

APPENDIX V

Laboratory Chemical, Geotechnical and Gas Monitoring Results

Results of analysis of 6 samples
received 16 May 2007

Report Date
23 May 2007

FAO Andrew Spooner

Pontefract Road, Cudworth

Login Batch No

Chemtest LIMS ID

Sample ID

Sample No

Depth

Matrix

					43781					
					AB97757	AB97758	AB97759	AB97760	AB97761	AB97762
					WS1	WS2	WS3	WS4	WS5	WS5
					0.20m	0.25m	0.50m	0.20m	0.40m	0.70m
					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
SOP↓	Determinand↓	CAS No↓	Units↓	*						
2300	Cyanide (total)	57125	mg kg ⁻¹	M	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2310	Cyanide (free)	57125	mg kg ⁻¹	M	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2320	Sulfide	18496258	mg kg ⁻¹	N	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2330	Thiocyanate	302045	mg kg ⁻¹	M	<5	<5	<5	<5	<5	<5
2120	Boron (hot water soluble)	7440428	mg kg ⁻¹	U	0.5	0.5	<0.4	0.5	<0.4	<0.4
2210	Sulfate (2:1 water soluble)	14808798	g l ⁻¹	M	0.08	0.06	0.07	0.06	0.04	0.05
2430	Sulfate (total)	14808798	%	U	0.35	0.07	0.04	0.09	0.03	0.02
	Sulfur (total TRL report 447)		%	N	0.06	0.03	0.02	0.93	0.48	0.11
2450	Arsenic	7440382	mg kg ⁻¹	M	28	22	5.2	15	5.8	3.3
	Cadmium	7440439	mg kg ⁻¹	M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium	7440473	mg kg ⁻¹	U	10	8.6	8.4	11	5.7	4.6
	Copper	7440508	mg kg ⁻¹	M	31	25	11	23	8.4	5.0
	Mercury	7439976	mg kg ⁻¹	M	0.20	0.15	<0.1	0.32	<0.1	<0.1
	Nickel	7440020	mg kg ⁻¹	M	20	17	19	17	8.3	10
	Lead	7439921	mg kg ⁻¹	M	130	50	7.4	28	9.6	<0.1
	Selenium	7782492	mg kg ⁻¹	U	0.68	0.51	0.28	0.41	0.29	0.20
	Zinc	7440666	mg kg ⁻¹	M	40	36	22	45	21	11
2490	Chromium (hexavalent)	18540299	mg kg ⁻¹	N	< 5	< 5	< 5	< 5	< 5	< 5
2800	Naphthalene	91203	mg kg ⁻¹	N	0.1	<0.1	0.2	<0.1	<0.1	<0.1
	Acenaphthylene	208968	mg kg ⁻¹	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Acenaphthene	83329	mg kg ⁻¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluorene	86737	mg kg ⁻¹	N	0.1	<0.1	0.2	<0.1	<0.1	<0.1
	Phenanthrene	85018	mg kg ⁻¹	N	2.3	<0.1	3.9	0.5	0.2	<0.1
	Anthracene	120127	mg kg ⁻¹	N	0.3	<0.1	0.7	<0.1	<0.1	<0.1
	Fluoranthene	206440	mg kg ⁻¹	N	2.4	<0.1	4.9	0.7	0.6	<0.1
	Pyrene	129000	mg kg ⁻¹	N	2	<0.1	3.9	0.8	0.5	<0.1
	Benzo[a]anthracene	56553	mg kg ⁻¹	N	0.8	<0.1	1.6	0.3	0.2	<0.1
	Chrysene	218019	mg kg ⁻¹	N	0.7	<0.1	1.4	0.2	0.1	<0.1
	Benzo[b]fluoranthene	205992	mg kg ⁻¹	N	0.4	<0.1	0.7	0.2	0.3	<0.1
	Benzo[k]fluoranthene	207089	mg kg ⁻¹	N	0.6	<0.1	1	0.3	0.2	<0.1

All tests undertaken between 18-May-2007 and 23-May-2007

* Accreditation status

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

Column page 1

Report page 1 of 2

Report sample ID range AB97757 to AB97762

Abatech International Ltd
4 Park Square
Chapelton
Sheffield
S35 2PM

LABORATORY TEST REPORT

Results of analysis of 6 samples
received 16 May 2007

Chemtest

Report Date
23 May 2007

FAO Andrew Spooner

Pontefract Road, Cudworth

					43781					
					AB97757	AB97758	AB97759	AB97760	AB97761	AB97762
					WS1	WS2	WS3	WS4	WS5	WS5
					0.20m	0.25m	0.50m	0.20m	0.40m	0.70m
					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
2800	Benzo[a]pyrene	50328	mg kg ⁻¹	N	0.4	<0.1	1	<0.1	0.1	<0.1
	Dibenzo[a,h]anthracene	53703	mg kg ⁻¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg ⁻¹	N	0.2	<0.1	0.3	<0.1	<0.1	<0.1
	Benzo[g,h,i]perylene	191242	mg kg ⁻¹	N	0.2	<0.1	0.3	<0.1	<0.1	<0.1
	Total (of 16) PAHs		mg kg ⁻¹	N	11	<2	20	3	2.2	<2
2920	Phenols (total)		mg kg ⁻¹	M	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
2010	pH		-	M	5.8	6.4	7.1	6.7	7.4	7.0

