KRONOSPAN LTD

NEW BOILER PLANT CIVILS WORK GROUND INVESTIGATION

DRAFT FACTUAL REPORT ON GROUND INVESTIGATION

Contract: W13/41236

Date: SEPTEMBER 2013

Ian Farmer Associates (1998) Limited
17 Rivington Court, Hardwick Grange, Woolston, Warrington, WA1 4RT
Tel: 01925 855 440
Fax: 01925 855 441

DRAFT FACTUAL REPORT ON

GROUND INVESTIGATION

carried out at

NEW BOILER PLANT CIVILS WORK GROUND INVESTIGATION

Prepared for

KRONOSPAN LTD
Chirk
Wrexham
LL14 5NT

Contract No: W13/41236

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1.0 INTRODUCTION

1.1 It is understood that it is proposed to develop the site for a new boiler house.

1.2 On the instructions of Kronospan Ltd under the direction of Ramboll consulting engineers, a ground investigation was undertaken to determine ground and groundwater conditions at the site.

1.3 This report has been prepared for the sole use of the Client for the purpose described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.

1.4 The comments given in this report and the opinions expressed herein are based on the information received, the conditions encountered during site works, and on the results of tests made in the field and laboratory. However, there may be conditions prevailing at the site which have not been disclosed by the investigation and which have not been taken into account in the report.

1.5 The comments on groundwater conditions are based on observations made at the time the site work was carried out. It should be noted that groundwater levels vary owing to seasonal or other effects.

2.0 SITE SETTING

2.1 Site Location

2.1.1 The site is situated approximately 850m to the north of Chirk Town Centre within the existing Kronospan factory and may be located by Grid reference SJ 285383. A site location plan is included in Appendix 1, Figure A1.1.

2.2 Site Description

2.2.1 At the time of the investigation the site was situated within the confines of Kronospan factory. The site was located on a level, hard standing concrete surfaces and was situated within the existing building, adjacent to the chip stores.

2.2.2 The site was bound to the west by a single tracked railway that ran from north to south, beyond which was the Shropshire Union Canal. Immediately beyond the canal to the west and north west the land was occupied by a golf course. Rural/agricultural land bound the site to the north and residential housing were located to the east beyond the B5070 that ran north to south.

2.2.3 A site plan is included in Appendix 1, Figure A1.2.

3.0 SITE WORK

3.1 The site work was carried out between 8th August and 19th August, 2013. The locations of exploratory holes were indicated by the Engineer, and the site works carried out on the basis of the practices set out in BS 10175:2011, ref. 5.1, and BS 5930:1999 ref. 5.2.

3.2 Four boreholes, designated BH01 to BH04 were sunk by light cable percussion method at the positions shown on the site plan, Appendix 1, Figure A1.2. The depths of boreholes, descriptions of strata encountered and comments on groundwater conditions are given in the borehole records, Appendix 2, Figure A2.1.

3.3 Representative disturbed and undisturbed samples were taken at the depths shown on the borehole records and despatched to the laboratory. Standard (split-barrel and cone) penetration tests, ref. 5.3 were carried out in the light cable percussion boreholes in the various strata to assess the relative density or consistency. The values of penetration resistance are given in the borehole records, and in greater detail in the SPT Summary Table, Appendix 2.

3.4 Samples were collected for environmental purposes in amber glass jars and kept in a cool box.

3.5 Perforated standpipes, surrounded by pea shingle and protected by a stopcock cover were installed in boreholes BH01 to BH04, as detailed in the borehole records. Instruments were monitored following the fieldwork and results are presented in Appendix 5.

3.6 The ground levels at the borehole locations were not determined.

4.0 LABORATORY TESTS

4.1 Geotechnical Testing

4.1.1 All soil samples were prepared in accordance with BS1377: Part One: 1990 ref. 5.3 and representative sub-samples were taken for testing. The following tests were carried out:

- 40 No. Moisture contents
- 22 No. Plasticity indices
- 1 No. Particle size distribution by wet sieving
- 7 No. Particle size distribution by sedimentation
- 6 No Undrained shear strength
- 8 No. Water soluble sulphate
- 8 No pH value
- 6 No. Bulk density
- 6 No. Dry density
- 6 No. Equivalent shear stress by hand vane

4.1.2 The results of these tests are shown in Appendix 3.

4.2 Chemical Testing

4.2.1 The chemical analyses were carried out on ten samples of soil and four samples of water. The nature of the analyses is detailed below:

4.2.2 **Metals screen** - arsenic, barium, cadmium, chromium III, chromium IV, lead, mercury, selenium, boron, beryllium, selenium, vanadium, copper, nickel and zinc.

