Ground Engineering
Newark Road
Peterborough

PE1 5UA

FAO John Gibb

LABORATORY TEST REPORT

Results of analysis of 2 samples received 07 September 2009

Elm Village, Camden, London

Chemtest
The right chemistry to deliver results

Report Date
15 September 2009

Login Batch No				57783	
Chemtest [LIMS] ID				AE29176	AE29179
Sample ID				TP1	TP2
Sample No				D1	D2
Depth				0.05m	0.2m
Matrix				*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓		
2120	Boron (hot water soluble)	7440428	mg kg⁻¹	U	1.6	4
	Sulfate (2:1 water soluble) as SO4	14808798	g l⁻¹	M	0.03	1.1
2300	Cyanide (free)	57125	mg kg⁻¹	M	< 0.5	< 0.5
	Cyanide (total)	57125	mg kg⁻¹	M	< 0.5	1.1
2325	Sulfide	18496258	mg kg⁻¹	M	8.3	2.9
2450	Arsenic	7440382	mg kg⁻¹	M	13	13
	Cadmium	7440439	mg kg⁻¹	M	0.92	4.2
	Chromium	7440473	mg kg⁻¹	M	33	36
	Copper	7440508	mg kg⁻¹	M	53	55
	Mercury	7439976	mg kg⁻¹	M	0.46	0.45
	Nickel	7440020	mg kg⁻¹	M	27	33
	Lead	7439921	mg kg⁻¹	M	510	110
	Selenium	7782492	mg kg⁻¹	M	0.34	0.97
	Zinc	7440666	mg kg⁻¹	M	160	140
2490	Chromium (hexavalent)	18540299	mg kg⁻¹	N	< 0.5	< 0.5
2625	Organic matter		%	M	7.2	24
2700	Naphthalene	91203	mg kg⁻¹	M	< 0.1	< 0.1
	Acenaphthylene	208968	mg kg⁻¹	M	< 0.1	< 0.1
	Acenaphthene	83329	mg kg⁻¹	M	< 0.1	< 0.1
	Fluorene	86737	mg kg⁻¹	M	< 0.1	< 0.1
	Phenanthrene	85018	mg kg⁻¹	M	0.56	0.45
	Anthracene	120127	mg kg⁻¹	M	0.15	< 0.1
	Fluoranthene	206440	mg kg⁻¹	M	1.2	0.53
	Pyrene	129000	mg kg⁻¹	M	1.1	0.45
	Benzo[a]anthracene	56553	mg kg⁻¹	M	0.72	0.56
	Chrysene	218019	mg kg⁻¹	M	0.79	0.32
	Benzo[b]fluoranthene	205992	mg kg⁻¹	M	0.67	< 0.1
	Benzo[k]fluoranthene	207089	mg kg⁻¹	M	0.41	< 0.1
	Benzo[a]pyrene	50328	mg kg⁻¹	M	1.1	< 0.1
	Dibenzo[a,h]anthracene	53703	mg kg⁻¹	M	< 0.1	< 0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg⁻¹	M	0.68	< 0.1

All tests undertaken between 08-Sep-2009 and 14-Sep-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

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15 September 2009

					57783	
					AE29176	AE29179
					TP1	TP2
					D1	D2
					0.05m	0.2m
					SOIL	SOIL
2700	Benzo[g,h,i]perylene	191242	mg kg-1	M	0.69	< 0.1
	Total (of 16) PAHs		mg kg-1	M	8.1	2.3
2920	Phenols (total)		mg kg-1	N	<0.3	<0.3
2010	pH		-	M	7.5	5.6

All tests undertaken between 08-Sep-2009 and 14-Sep-2009

* Accreditation status

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Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Ground Engineering
Newark Road
Peterborough

PE1 5UA

FAO J Gibb
28 October 2009

Dear J Gibb

Test Report Number **97290**
Your Project Reference **Elm Village, Camden, London - C11779**

Please find enclosed the results of analysis for the samples received 20 October 2009.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Authorised Signatory