All tests undertaken between 18-May-2007 and 23-May-2007

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Column page 1

Report page 2 of 2

Report sample ID range AB97757 to AB97762

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK



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Accredited to
ISO/IEC 17025:1999

Chemtest

Issue No: 022 Issue date: 29 June 2006

Willie Snaithe Road
Newmarket
Suffolk
CB8 7SQ

Contact: Mr M J H Avis
Tel: +44 (0)1638-606070
Fax: +44 (0)1638-606071
E-Mail: admin@chemtest.co.uk
Website:

Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ASBESTOS IN BULK MATERIALS including materials and products suspected of containing asbestos	<u>Health and Hygiene</u>	Health and Safety Executive Asbestos: The analysts' guide for sampling, analysis and clearance procedures (HSG 248)
	Identification of: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite	HSG 248:February 2005 by Documented In-House Method SOP 2185 using stereo-microscopy, polarised light microscopy and dispersion staining
	<u>Chemical Tests</u>	Documented In-House Method based on/incorporating published procedures in the HMSO series 'Methods for the Examination of Water and Associated Materials', unless otherwise stated, referenced by ISBN number and year
	Boron (water soluble)	SOP 2120 by ICP spectrometry based on procedure in 'The Analysis of Agricultural Materials', ADAS (ISBN 011 242 762 6:1986)
SOIL	Metals, arsenic copper nickel zinc lead chromium (+ sulphate)	SOP 2430 by microwave digestion or Digiprep hotblock digestion followed by ICP (ISBN 011 753 244 4:1996)



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Chemtest

Issue No: 022 Issue date: 29 June 2006

Testing performed at main address only

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOIL (cont'd)	<u>Chemical Tests</u>	
	pH value	SOP 2010 by pH meter (ISBN 011 751 252 4:1977)
	Polynuclear Aromatic Hydrocarbons (PAHs), Acenaphthene Acenaphthylene Anthracene Benzo[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[g,h,i]perylene Benzo[k]fluoranthene Chrysene Dibenzo[a,h]anthracene Fluoranthene Fluorene Indeno[1,2,3-cd]pyrene Naphthalene Phenanthrene Pyrene Total PAHs [sum of 16 above]	SOP 2700 by GC-FID (ISBN 087 553 223 3:1995)
	Metals, Arsenic Cadmium Chromium Cobalt Copper Lead Manganese Mercury Nickel Selenium Zinc	SOP 2450 by digiprep hotblock digestion followed by ICP-Mass Spectroscopy (ISBN 011 753 244 4:1996)
	Sulphate (total)	SOP 2430 by microwave digestion followed by ICP spectrometry (ISBN 011 753 244 4:1996)



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOIL (cont'd)	<u>Chemical Tests</u> Sulphate (water soluble) Total Petroleum Hydrocarbons including Gasoline Range Organics (GRO, Diesel Range Organics (DRO) Volatile Organic Compounds (VOCs), Dichlorodifluoromethane Chloromethane Vinyl chloride Bromomethane Chloroethane Trichlorofluoromethane 1,1-Dichloroethene trans-1,2-Dichloroethene 1,1-Dichloroethane cis-1,2-Dichloroethene Bromochloromethane Trichloromethane 1,1,1-Trichloroethane Tetrachloromethane 1,1-Dichloropropene Benzene 1,2-Dichloroethane Trichloroethene 1,2-Dichloropropane Dibromomethane Bromodichloromethane Toluene 1,1,2-Trichloroethane Tetrachloroethene 1,3-Dichloropropane Dibromochloromethane 1,2-Dibromoethane Chlorobenzene 1,1,1,2-Tetrachloroethane Ethylbenzene m- & p-Xylene o-Xylene Styrene Tribromomethane Isopropylbenzene	 SOP 2210 by ICP spectrometry (ISBN 011 752 240 6:1988) SOP 2670 by GC-FID (ISBN 011 752 222 8:1988) SOP 2760 by Headspace GC-MS based on EPA 524.2:1992