4.2.3 **Organic Screen -** total petroleum hydrocarbons (TPH) – C_{10} to C_{14} and C_{15} to C_{36} aliphatic hydrocarbons, polyaromatic hydrocarbons (PAH) – USEPA 16 suite, monohydric phenols, total organic carbon

4.2.4 **Inorganics Screen** - cyanide (total), sulphate (water soluble), sulphide, sulphur

4.2.5 **Others** - pH, organic matter, asbestos, formaldehyde, WAC suite

4.2.6 **Volatile Organic Compounds** (VOC) - including: benzene, toluene, ethylbenzene and xylenes (BTEX) and chlorinated solvents

4.2.7 **Semi-Volatile Organic Compounds** (SVOC) - including: phenols and polyaromatic hydrocarbons (PAH)

4.2.8 The results of these tests are shown in Appendix 4.

5.0 REFERENCES

5.1 British Standards Institute: BS 10175 ‘Code of practice for the investigation of potentially contaminated sites’, BSI 2011.

5.2 British Standards Institute: BS 5930 ‘Code of practice for site investigations’, BSi 1999.

5.3 British Standard 1377:1990, Part 9, ‘Methods of Test for Soils for Civil Engineering Purposes’.

For and on behalf of Ian Farmer Associates (1998) Limited

T Byers
BSc (Hons)
Engineering Geologist

J A Latimer
BSc (Hons) FGS
Director

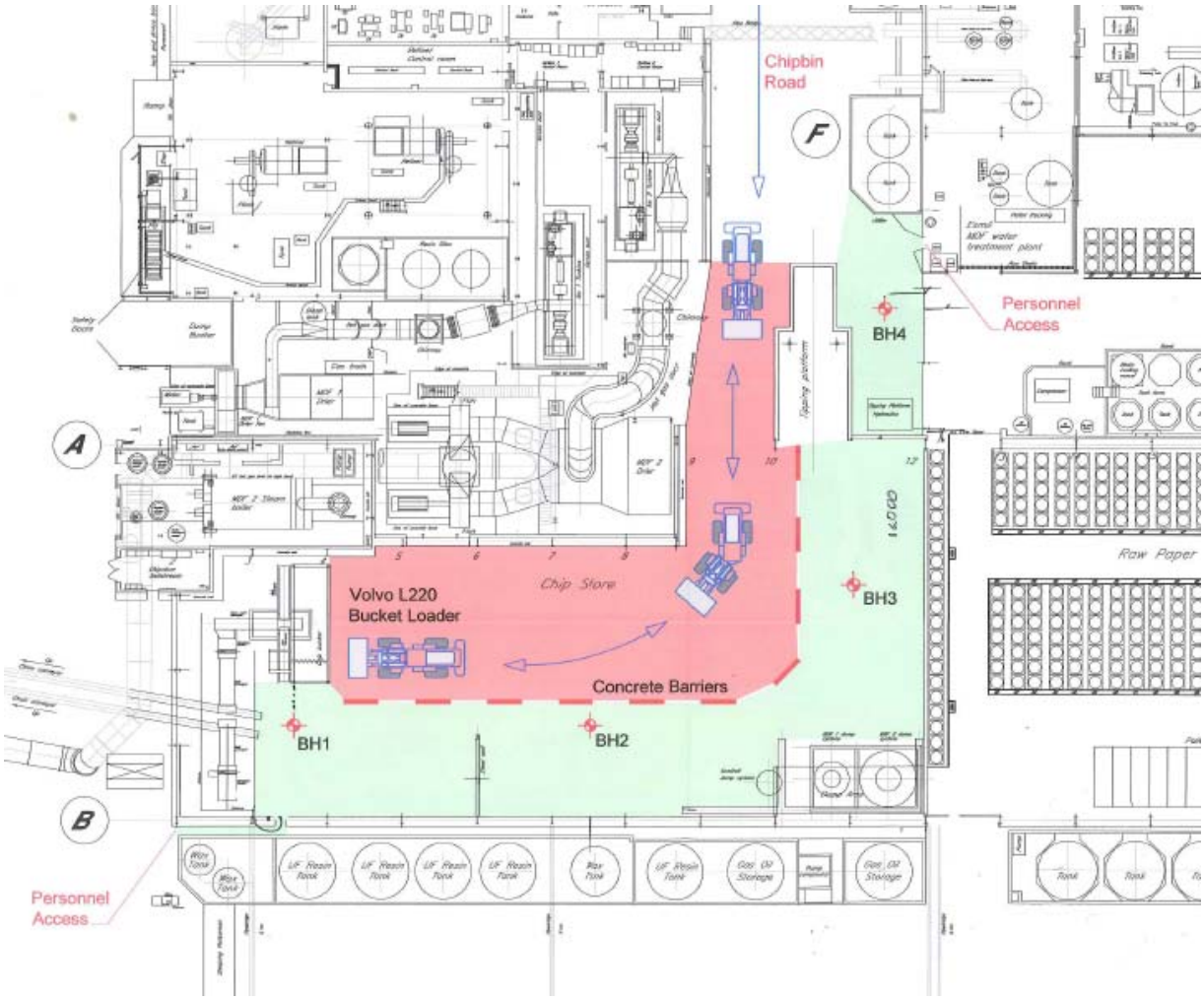
APPENDIX 1

DRAWINGS

THE SITE

N

PROJECT: 41236 – New Boiler Plant Civils Work Ground Investigation
FIGURE No. A1.1. **SCALE: As Indicated**
TITLE: Site Location Plan
IAN FARMER ASSOCIATES Geotechnical & Environmental Specialists



N

PROJECT: 41236 – New Boiler Plant Civils Work Ground Investigation
FIGURE No. A1.2. **SCALE: NTS**
TITLE: Exploratory Hole Location Plan
IAN FARMER ASSOCIATES Geotechnical & Environmental Specialists

APPENDIX 2

SITE WORK

APPENDIX 2

GENERAL NOTES ON SITE WORKS

A2.1 SITE WORK

A2.1.1 Light Cable Percussion Boring

For routine soil exploration to depths in excess of 3m, the light cable percussion rig is generally employed for boring through soils and weak rocks. It consists of a powered winch and tripod frame, with running wheels that are permanently attached so that the rig may be towed behind a suitable vehicle. The rig is towed into position and set up using its own winching system.

The locations of services are checked to make sure the borehole is not situated unacceptably near any services. Regardless of the proximity of services, a CAT scan is undertaken at the borehole location and a trial hole dug to 1.20m by hand.