- Darrell Hall — Laboratory Manager
- Phil Hellier — Operations Director
- Keith Jones — Technical Development Manager
- John Crawford — Quality Manager
- Malcolm Avis — Technical Director

UKAS TESTING
2183

Notes to accompany report:

- *The sign < means 'less than'*
- *Tests marked 'U' hold UKAS accreditation*
- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/e means 'not evaluated'*
- *i/s means 'insufficient sample'*
- *u/s means 'unsuitable sample'*
- *Comments or interpretations are beyond the scope of UKAS accreditation*
- *The results relate only to the items tested*

Newmarket • Tamworth • Glasgow
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Ground Engineering
Newark Road
Peterborough

PE1 5UA

FAO J Gibb

LABORATORY TEST REPORT

Results of analysis of 2 samples
received 20 October 2009

Elm Village, Camden, London - C11779

Chemtest
The right

Report Date
28 October 2009

Login Batch No					97290	
Chemtest LIMS ID					AE41006	AE41007
Sample ID					TP3	TP4
Sample No					B1	B1
Depth					0.2m - 0.5m	0.2m - 0.5m
Matrix					*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*		
2120	Boron (hot water soluble)	7440428	mg kg^{-1}	U	1.1	0.7
	Sulfate (2:1 water soluble) as SO4	14808798	g l^{-1}	M	0.03	0.01
2300	Cyanide (free)	57125	mg kg^{-1}	M	< 0.5	< 0.5
	Cyanide (total)	57125	mg kg^{-1}	M	< 0.5	< 0.5
2325	Sulfide	18496258	mg kg^{-1}	M	2.9	5.9
2450	Arsenic	7440382	mg kg^{-1}	M	19	17
	Cadmium	7440439	mg kg^{-1}	M	1.5	0.28
	Chromium	7440473	mg kg^{-1}	M	38	34
	Copper	7440508	mg kg^{-1}	M	40	40
	Mercury	7439976	mg kg^{-1}	M	0.52	0.39
	Nickel	7440020	mg kg^{-1}	M	26	33
	Lead	7439921	mg kg^{-1}	M	120	110
	Selenium	7782492	mg kg^{-1}	M	<0.2	<0.2
	Zinc	7440666	mg kg^{-1}	M	120	92
2490	Chromium (hexavalent)	18540299	mg kg^{-1}	N	<0.5	<0.5
2625	Organic matter		%	M	4.0	2.8
2700	Naphthalene	91203	mg kg^{-1}	M	< 0.1	< 0.1
	Acenaphthylene	208968	mg kg^{-1}	M	< 0.1	0.28
	Acenaphthene	83329	mg kg^{-1}	M	0.13	0.36
	Fluorene	86737	mg kg^{-1}	M	< 0.1	< 0.1
	Phenanthrene	85018	mg kg^{-1}	M	0.89	0.58
	Anthracene	120127	mg kg^{-1}	M	0.22	0.25
	Fluoranthene	206440	mg kg^{-1}	M	1.3	1.1
	Pyrene	129000	mg kg^{-1}	M	1.1	0.95
	Benzo[a]anthracene	56553	mg kg^{-1}	M	0.56	0.6
	Chrysene	218019	mg kg^{-1}	M	0.66	0.65
	Benzo[b]fluoranthene	205992	mg kg^{-1}	M	0.69	0.61
	Benzo[k]fluoranthene	207089	mg kg^{-1}	M	0.6	0.37
	Benzo[a]pyrene	50328	mg kg^{-1}	M	0.77	0.68
	Dibenzo[a,h]anthracene	53703	mg kg^{-1}	M	< 0.1	< 0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg^{-1}	M	0.43	0.37

All tests undertaken between 21-Oct-2009 and 26-Oct-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Ground Engineering
Newark Road
Peterborough

PE1 5UA

FAO J Gibb

LABORATORY TEST REPORT

Results of analysis of 2 samples
received 20 October 2009

Elm Village, Camden, London - C11779

Chemtest
The right chemistry to deliver results

Report Date
28 October 2009

					97290	
					AE41006	AE41007
					TP3	TP4
					B1	B1
					0.2m - 0.5m	0.2m - 0.5m
					SOIL	*SOIL*
2700	Benzo[g,h,i]perylene	191242	mg kg^{-1}	M	0.49	0.48
	Total (of 16) PAHs		mg kg^{-1}	M	8	7.4
2920	Phenols (total)		mg kg^{-1}	N	<0.3	<0.3
2010	pH		-	M	7.8	8.2