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOIL (cont'd)	<u>Chemical Tests (cont'd)</u>	
	Volatile Organic Compounds (VOCs), (cont'd)	
	Bromobenzene	
	n-Propylbenzene	
	2-Chlorotoluene	
	1,3,5-Trimethylbenzene	
	4-Chlorotoluene	
	tert-Butylbenzene	
	1,2,4-Trimethylbenzene	
	sec-Butylbenzene	
	1,3-Dichlorobenzene	
	4-Isopropyltoluene	
	1,4-Dichlorobenzene	
	n-Butylbenzene	
	1,2-Dichlorobenzene	
	1,2-Dibromo-3-chloropropane	
	1,2,4-Trichlorobenzene	
	Hexachlorobutadiene	
	Naphthalene	
	1,2,3-Trichlorobenzene	
	<u>Chemical Tests and Physical Tests</u>	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils
	pH value	SOP 2010 by pH meter (ISBN 011 751 252 4:1977)
	Sulphur (elemental and organic)	SOP 2170 by ICP-OES
	Sulphate (water soluble)	SOP 2120 by ICP spectrometry (ISBN 011 752 240 6:1988)
	Metals, Cobalt Manganese Arsenic Copper Zinc Cadmium Mercury Nickel Lead	SOP 2450 by digiprep hotblock digestion followed by ICP-Mass Spectroscopy (ISBN 011 753 244 4:1996)



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOIL (cont'd)	<u>Chemical Tests and Physical Tests</u> Volatile Organic Compounds (VOCs), 1,1-Dichloroethane cis-1,2-Dichloroethene 2-Chlorotoluene Benzene Chlorobenzene Chloromethane Ethylbenzene 1,1,1,2-Tetrachloroethane Tetrachloroethene Tetrachloromethane Toluene 1,1,1-Trichloroethane Trichloroethene Trichloromethane Vinyl Chloride Polynuclear Aromatic Hydrocarbons (PAHs) Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Dibenzo(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene Pyrene Total PAH (sum of 16 above) Total Petroleum Hydrocarbons C ₈ - C ₄₀ Polychlorinated Biphenyls as Arochlor 1242	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils SOP 2760 by Headspace GC-MS based on EPA 524.2:1992 SOP 2700 by GC-FID based on 'Standard Methods for the examination of Water & Waste Water', APHA (ISBN 087 553 223 3:1995) SOP 2670 by GC-FD (ISBN 011 752 2228:1988) SOP 2810 by GC-ECD



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOIL (cont'd)	<u>Chemical Tests and Physical Tests</u>	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils
WATER	Phenol	SOP 2920 by HPLC
	<u>Chemical Tests</u>	Documented In-House Methods based on/incorporating published procedures in the HMSO series 'Methods for the Examination of Water and Associated Materials' referenced by ISBN number and year
	Anions: fluoride chloride nitrite nitrate phosphate sulphate	SOP 1210 by ion chromatography (ISBN 011 752 331 3:1990)
	Cations: calcium magnesium potassium sodium ammonium	SOP 1210 by ion chromatography (ISBN 011 752 331 3:1990)
	Electrical conductivity	SOP 1020 by Conductivity Meter (ISBN 011 751 428 4:1978)
	pH value	SOP 1010 by pH meter (ISBN 011 751 252 4:1977)
	Total alkalinity	SOP 1260 by titration (ISBN 011 751 601 5:1981)
	Total hardness	SOP 1270 by calculation based on procedure in 'The Analysis of Agricultural Materials', ADAS (ISBN 011 242 762 6:1986)
	Total Petroleum Hydrocarbons including Gasoline Range Organics (GRO), Diesel Range Organics (DRO)	SOP 1670 by GC-FID (ISBN 011 752 222 8:1988)



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATER (cont'd)	<u>Chemical Tests</u> Volatile Organic Compounds (VOCs), Dichlorodifluoromethane Chloromethane Bromomethane Chloroethane Trichlorofluoromethane 1,1-Dichloroethene trans-1,2-Dichloroethene 1,1-Dichloroethane cis-1,2-Dichloroethene Bromochloromethane Trichloromethane 1,1,1-Trichloroethane Tetrachloromethane 1,1-Dichloropropene Benzene 1,2-Dichloroethane Trichloroethene 1,2-Dichloropropane Dibromomethane Bromodichloromethane Toluene 1,1,2-Trichloroethane Tetrachloroethene 1,3-Dichloropropane Dibromochloromethane 1,2-Dibromoethane 1,1,1,2-Tetrachloroethane Ethylbenzene m- & p-Xylene o-Xylene Styrene Tribromomethane Isopropylbenzene Bromobenzene n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene	SOP 1760 by Headspace GC-MS based on EPA 524.2:1992