Boreholes are advanced in soil by the percussive action of the cable tool. The force of the cylindrical tool as it is dropped a short distance cuts a plug of cohesive soil that is removed by the tool.

In non-cohesive soils, the borehole is advanced by a 'shell', otherwise known as a 'bailer' or 'sand pump', which incorporates a clack valve. Material is transferred into the shell and retained by the clack valve. The water level in a borehole is maintained above that in the surrounding granular soil to allow for temporary reductions in the head of water as the shell is withdrawn from the borehole. Water should flow from the borehole into the surrounding soil at all times to prevent 'piping' and loosening the soil at the base of the hole. The casing is always advanced with the borehole in granular soil so that material is drawn from the base rather than the borehole sides.

Obstructions to boring are overcome by fitting a serrated chiselling ring to the base of the percussion tool. For large obstructions, a heavy chisel with a hardened cutting edge may have to be used.

Disturbed samples are taken in polythene bags, jars or tubs that are sealed against air or water loss.

Undisturbed samples are generally taken in cohesive materials at changes in strata and at one metre intervals to 5 metres then at 1.5 metre intervals to the full depths of the borehole. The general purpose open-tube sampler is suitable for firm to stiff clays, but is often used to retrieve disturbed samples of weak rocks, soft or hard clay and also clayey sand or silts. This has been adopted for routine use, and usually consists of a 100mm internal diameter tube (U100), which is capable of taking soil samples up to 450mm in length. The undisturbed samples are sealed at each end using micro-crystalline wax to prevent drying.

Standard penetration tests are generally carried out in non-cohesive soils but also in stiff clays and soft rocks at frequencies similar to that of undisturbed sampling.

A2.2 IN-SITU TESTS

A2.2.1 Standard Penetration Test

The Standard Penetration Test is carried out in accordance with the proposals recommended by BS 1377, Part 9, 1990, ref 5.5.

