Nicholls Colton Analytical
7 - 11 Harding Street
Leicester
LE1 4DH

GRM Development Solutions
Laurus House
First Avenue
Centrum 100
Burton on Trent
Staffs
DE14 2WH

Analytical Test Report: L16/2705/GRM/001 - Amendment A

Your Project Reference:	**Chapel Street, Forsbrook**	Samples Received on:	23.11.2016
Your Order Number:	P7711	Testing Instruction Received:	23.11.2016
Report Issue Number:	2	Sample Tested:	23.11 to 16.12.2016
Samples Analysed:	8 Soils	Report issued:	16.12.2016

Signed

James Gane
Commercial Manager
Nicholls Colton Analytical

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 NCA 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 NCA method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

With the exception of Sulphate, which is crushed over the 2mm 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.

Samples were supplied by customer, results are representative of the material provided

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

Date of Issue 17.11.16

Owned by Emily Blissett - Customer Services Supervisor

Authorised by James Gane - Commercial Manager

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Project Reference - Chapel Street, Forsbrook

Analytical Test Results - GRM Brownfield Suite

NCA Reference			16-38689	16-38690	16-38691	16-38692	16-38693	16-38694
Client Sample Reference			TP01	TP02	TP03	TP04	TP05	TP01
Client Sample Location			TP01	TP02	TP03	TP04	TP05	TP01
Depth (m)			0.1-0.2	0.2-0.3	0.1-0.2	0.2-0.3	0.1-0.2	1.0-1.1
Date of Sampling			21.11.2016	21.11.2016	21.11.2016	21.11.2016	21.11.2016	21.11.2016
Time of Sampling			10:30	09:30	11:00	11:30	10:00	Not provided
Sample Matrix			Clay	Clay	Clay	Slag	Clay	Clay
Determinant	**Units**	**Accreditation**						
Arsenic	(mg/kg)	MCERTS		< 10	10.8	14.5	18.9	-
Cadmium	(mg/kg)	MCERTS		1.2	1.6	3.0	2.3	-
Chromium (Total)	(mg/kg)	UKAS		25.5	19.0	54.3	28.3	-
Copper	(mg/kg)	MCERTS		8.5	75.4	230	54.6	-
Lead	(mg/kg)	MCERTS	Not possible*	29.7	102	27.8	197	-
Mercury	(mg/kg)	UKAS		< 2.5	< 2.5	< 2.5	< 2.5	-
Nickel	(mg/kg)	MCERTS		23.5	26.8	175	36.2	-
Selenium	(mg/kg)	u		< 8	< 8	< 8	< 8	-
Zinc	(mg/kg)	MCERTS		148	236	72.8	308	-
Total Phenols	(mg/kg)	MCERTS	< 10	< 1	< 1	< 1	< 10	-
Cyanide (Total)	(mg/kg)	MCERTS	< 10	< 1	< 1	< 1	< 10	-
Chromium (Hexavalent)	(mg/kg)	u	< 10	< 1	< 1	< 1	< 10	-
pH	pH Units	MCERTS	8.0	8.0	7.0	7.6	7.1	7.2
SOM	(%)	UKAS	11.4	2.1	6.7	35.1	11.8	-
Sulphate	(mg/l)	u	250	71	<10	950	80	33
Acenaphthene	(mg/kg)	MCERTS	<0.2	<0.02	<0.02	<0.02	<0.02	-
Acenaphthylene	(mg/kg)	UKAS	<0.2	<0.02	<0.02	<0.02	0.05	-
Anthracene	(mg/kg)	UKAS	0.49	<0.02	0.04	<0.02	0.06	-
Benzo (a) anthracene	(mg/kg)	MCERTS	1.07	<0.02	0.10	<0.02	0.26	-
Benzo (a) pyrene	(mg/kg)	MCERTS	1.63	<0.02	0.09	<0.02	0.28	-
Benzo (b) fluoranthene	(mg/kg)	MCERTS	1.82	<0.02	0.17	<0.02	0.41	-
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	1.23	<0.02	0.09	<0.02	0.20	-
Benzo (k) fluoranthene	(mg/kg)	MCERTS	0.69	<0.02	0.06	<0.02	0.16	-
Chrysene	(mg/kg)	MCERTS	1.44	<0.02	0.16	<0.02	0.40	-
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	0.36	<0.02	<0.02	<0.02	0.04	-
Fluoranthene	(mg/kg)	MCERTS	2.47	<0.02	0.21	0.03	0.70	-
Fluorene	(mg/kg)	MCERTS	<0.2	<0.02	<0.02	<0.02	<0.02	-
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	1.21	<0.02	0.08	<0.02	0.20	-
Naphthalene	(mg/kg)	MCERTS	<0.2	<0.02	0.06	<0.02	<0.02	-
Phenanthrene	(mg/kg)	MCERTS	0.93	<0.02	0.11	<0.02	0.16	-
Pyrene	(mg/kg)	MCERTS	2.24	<0.02	0.20	<0.02	0.62	-
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	16.6	<0.32	1.47	0.37	3.67	-
Asbestos	-	UKAS	Chrysotile	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	-
Quantification Screen	-	u	Chrysotile	-	-	-	-	-
ACM Type Detected	-	u	Loose Insulation	-	-	-	-	-
Total Asbestos in Sample	(%)	u	0.113	-	-	-	-	-

*Testing not possible due to sample containing Chrysotile

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Project Reference - Chapel Street, Forsbrook

Analytical Test Results - GRM Brownfield Suite

NCA Reference			16-38695	16-38696
Client Sample Reference			TP02	TP04
Client Sample Location			TP02	TP04
Depth (m)			1.4-1.5	2.0-2.1
Date of Sampling			21.11.2016	21.11.2016
Time of Sampling			Not provided	Not provided
Sample Matrix			Clay	Clay
Determinant	**Units**	**Accreditation**		
Arsenic	(mg/kg)	MCERTS	-	-
Cadmium	(mg/kg)	MCERTS	-	-
Chromium (Total)	(mg/kg)	UKAS	-	-
Copper	(mg/kg)	MCERTS	-	-
Lead	(mg/kg)	MCERTS	-	-
Mercury	(mg/kg)	UKAS	-	-
Nickel	(mg/kg)	MCERTS	-	-
Selenium	(mg/kg)	u	-	-
Zinc	(mg/kg)	MCERTS	-	-
Total Phenols	(mg/kg)	MCERTS	-	-
Cyanide (Total)	(mg/kg)	MCERTS	-	-
Chromium (Hexavalent)	(mg/kg)	u	-	-
pH	pH Units	MCERTS	7.4	7.5
SOM	(%)	UKAS	-	-
Sulphate	(mg/l)	u	<10	17
Acenaphthene	(mg/kg)	MCERTS	-	-
Acenaphthylene	(mg/kg)	UKAS	-	-
Anthracene	(mg/kg)	UKAS	-	-
Benzo (a) anthracene	(mg/kg)	MCERTS	-	-
Benzo (a) pyrene	(mg/kg)	MCERTS	-	-
Benzo (b) fluoranthene	(mg/kg)	MCERTS	-	-
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	-	-
Benzo (k) fluoranthene	(mg/kg)	MCERTS	-	-
Chrysene	(mg/kg)	MCERTS	-	-
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	-	-
Fluoranthene	(mg/kg)	MCERTS	-	-
Fluorene	(mg/kg)	MCERTS	-	-
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	-	-
Naphthalene	(mg/kg)	MCERTS	-	-
Phenanthrene	(mg/kg)	MCERTS	-	-
Pyrene	(mg/kg)	MCERTS	-	-
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	-	-
Asbestos	-	UKAS	-	-
Quantification Screen	-	u	-	-
ACM Type Detected	-	u	-	-
Total Asbestos in Sample	(%)	u	-	-

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Sample Descriptions

NCA Reference	Client Sample Reference	Sample Depth (m)	Description	Moisture Content (%)	Stone Content (%)
16-38689	TP01	0.1-0.2	Dark brown silty slightly sandy gravelly clay with tile fragments.	32	37
16-38690	TP02	0.2-0.3	Brown slightly silty slightly sandy clay with root fragments.	25	0
16-38691	TP03	0.1-0.2	Dark brown silty slightly sandy gravelly clay with root fragments.	28	11
16-38692	TP04	0.2-0.3	Brown slag.	16	0
16-38693	TP05	0.1-0.2	Dark brown slightly silty slightly sandy slightly gravelly clay with organic matter.	87	0

NCA Reference	Client Sample Reference	Sample Depth (m)	Description	% Passing 2mm BS test sieve
16-38694	TP01	1.0-1.1	Brown/grey slightly gravelly slightly silty clay.	70
16-38695	TP02	1.4-1.5	Brown/grey slightly gravelly slightly silty clay.	96
16-38696	TP04	2.0-2.1	Brown slightly gravelly slightly silty clay.	93

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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	Cyanide	As Received	In house method statement - MS - CL - Cyanide by Skalar
Soil	pH	As Received	In house method statement - MS - CL - pH in soils (using a 1:3 soil to water extraction)
Soil	SOM	Air Dried	In house method statement - MS - CL - TOC Eltra
Soil	Sulphate (w/s)	Oven Dried	In house method statement - MS - CL - Anions by Aquakem
Soil	Asbestos	As Received	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	Asbestos Quantification	-	Subcontract Analysis