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATER (cont'd)	<u>Chemical Tests (cont'd)</u> Volatile Organic Compounds (VOCs), (cont'd) 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2-Dibromo-3-chloropropane 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene Metals, Arsenic Boron Cadmium Chromium Copper Lead Manganese Mercury Nickel Selenium Zinc	SOP 1450 by ICP-Mass Spectroscopy (ISBN 011 753 244 4:1996)
WATER Ground Water, Freshwater and Leachates	Cations Sodium Calcium Potassium Magnesium	SOP 1415 by ICP- Mass Spectroscopy
WATER Ground Water and Leachates	Chemical Oxygen Demand Ammonium	SOP 1110 by Colorimetry SOP 1410 by Colorimetry
END		



LABORATORY REPORT



Contract Number: PSL07/1144

Client's Reference:

Report Date: 07 June 2007

Client Name: Abatech International Ltd
4 Park Square
Thorncliffe Park
Chapelton
Sheffield
S35 2PH

For the attention of: Andy Spooner

Contract Title: Pontefract Road , Cudworth.

Date Received: 21-May-07

Date Commenced: 21-May-07

Date Completed: 7-Jun-07

Notes: Observations and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

D Lambe
(Senior Technician)

5 - 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AG
tel: +44 (0)870 240 1964
fax: +44 (0)870 240 1965
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awatkins@prosoils.co.uk

ABATECH INTERNATIONAL LTD			
PROJECT NUMBER: 57/028			
REVIEW: SNE			
DATE: 11.6.07			
ASS	AS		
		FILE:	✓

Page 1 of 3

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

Compiled by	Date	Checked by	Date	Approved by	Date
	7/6/07		7/6/07		7/6/07
PONTEFRAC T ROAD, CUDWORTH.					Contract No: PSL07/1144
					Client Ref: S6/028

SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.

	Compiled by	Date	Checked by	Date	Approved by	Date
	1008	7/6/07	~~1008~~	7/6/07	~~1008~~	7/6/07
PONTEFRACT ROAD, CUDWORTH.						Contract No: PSL07/1144
						Client Ref: S6/028

MONITORING OF SOIL GASES & GROUNDWATER

abatech
consulting engineers

**Abatech International Ltd,
Consulting Engineers
Abatech House, Bull Close Road, Lenton,
Nottingham NG7 2UL
Tel. 0115 986 5022**

CONTRACT N° : S7/023
CONTRACT : Pontefract Road Primary School
CLIENT : Barratt Sheffield
DATE : Monday 14th May 2007
CONDITIONS : Overcast with a few showers
Atmospheric Pressure: 1006mb
SPECIFICATIONS : Waste Management Paper No 27
and BS 5930 : 1999 'Code of Practice for Site Investigations'
OPERATOR : D R Simpson
EQUIPMENT : GA2000 - Infrared gas analyser

RESULTS

Borehole No./Ref.	LEL %	Methane (CH ₄) %	Carbon Dioxide (CO ₂) %	Oxygen (O ₂) %	Gas Flow Rate (l/hr)	H ₂ S ppm	CO ppm	Depth to Groundwater (mbgl) / Depth of well
BH1	0	0.0	1.5	18.6	0.0	0	0	0.16/1.48
BH4	0	0.0	3.6	16.7	0.0	0	13	0.10/1.85

Notes

L.E.L. = Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)
% = By Volume
* = Bag sample taken for laboratory analysis

Signed (Operator)

Signed (Andrew Spooner)

MONITORING OF SOIL GASES & GROUNDWATER

abatech
consulting engineers

**Abatech International Ltd,
Consulting Engineers
Abatech House, Bull Close Road, Lenton,
Nottingham NG7 2UL
Tel. 0115 986 5022**

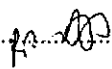
CONTRACT N° : S7/023
CONTRACT : Pontefract Road Primary School
CLIENT : Barratt Sheffield
DATE : Monday 21st May 2007
CONDITIONS : Sunny with some cloudy patches
Atmospheric Pressure: 1011mb
SPECIFICATIONS : Waste Management Paper No 27
and BS 5930 : 1999 'Code of Practice for Site Investigations'
OPERATOR : D R Simpson
EQUIPMENT : GA2000 - Infrared gas analyser

RESULTS

Borehole No./Ref.	LEL %	Methane (CH ₄) %	Carbon Dioxide (CO ₂) %	Oxygen (O ₂) %	Gas Flow Rate (l/hr)	H ₂ S ppm	CO ppm	Depth to Groundwater (mbgl) / Depth of well
BH1	0	0.0	1.4	19.3	0.0	0	0	1.23/1.47
BH4	0	0.0	3.4	16.8	0.0	0	6	1.77/1.85

Notes

L.E.L = Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)
% = By Volume
* = Bag sample taken for laboratory analysis

Signed (Operator) 

Signed (Andrew Spooner) 