The standard penetration test, **SPT**, covers the determination of the resistance of soils to the penetration of a split barrel sampler. A 50mm diameter split barrel sampler is driven 450mm into the soil using a 65kg hammer with a 760mm drop. The penetration resistance is expressed as the number of blows required to obtain 300mm penetration below an initial seating drive of 150mm through any disturbed ground at the bottom of the borehole. The number of blows to achieve the standard penetration of 300mm is reported as the 'N' value.

The test is generally carried out in fine soils, however, it may also be carried out in coarse granular soils, weak rocks and glacial tills using the same procedure as for the SPT but with a 50mm diameter, 60° apex solid cone replacing the split spoon sampler, **CPT.**

When attempting the standard penetration test in very dense material or weathered rocks it may be necessary to terminate the test before completion to prevent damage to the equipment. In these circumstances it is important to distinguish how the blow count relates to the penetration of the sampler. This may be achieved in the following manner:

- Where the seating drive has been completed, the test drive is terminated if 50 blows are reached before the full penetration of 300mm is achieved. The penetration for 50 blows is recorded and an approximate N value obtained by linear extrapolation of the number of blows for the partial test drive.

- If the seating drive of 150mm is not achieved within the first 25 blows, the penetration after 25 blows is recorded and the test drive then commenced.

- For tests in soft rocks, the test drive should be terminated after 100 blows where the penetration of 300mm has not been achieved.

The N-value obtained from the Standard Penetration Test may be used to assess the relative density of sands and gravels as follows:

Term	SPT N-Value : Blows/300mm Penetration
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Over 50

A2.3 SAMPLES

U(x) represents undisturbed 100mm diameter sample with (x) being the number of blows required to obtain sample.

U NR| indicates undisturbed sample not recovered

B represents large bulk disturbed samples

D represents small disturbed sample

W represents water sample

▽ respresents water strike

▼ represents level to which water rose

A2.4 DESCRIPTION OF SOILS

A2.4.1 General

The procedures and principles given in Section 6 of BS 5930, ref. 5.4 have been used in the soil descriptions contained within this report.

A2.4.2 Predominantly Coarse Soils

A coarse soil (omitting any boulders or cobbles) contains about 65% or more coarse material and is described as a SAND or GRAVEL depending on which of the constituents predominates. The secondary constituents of coarse soils should precede the main soil type e.g. 'Medium dense brown very gravelly coarse SAND. Gravel is subangular fine and medium of sandstone and mudstone'.

A2.4.3 Deposits containing silt-sized and clay-sized particles

Most soils are mixtures of clay and silt sized particles. Fine soil should be described as either a clay or a silt, depending on the plastic properties. If ambiguous, the term CLAY/SILT should be used.

A2.4.4 Deposits containing mixtures of fine and coarse soil.

The appropriate quantified terms should be used before the principal soil type. It is recommended that the dominant secondary fraction come immediately before the principal soil term. Additional detail can be added in a separate sentence thus, 'Gravelly very clayey SAND. Gravel (10%) is fine of rounded quartz. Clay is firm'.

The terms 'silty' and 'clayey' are mutually exclusive as in a coarse soil and based on the plastic properties of the fine fraction.

Table 1 Deposits containing boulder-size and cobble-size particles

Term	Composition
BOULDERS (or COBBLES) with a little finer material	Up to 5% finer material
BOULDERS (or COBBLES) with some finer material	5 to 20% finer material
BOULDERS (or COBBLES) with much finer material	20 to 50% finer material
FINER MATERIAL with many boulders (or cobbles)	50 to 20% boulders (or cobbles)
FINER MATERIAL with some boulders (or Cobbles)	20 to 5% boulders (or cobbles)
FINER MATERIAL with occasional boulders (or cobbles)	up to 5% boulders (or cobbles)

Term	Principal Soil Type	Approximate proportion of secondary constituent
Slightly sandy or gravelly	SAND or GRAVEL	Up to 5%
Sandy or gravelly		5 to 20%
Very sandy or gravelly		over 20%
	SAND and GRAVEL	about equal proportions

Table 2 Mixtures of coarse and fine fractions.

Term Before	Principal Term	Proportion of secondary Coarse soil	constituent Coarse and/or fine soil
Slightly clayey or silty and/or sandy gravelly	SAND and/or GRAVEL		< 5
Clayey or silty and/or sandy or gravelly			5 – 20 %
Very clayey or silty and/or sandy or gravelly			20 %
Very sandy or gravelly	SILT or CLAY	< 65%	
Sandy and/or gravelly		35 – 65 %	
Slightly sandy an/or gravelly		<35 %	

For clays the strength scale is used as follows:

Term	Field Identification	Undrained shear strength (KN/m^2)
Very Soft	Exudes between fingers when squeezed in hand	< 20
Soft	Moulded by light finger pressure	20 - 40
Firm	Can be moulded by strong finger pressure	40 - 75
Stiff	Cannot be moulded by finger. Can be indented by thumb.	75 - 150
Very Stiff	Can be indented by thumbnail.	150 - 300
Hard (or very weak mudstone)		> 300

A2.4.5 Man Made Soils

Man made soils (Made Ground or Fill) have been placed by man and can be divided into those composed of natural reworked soils and those composed of man-made materials. Fills are placed in the ground in a controlled manner and soils defined as Made Ground are placed without any engineering control. For example:

'MADE GROUND comprising plastic bags, window frames, garden refuse and newspapers'.

' MADE GROUND dense brown sandy GRAVEL with occasional tiles, wire and glass'.

'Firm yellow brown slightly sandy CLAY with clods (up to 200mm) of firm to stiff orange CLAY (EMBANKMENT FILL)'.

A2.4.6 Organic Soils

Small quantities of dispersed organic matter can have a marked effect on plasticity and hence the engineering properties of the soil. The following quantifying terms are appropriate:

Term	Organic Content	Typical Colour
Slightly organic clay or silt	2 - 5	Grey
Slightly organic sand	1 – 3	As mineral
Organic clay or silt	5 – 10	Dark grey
Organic sand	3 – 5	Dark grey
Very organic clay or silt	>10	Black
Very organic sand	>5	Black

Exploratory Hole Records

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH01

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	200mm cased to 10.50m 150mm cased to 25.00m		Kronospan Limited	41236
	Location	**Dates**	**Engineer**	**Sheet**
		13/08/2013- 15/08/2013	Ramboll UK Limited	1/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.20)	MADE GROUND: Concrete.			
						0.20				
							MADE GROUND:Screed concrete.			
						0.25 (0.20)				
0.40	D1					0.45	MADE GROUND: Grey, slightly sandy, subangular, fine to coarse GRAVEL including limestone.			
0.40	J2			At 0.40m: PID reading = 0.3 ppm						
0.50-1.00	B3						Medium dense, green, brown grey, slightly sandy, clayey, subangular to rounded, fine to coarse GRAVEL with cobbles. Gravel includes sandstone, limestone and siltstone.			
0.95	D4									
0.95	J5			At 0.95m: PID reading = 0.2ppm		(1.45)				
1.20	D7									
1.20-1.65	SPT(C) N=13	1.20		2,3/4,2,2,5					▼1	
1.20-1.65	B6								▽1	
1.90	D8			Water strike(1) at 1.90m, rose to 1.70m in 20 mins, sealed at 3.00m.		1.90	Medium dense, brown grey, slightly clayey, very sandy, subangular to subrounded, fine to coarse GRAVEL including sandstone, limestone and siltstone.			
1.95	D9									
1.95	J10			At 1.95m: PID reading = 0.2ppm		(0.80)				
2.00-2.45	B11									
2.00-2.45	SPT(C) N=15	2.00	1.70	3,4/3,3,5,4		2.70	Soft, grey brown, silty CLAY.			
2.80	D12									
3.00-3.45	U13 0.45 - 15kPa	3.00	DRY	At 2.80m: PID reading = 0.2ppm 17 blows						
3.50	D14									
3.80	D15									
4.00-4.45	B16			At 3.80m: PID reading = 0.6ppm						
4.00-4.45	SPT N=6	4.00	DRY	1,2/1,1,2,2						
4.00-4.45	D17									
4.80	D18					(4.20)				
5.00	HV 28kPa			At 4.80m: PID readimg = 0.4ppm						
5.00-1.00	B19									
5.00-5.50	U20 0.45	5.00	DRY	18 blows						
5.50	D21									
5.80	D22									
6.00-6.45	B23			At 5.80m: PID reading = 0.3ppm			Below 6.00m: firm.			
6.00-6.45	SPT N=8	6.00	DRY	2,3/2,2,2,2						
6.90	D24					6.90	Firm, grey, slightly sandy, silty, gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone, quartz and limestone.			
7.00-7.45	B25			At 6.90m: PID reading = 0.2ppm			Below 7.00m: stiff.			
7.00-7.45	D26									
7.00-7.45	SPT N=17	7.00	DRY	3,4/3,5,4,5		(1.40)				
7.80	D27			At 7.80m: PID reading = 0.2ppm						

Remarks
Samples marked as "J" comprise 1 x amber jar and 1 x vial.
Excavating from 0.00m to 1.20m for 1.00 hour.

