS	0.12	0.05
Benzo (a) pyrene	(mg/kg)	MCERTS	0.11	0.03
Benzo (b) fluoranthene	(mg/kg)	MCERTS	0.16	0.07
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	0.09	< 0.02
Benzo (k) fluoranthene	(mg/kg)	MCERTS	0.04	< 0.02
Chrysene	(mg/kg)	MCERTS	0.14	0.05
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	< 0.02	< 0.02
Fluoranthene	(mg/kg)	MCERTS	0.18	0.07
Fluorene	(mg/kg)	MCERTS	< 0.02	< 0.02
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	0.07	< 0.02
Naphthalene	(mg/kg)	MCERTS	0.04	< 0.02
Phenanthrene	(mg/kg)	MCERTS	0.19	< 0.02
Pyrene	(mg/kg)	MCERTS	0.30	0.07
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	1.6	0.62
Asbestos	-	UKAS	No asbestos detected	-
Pesticide Screen	(mg/kg)	u	-	-

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Analytical Test Results - TPH CWG

NC Reference			142028	142032
Client Sample ID			TP03	TP07
Client Sample Location			TP03	TP07
Client Sample Type			ES	ES
Client Sample Number			2	1
Depth - Top (m)			0.40	0.20
Depth - Bottom (m)			0.40	0.20
Date of Sampling			15/02/2021	15/02/2021
Time of Sampling			11:32	12:00
Sample Matrix			Clay	Sand
Determinant	Units	Accreditation		
Aliphatics				
>C ₅ to C ₆ [HS_MS_1D_AL]	(mg/kg)	u	0.13	< 0.05
>C ₆ to C ₈ [HS_MS_1D_AL]	(mg/kg)	u	0.49	< 0.05
>C ₈ to C ₁₀ [HS_MS_1D_AL]	(mg/kg)	u	< 0.05	< 0.05
>C ₁₀ to C ₁₂ [EH_CU_1D_AL]	(mg/kg)	u	< 10	< 10
>C ₁₂ to C ₁₆ [EH_CU_1D_AL]	(mg/kg)	u	< 10	< 10
>C ₁₆ to C ₂₁ [EH_CU_1D_AL]	(mg/kg)	u	12	< 10
>C ₂₁ to C ₃₅ [EH_CU_1D_AL]	(mg/kg)	u	120	110
Aromatics				
>C ₅ to C ₇ [HS_MS_1D_AR]	(mg/kg)	u	< 0.05	< 0.05
>C ₇ to C ₈ [HS_MS_1D_AR]	(mg/kg)	u	< 0.05	< 0.05
>C ₈ to C ₁₀ [HS_MS_1D_AR]	(mg/kg)	u	< 0.05	< 0.05
>C ₁₀ to C ₁₂ [EH_CU_1D_AR]	(mg/kg)	u	< 10	< 10
>C ₁₂ to C ₁₆ [EH_CU_1D_AR]	(mg/kg)	u	< 10	< 10
>C ₁₆ to C ₂₁ [EH_CU_1D_AR]	(mg/kg)	u	15	< 10
>C ₂₁ to C ₃₅ [EH_CU_1D_AR]	(mg/kg)	u	120	20
Total				
>C ₅ to C ₃₅ [EH_CU+HS_1D_Total]	(mg/kg)	u	260	130

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Sample Descriptions

NC Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)
142025	TP01	TP01	ES	1	Made Ground- dark brown slightly gravelly very sandy silty clay with occasional brick fragments organic matter	25	31
142026	TP02	TP02	ES	1	Made Ground- dark brown slightly gravelly very sandy silty clay with occasional organic matter hydrocarbons	33	18
142027	TP03	TP03	ES	1	Made Ground- dark brown slightly gravelly very sandy silty clay with occasional brick fragments organic matter glass	24	26
142028	TP03	TP03	ES	2	Made Ground- dark brown slightly gravelly very sandy silty clay with occasional brick fragments hydrocarbons	17	42
142029	TP04	TP04	ES	1	Brown slightly silty sandy clay with rare rootlets	30	0.0
142030	TP05	TP05	ES	1	Brown slightly silty slightly gravelly sandy clay with rare rootlets	32	0.0
142031	TP06	TP06	ES	1	Brown slightly sandy slightly gravelly silty clay with rare rootlets	31	0.0
142032	TP07	TP07	ES	1	Made Ground- black slightly clayey very gravelly silty sand with frequent hydrocarbons	43	33



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Sample Comments

NC Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
142028	TP03	TP03	ES	2	VPH - Sample taken from container with headspace.
142032	TP07	TP07	ES	1	VPH - Sample taken from container with headspace.



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Analysis Methodologies

Matrix	Determinant	Sample condition for analysis	Test Method used
Soil	Metals	Air Dried	In house method statement - MS - CL - ICP metals
Soil	PAH	As Received	In house method statement - MS - CL - PAH (As received)
Soil	Phenols	As Received	In house method statement - MS - CL - Phenols by Skalar
Soil	Chromium (hexavalent)	As Received	In house method statement - MS - CL - Hexavalent Chromium by Skalar
Soil	pH	As Received	In house method statement - MS - CL - pH in soils (using a 1:3 soil to water extraction)
Soil	CWG	As Received	In house method statements - MS - CL - EPH in soil and MS - CL - VPH
Soil	Asbestos	-	Fibre identification is in accordance with in house documented methods which are based on the procedure documented in the HSE Document HSG 248 "Asbestos: The analysts guide for sampling, analysis and clearance procedures"
Soil	Pesticide Screen	As Received	In house method statement - MS - CL - Pesticides

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HWOL TPH Acronym Index

Acronym	Description
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics and Aromatics
AL	Aliphatics Only
AR	Aromatics Only
2D	GC-GC - Double Coil Gas Chromatography
#1	EH_Total but with humics mathmatically subtracted
#2	EH_Total but with fatty acids mathmatically subtracted
_	Operator - underscore to separate acronyms (except for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry