



2139

Certificate of Analysis

Certificate Number: 12-61455



Date: 23/04/2012

Client: Earth Science Partnership
33 Cardiff Road
Taffs Well
Cardiff
CF15 7RB

Our Reference: 12-61455

Client Reference: 4994E

Contract Title: Hadden Hall Hotel

Description: 12 soil samples

Date Received: 05 April 2012

Date Started: 05 April 2012

Date Completed: 23 April 2012

Test Procedures: Identified by prefix DETSn (details on request), Asbestos Analysis (DETS 082).

Notes: Observations and interpretations are outside the scope of UKAS accreditation

Approved By: 
Mark Hughes, Contracts Manager

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 except in full, without the prior written approval of the laboratory.

Information in Support of the Analytical Results

Analysis

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425um sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample.

Key

- * Denotes test not included in laboratory scope of accreditation
- # Denotes test that holds MCERTS accreditation, however, MCERTS accreditation is only implied if the report carries the MCERTS logo
- \$ Denotes tests completed by an approved subcontractor
- I/S Denotes insufficient sample to carry out test
- U/S Denotes that the sample is not suitable for testing

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month

Liquids - 2 weeks

Asbestos (test portion) - 6 months

Summary of Chemical Analysis

Matrix Descriptions

Our Ref: 12-61455

Client Ref: 4994E

Contract Title: Hadden Hall Hotel

Sample ID	Depth	Sample No	Completed	Matrix Description
TP1	0.60	401804	23/04/2012	Brown gravelly sandy CLAY
TP3	0.30	401805	23/04/2012	Dark brown brow
TP4	1.30	401806	23/04/2012	Dark grey gravelly clayey SAND (made ground includes brick)
TP5	0.50	401807	23/04/2012	Dark brown gravelly clayey SAND
TP6	0.50	401808	23/04/2012	Dark grey gravelly clayey SAND (made ground includes brick)
TP7	1.30	401809	23/04/2012	Dark grey gravelly clayey SAND

Summary of Chemical Analysis

Soil Samples

Our Ref: 12-61455

Client Ref: 4994E

Contract Title: Hadden Hall Hotel

				Lab No.	401804	401805	401806	401807
				Sample ID	TP1	TP3	TP4	TP5
				Depth	0.60	0.30	1.30	0.50
				Sample Ref				
				Sample Type				
				Sampling Date	03/04/2012	03/04/2012	03/04/2012	03/04/2012
				Sampling Time				
Test	Units	DETSxx	LOD					
Arsenic	mg/kg	DETS 042#	0.2		12	2.7	6.7	12
Cadmium	mg/kg	DETS 042#	0.1		10	0.7	1.3	1.2
Chromium III	mg/kg	DETS 042*	0.15		47	6.7	14	20
Chromium	mg/kg	DETS 042#	0.15		47	6.7	14	20
Hexavalent Chromium	mg/kg	DETSC2204*	1		< 1.0	< 1.0	< 1.0	< 1.0
Copper	mg/kg	DETS 042#	0.2		36	5.4	32	51
Lead	mg/kg	DETS 042#	0.3		46	14	99	92
Mercury	mg/kg	DETSC2325#	0.05		0.24	< 0.05	0.15	0.29
Nickel	mg/kg	DETS 042#	1		70	5.4	15	19
Selenium	mg/kg	DETS 042#	0.5		< 0.5	< 0.5	< 0.5	< 0.5
Cyanide total	mg/kg	DETSC 2130#	0.1		< 0.1	< 0.1	0.1	< 0.1
Cyanide free	mg/kg	DETSC 2130#	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Cyanide complex	mg/kg	DETSC 2130	0.2		< 0.2	< 0.2	< 0.2	< 0.2
Organic matter	%	DETSC2002#	0.1		0.8	1.5	1.6	2.3
Total Sulphate as SO4	%	DETSC2321#	0.01		0.02	0.04	3.3	0.23
Sulphate Aqueous Extract as SO4	mg/l	DETSC 2076#	10		20	33	1800	610
Total Sulphur as S	%	DETSC 2320	0.01		0.01	0.02	0.99	0.11
pH		DETSC2008#			7.7	8.3	9.2	10.0
Acenaphthene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	0.6	0.8
Benzo(a)anthracene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	0.2	0.3
Benzo(a)pyrene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	0.6	0.5
Dibenzo(a,h)anthracene	mg/kg	DESTC 3301	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	1.1	1.8
Fluorene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	0.7	1.0
Indeno(1,2,3-c,d)pyrene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Naphthalene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	0.8	0.9
Pyrene	mg/kg	DETSC 3301	0.1		< 0.1	< 0.1	1.0	1.4
PAH	mg/kg	DETSC 3301	1.6		< 1.6	< 1.6	5.1	6.6
Phenol - Monohydric	mg/kg	DETSC2130#	0.3		< 0.3	110	1.9	0.4

Summary of Chemical Analysis

Soil Samples

Our Ref: 12-61455

Client Ref: 4994E

Contract Title: Hadden Hall Hotel

				Lab No.	401808	401809
				Sample ID	TP6	TP7
				Depth	0.50	1.30
				Sample Ref		
				Sample Type		
				Sampling Date	03/04/2012	03/04/2012
				Sampling Time		
Test	Units	DETSxx	LOD			
Arsenic	mg/kg	DETS 042#	0.2	10	11	
Cadmium	mg/kg	DETS 042#	0.1	3.4	0.9	
Chromium III	mg/kg	DETS 042*	0.15	45	17	
Chromium	mg/kg	DETS 042#	0.15	45	17	
Hexavalent Chromium	mg/kg	DETSC2204*	1	< 1.0	< 1.0	
Copper	mg/kg	DETS 042#	0.2	26	67	
Lead	mg/kg	DETS 042#	0.3	29	290	
Mercury	mg/kg	DETSC2325#	0.05	0.20	0.12	
Nickel	mg/kg	DETS 042#	1	53	14	
Selenium	mg/kg	DETS 042#	0.5	0.8	< 0.5	
Cyanide total	mg/kg	DETSC 2130#	0.1	< 0.1	0.4	
Cyanide free	mg/kg	DETSC 2130#	0.1	< 0.1	< 0.1	
Cyanide complex	mg/kg	DETSC 2130	0.2	< 0.2	0.4	
Organic matter	%	DETSC2002#	0.1	0.5	2.3	
Total Sulphate as SO4	%	DETSC2321#	0.01	0.04	10	
Sulphate Aqueous Extract as SO4	mg/l	DETSC 2076#	10	140	1900	
Total Sulphur as S	%	DETSC 2320	0.01	0.02	2.0	
pH		DETSC2008#		7.5	9.0	
Acenaphthene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Anthracene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Benzo(g,h,i)perylene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Chrysene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Dibenzo(a,h)anthracene	mg/kg	DESTC 3301	0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	DETSC 3301	0.1	< 0.1	0.5	
Fluorene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Indeno(1,2,3-c,d)pyrene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Naphthalene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	
Pyrene	mg/kg	DETSC 3301	0.1	< 0.1	0.5	
PAH	mg/kg	DETSC 3301	1.6	< 1.6	< 1.6	
Phenol - Monohydric	mg/kg	DETSC2130#	0.3	< 0.3	< 0.3	

Summary of Asbestos Analysis

Soil Samples

Our Ref: 12-61455

Client Ref: 4994E

Contract Title: Hadden Hall Hotel

Lab No	Sample Ref	Material Type*	Result	Comment	Analyst
401798	A1	Soil	NAD	None	Jeff Cruddas
401799	A2	Soil	Chrysotile	Contains Bundle of Unbound Asbestos Fibres	Jeff Cruddas
401800	A3	Soil	NAD	None	Jeff Cruddas
401801	A4	Soil	NAD	None	Jeff Cruddas
401802	A5	Soil	NAD	None	Jeff Cruddas
401803	A6	Soil	NAD	None	Jeff Cruddas
401804	TP1 0.60	Soil	NAD	None	Jeff Cruddas
401805	TP3 0.30	Soil	NAD	None	Jeff Cruddas
401806	TP4 1.30	Soil	NAD	None	Jeff Cruddas
401807	TP5 0.50	Soil	NAD	None	Jeff Cruddas
401808	TP6 0.50	Soil	NAD	None	Jeff Cruddas
401809	TP7 1.30	Soil	NAD	None	Jeff Cruddas

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. NAD = No Asbestos Detected. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETS 082 using polarised light microscopy in accordance with HSG248 and documented in-house methods. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'.

Sample Comments

(The laboratory cannot be held responsible for the integrity of sample(s) received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating.

Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note "Guidance on Deviating Samples".)

Lab No.	Sample ID	Date Sampled	Sample exceeded holding time for test	Sample not received in appropriate containers for test
401804	TP1 0.60	03/04/2012		Naphthalene
401804	TP1 0.60	03/04/2012		Naphthalene
401804	TP1 0.60	03/04/2012		PAH FID solid
401804	TP1 0.60	03/04/2012		PAH
401805	TP3 0.30	03/04/2012		Naphthalene
401805	TP3 0.30	03/04/2012		Naphthalene
401805	TP3 0.30	03/04/2012		PAH FID solid
401805	TP3 0.30	03/04/2012		PAH
401806	TP4 1.30	03/04/2012		Naphthalene
401806	TP4 1.30	03/04/2012		Naphthalene
401806	TP4 1.30	03/04/2012		PAH FID solid
401806	TP4 1.30	03/04/2012		PAH
401807	TP5 0.50	03/04/2012		Naphthalene
401807	TP5 0.50	03/04/2012		Naphthalene
401807	TP5 0.50	03/04/2012		PAH FID solid
401807	TP5 0.50	03/04/2012		PAH
401808	TP6 0.50	03/04/2012		Naphthalene
401808	TP6 0.50	03/04/2012		Naphthalene
401808	TP6 0.50	03/04/2012		PAH FID solid
401808	TP6 0.50	03/04/2012		PAH
401809	TP7 1.30	03/04/2012		Naphthalene
401809	TP7 1.30	03/04/2012		Naphthalene
401809	TP7 1.30	03/04/2012		PAH FID solid
401809	TP7 1.30	03/04/2012		PAH

Appendix A - Details of Analysis

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.

No Recovery Factors are used in the determination of results. Results reported assume 100% recovery.

Full method statements are available on request.

<u>Method</u>	<u>Name of Parameter</u>	<u>Units</u>	<u>Limit of Detection</u>	<u>Sample Preparation</u>	<u>Sub-Contracted</u>	<u>UKAS</u>	<u>MCERTS</u>
DETS 002	Organic Matter	%	0.01	Air Dried	No	Yes	Yes
DETS 003	Loss on Ignition	%	0.01	Air Dried	No	Yes	Yes
DETS 004	Total Sulphate	%	0.01	Air Dried	No	Yes	Yes
DETS 075	Total Sulphate	%	0.01	Air Dried	No	Yes	Yes
DETS 004	Water Soluble Sulphate	mg/l	10.00	Air Dried	No	Yes	Yes
DETS 076	Water Soluble Sulphate	mg/l	10.00	Air Dried	No	Yes	Yes
DETS 006	Chloride	mg/kg	0.01	Air Dried	No	Yes	Yes
DETS 008	pH	pH Units	0.10	Air Dried	No	Yes	Yes
DETS 042	Selenium	mg/kg	0.50	Air Dried	No	Yes	Yes
DETS 019	Ammonia	mg/kg	0.02	Air Dried	No	Yes	Yes
DETS 020	Boron (Water Soluble)	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 024	Sulphide	mg/kg	10.00	Air Dried	No	Yes	Yes
DETS 042	Antimony	mg/kg	1.00	Air Dried	No	No	No
DETS 042	Arsenic	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Barium	mg/kg	1.50	Air Dried	No	Yes	Yes
DET S 042	Beryllium	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Cadmium	mg/kg	0.10	Air Dried	No	Yes	Yes
DETS 042	Cobalt	mg/kg	0.70	Air Dried	No	Yes	Yes
DETS 042	Copper	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes

DETS 042	Iron	mg/kg	1.00	Air Dried	No	Yes	No
DETS 042	Lead	mg/kg	0.30	Air Dried	No	Yes	Yes
DETS 042	Manganese	mg/kg	20.00	Air Dried	No	Yes	Yes
DETS 081	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETS 042	Molybdenum	mg/kg	0.40	Air Dried	No	Yes	Yes
DETS 042	Nickel	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Thallium	mg/kg	1.00	Air Dried	No	No	No
DETS 042	Vanadium	mg/kg	0.80	Air Dried	No	Yes	Yes
DETS 042	Zinc	mg/kg	1.00	Air Dried	No	Yes	Yes
DETS 049	Sulphur (Free)	mg/kg	0.50	As Received	No	Yes	Yes
DETS 050	PAH	mg/kg	0.10	As Received	No	Yes	No
DETS 051	TPH (C10 - C40)	mg/kg	20.00	As Received	No	Yes	Yes
DETS 052	PCB	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzne	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 067	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETS 067	Easily Liberatable Cyanide	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 067	Complex Cyanide	mg/kg	0.30	Air Dried	No	Yes	No
DETS 067	Total Cyanide	mg/kg	0.40	Air Dried	No	Yes	Yes
DETS 067	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETS 068	VOC	mg/kg	0.01	As Received	No	No	No