All tests undertaken between 21-Oct-2009 and 26-Oct-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Ground Engineering
Newark Road
Peterborough

PE1 5UA

FAO John Gibb
15 September 2009

Dear John Gibb

Test Report Number **57783**
Your Project Reference **Elm Village, Camden, London**

Please find enclosed the results of analysis for the samples received 7 September 2009.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Authorised Signatory

☐ Darrell Hall	Laboratory Manager
☐ Phil Hellier	Operations Director
☒ Keith Jones	Technical Development Manager
☐ John Crawford	Quality Manager
☐ Malcolm Avis	Technical Director

UKAS TESTING
2183

Notes to accompany report:

- *The sign < means 'less than'*
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- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/a means 'not evaluated'*
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- *u/s means 'unsuitable sample'*
- *Comments or interpretations are beyond the scope of UKAS accreditation*
- *The results relate only to the items tested*

Ground Engineering
Newark Road
Peterborough

PE1 5UA

FAO John Gibb

LABORATORY TEST REPORT

Results of analysis of 2 samples received 07 September 2009

Elm Village, Camden, London

Chemtest
The right chemistry to deliver results

Report Date
16 September 2009

Login Batch No					57784	
Chemtest LIMS ID					AE29186	AE29187
Sample ID					TP1	TP2
Sample No					D2	D3
Depth					0.2m	0.4m
Matrix					*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*		
	Carbon:nitrogen ratio			N	16	18
2025	Phosphorus (available)	7723140	mg l^{-1}	N	83	30
2110	Nitrogen (total)	17778880	%	N	0.17	0.39
2260	Carbonate		%	N	1.5	3.2
2400	Calcium (available)	7439954	mg l^{-1}	N	1000	1100
	Potassium (available)	7440097	mg l^{-1}	N	110	75
	Magnesium (available)	7439954	mg l^{-1}	N	50	100
	Sodium (available)	7439954	mg l^{-1}	N	550	550
2420	Electrical Conductivity (topsoil)	7439954	µS cm^{-1}	N	2400	2900
2450	Copper (Nitric Acid Extract)	7440508	mg kg^{-1}	N	48	54
	Nickel (Nitric Acid Extract)	7440020	mg kg^{-1}	N	19	29
	Zinc (Nitric Acid Extract)	7440666	mg kg^{-1}	N	130	130
2625	Organic matter		%	M	4.8	12
2010	pH		-	M	7.5	6.7
	Miscellaneous subcontracted analysis				See Attached	See Attached

All tests undertaken between 09-Sep-2009 and 16-Sep-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : 15/09/09 PAGE 1 of 4 Pages

Contract Serial No.

Chemtest Job No. 57784 S22462

0998

CLIENT:

CHEMTEST
Depot Road
Newmarket
Suffolk
CB8 0AP

Soil Property Testing

18 Halcyon Court, St Margarets Way,
Stukeley Meadows, Huntingdon,
Cambs. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email SPTownend@btclick.com

SAMPLES SUBMITTED BY:

CHEMTEST

APPROVED SIGNATORIES:

☐ S.P.TOWNEND FGS
Technical Director

☐ W.JOHNSTONE
Deputy Technical/Quality Manager

☑ J.C.GARNER B.Eng (Hons.) FGS
Quality Manager

SAMPLES LABELLED:

Chemtest Job No. 57784

DATE RECEIVED: 08/09/09

SAMPLES TESTED BETWEEN 08/09/09 and 15/09/09

REMARKS: For the attention of Jason Keeley
Your Order No. 10073

NOTES: 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2 (a) UKAS - United Kingdom Accreditation Service.
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 2 of 4

Contract Serial No.

Chemtest Job No. 57784 S22462

SCHEDULE OF LABORATORY TESTS

Bh./ Tp No.	Sample Ref	Depth (from)	153:Stone Content	154:Textural Class	155:Visible Contaminants	156:Sharp objects	Remarks
29186	D1	-	*	*	*	*	Sample Prefixed AE
29187	D2	-	*	*	*	*	Sample Prefixed AE
-	-	-	2	2	2	2	<— Total Number of Tests —

Scheduled by: CHEMTEST

Target Date: 16/09/09

SPTSCHED

TEST REPORT

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE: As page 1

CONTRACT
CHEMTEST JOB No. 57784

Serial No.
S22462

No.0983

TOPSOIL ANALYSIS BS 3882:2007

BOREHOLE/TP No. AE29186	**Description in moist condition on receipt:**
SAMPLE No. D1	Dark brown slightly organic slightly sandy slightly gravelly CLAY with occasional brick, cinder, coke and glass fragments and recently active roots. Gravel is limestone and chert
DEPTH (m)	

	Weights (g)	Percentages	Notes
Initial Sample			
Total - Oven Dried Weight (105-110°C)	1559.90		
Organics/Wood - Picked out by Hand	0.107	0.01	Roots
Contaminants - Picked out by Hand	34.31	2.2	Brick, cinder & coke fragments
Sharps	1.667	0.1	Glass
New Total Dry Weight After Excluding Above Material (g)	1523.766		
Cumulative Retained 50mm	0	0.0	Wet sieved if necessary through the 2mm sieve retaining all material passing
Cumulative Retained 20mm	229.86	15.1	
Cumulative Retained 2mm	474.97	31.2	
Passing 2mm	1047.7	68.8	
Riffled to	87.41		
Riffle Factor	11.980		
Removal of Organics by Hydrogen Peroxide			
Passing 2mm after removal of Organics			
Loss of Organics			
Retained on 0.063mm after wet sieving	35.16		
Corrected Retained on 0.063mm	421.43	58.8	
Passing 0.063mm		41.2	
From the Hydrometer Test			**Percentages for Textural Class calculated as a percentage of material passing 2mm**
Sand Content		28	40.6
Silt Content		28	40.6
Clay Content		13	18.8
	Textural Classification		**Clay Loam**

METHOD OF PREPARATION	:	See Individual Test Report Form
METHOD OF TEST	:	See Individual Test Report Form
TYPE OF SAMPLE KEY	:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
COMMENTS	:	Ref.: BS3882:2007 Specification for Topsoil and Requirements for Use
REMARKS TO INCLUDE	:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105 – 110 deg C.

TEST REPORT

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE: As page 1

CONTRACT
CHEMTEST JOB No. 57784

Serial No.
S22462

No.0998

TOPSOIL ANALYSIS BS 3882:2007

BOREHOLE/TP No. AE29187	**Description in moist condition on receipt:**
SAMPLE No. D2	Limestone, chert and granite fragments from fine to coarse GRAVEL size with dark brown slighlly organic sandy clay/very clayey sand, occasional cinder and brick fragments and recently active roots
DEPTH (m)	

	Weights (g)	Percentages	Notes
Initial Sample			
Total - Oven Dried Weight (105-110°C)	723.50		
Organics/Wood - Picked out by Hand	1.016	0.14	Roots
Contaminants - Picked out by Hand	49.17	6.8	Cinder and brick fragments
Sharps	0	0.0	
New Total Dry Weight After Excluding Above Material (g)	673.314		
Cumulative Retained 50mm	0	0.0	Wet sieved if necessary through the 2mm sieve retaining all material passing
Cumulative Retained 20mm	166.52	23.1	
Cumulative Retained 2mm	350.83	52.1	
Passing 2mm	322.55	47.9	
Riffled to	87.41		
Riffle Factor	3.690		
Removal of Organics by Hydrogen Peroxide			
Passing 2mm after removal of Organics			
Loss of Organics			
Retained on 0.063mm after wet sieving	56.57		
Corrected Retained on 0.063mm	208.75	83.1	
Passing 0.063mm		16.9	
From the Hydrometer Test			Percentages for Textural Class calculated as a percentage of material passing 2mm
Sand Content		31	64.6
Silt Content		10	20.8
Clay Content		7	14.6
Textural Classification			Sandy Loam

METHOD OF PREPARATION	:	See Individual Test Report Form
METHOD OF TEST	:	See Individual Test Report Form
TYPE OF SAMPLE KEY	:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
COMMENTS	:	Ref.: BS3882:2007 Specification for Topsoil and Requirements for Use
REMARKS TO INCLUDE	:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105 – 110 deg C.

Appendix 4

Concrete Requirements Against Sulphate Attack
(1 Page)

TABLE C2 – AGGRESSIVE CHEMICAL ENVIRONMENT FOR CONCRETE (ACEC) CLASSIFICATION FOR BROWNFIELD LOCATIONS[a]

Table C2 Aggressive Chemical Environment for Concrete (ACEC) classification for brownfield locations[a]

Sulfate and magnesium						Groundwater		ACEC
Design Sulfate Class for location	2:1 water/soil extract[b]		Groundwater		Total potential sulfate[c]	Static water	Mobile water	Class for location
1	2 (SO_4 mg/l)	3 (Mg mg/l)	4 (SO_4 mg/l)	5 (Mg mg/l)	6 (SO_4 %)	7 (pH)[d]	8 (pH)[d]	9
DS-1	< 500		< 400		< 0.24	≥ 2.5		AC-1s
							> 6.5[d]	AC-1
							5.5–6.5	AC-2z
							4.5–5.5	AC-3z
							2.5–4.5	AC-4z
DS-2	500–1500		400–1400		0.24–0.6	> 5.5		AC-1s
							> 6.5	AC-2
						2.5–5.5		AC-2s
							5.5–6.5	AC-3z
							4.5–5.5	AC-4z
							2.5–5.5	AC-5z
DS-3	1600–3000		1500–3000		0.7–1.2	> 5.5		AC-2s
							> 6.5	AC-3
						2.5–5.5		AC-3s
							5.5–6.5	AC-4
							2.5–5.5	AC-5
DS-4	3100–6000	≤ 1200	3100–6000	≤ 1000	1.3–2.4	> 5.5		AC-3s
							> 6.5	AC-4
						2.5–5.5		AC-4s
							2.5–6.5	AC-5
DS-4m	3100–6000	> 1200[e]	3100–6000	> 1000[e]	1.3–2.4	> 5.5		AC-3s
							> 6.5	AC-4m
						2.5–5.5		AC-4ms
							2.5–6.5	AC-5m
DS-5	> 6000	≤ 1200	> 6000	≤ 1000	> 2.4	> 5.5		AC-4s
						2.5–5.5	≥ 2.5	AC-5
DS-5m	> 6000	> 1200[e]	> 6000	> 1000[e]	> 2.4	> 5.5		AC-4ms
						2.5–5.5	≥ 2.5	AC-5m

Notes

a Brownfield locations are those sites, or parts of sites, that might contain chemical residues produced by or associated with industrial production (Section C5.1.3).

b The limits of Design Sulfate Classes based on 2:1 water/soil extracts have been lowered from previous Digests (Box C7).

c Applies only to locations where concrete will be exposed to sulfate ions (SO_4), which may result from the oxidation of sulfides such as pyrite, following ground disturbance (Appendix A1 and Box C8).

d An additional account is taken of hydrochloric and nitric acids by adjustment to sulfate content (Section C5.1.3).

e The limit on water-soluble magnesium does not apply to brackish groundwater (chloride content between 12 000 mg/l and 17 000 mg/l). This allows 'm' to be omitted from the relevant ACEC classification. Seawater (chloride content about 18 000 mg/l) and stronger brines are not covered by this table.

Explanation of suffix symbols to ACEC Class

- Suffix 's' indicates that the water has been classified as static.
- Concrete placed in ACEC Classes that include the suffix 'z' have primarily to resist acid conditions and may be made with any of the cements in Table D2 on page 42.
- Suffix 'm' relates to the higher levels of magnesium in Design Sulfate Classes 4 and 5.

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