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH01

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Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH01

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	200mm cased to 10.50m 150mm cased to 25.00m		Kronospan Limited	41236
	Location	**Dates** 13/08/2013-15/08/2013	**Engineer** Ramboll UK Limited	**Sheet** 2/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
8.00-8.38 8.00-8.45	SPT(C) 50/225 B28	8.00	DRY	7,8/14,16,20		8.30				
							Very stiff, brown, slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone and quartz. Driller notes cobbles.			
8.80	D29			At 8.80m: PID reading = 0.2ppm						
9.00-9.45 9.00-9.38 9.00-9.45	B30 SPT 50/229 D31	9.00	DRY	3,11/13,16,16,5						
10.00-10.39 10.00 10.00-10.45	SPT(C) 50/235 D33 B32	10.00	9.70	8,11/14,13,15,8 At 10.00m: PID reading = 0.1ppm						
11.00	D34			Water strike(2) at 10.90m. At 11.00m: PID reading = 0.2ppm				▽2		
11.50-11.88 11.50-11.95	SPT(C) 46/228 B35	11.50	11.30	6,9/13,14,15,4						
12.50	D36			At 12.50m: PID reading = 0.2ppm						
13.00-13.38 13.00-13.45	SPT(C) 50/225 B37	13.00	12.90	7,14/16,18,16						
14.00	D38			At 14.00m: PID reading = 0.1ppm						
14.50-14.88 14.50-14.95	SPT(C) 50/225 B39	14.50	14.40	8,16/15,16,19						
15.50	D40			At 15.5m: PID reading =0.2ppm						
16.00-16.38	SPT(C) 50/225	16.00	15.80	9,18/18,16,16						

Remarks

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH01

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH01

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	200mm cased to 10.50m 150mm cased to 25.00m		Kronospan Limited	41236
	Location	**Dates**	**Engineer**	**Sheet**
		13/08/2013- 15/08/2013	Ramboll UK Limited	3/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
16.00-16.45	B41					(17.15)				
17.00	D42			At 17.00m: PID reading = 0.1ppm						
17.50-17.88 17.50	SPT(C) 50/227 B43	17.50	17.10	9,11/13,16,17,4						
18.50	D44			At 18.50m: PID reading = 0.1ppm						
19.00-19.38 19.00-19.45	SPT(C) 50/231 B45	19.00	18.70	6,7/11,15,16,8						
20.50-20.88 20.50 20.50-20.95	SPT 49/228 D47 B46	20.50	16.40	5,7/12,14,17,6 At 20.50m: PID reading = 0.2ppm						
21.50-21.95	D48			At 21.50: PID reading = 0.2ppm						
22.00-22.37 22.00-22.45 22.00-22.45	SPT 50/224 B49 D50	22.00	19.30	6,8/12,18,20						
23.00	D51			At 23.00m: PID reading = 0.1ppm						
23.50-23.88 23.50-23.95 23.50-23.95	SPT 50/225 B52 D53	23.50	21.70	4,10/17,16,17						

Remarks

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH01

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH01

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	200mm cased to 10.50m 150mm cased to 25.00m		Kronospan Limited	41236
	Location	**Dates**	**Engineer**	**Sheet**
		13/08/2013- 15/08/2013	Ramboll UK Limited	4/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
24.50	D54			At 24.50m: PID reading = 0.1ppm						
25.00-25.37 25.00-25.45	SPT 50/222 B55	25.00	21.90	8,11/16,16,18		25.45	Complete at 25.45m			

Remarks

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH01

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH02

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 24.00m 200mm cased to 10.00m		Kronospan Limited	41236
	Location	**Dates** 09/08/2013-14/08/2013	**Engineer** Ramboll UK Limited	**Sheet** 1/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.22)	MADE GROUND: Concrete.			
						0.22				
						0.30	MADE GROUND: Screed concrete.			
0.30-1.00	B1					(0.20)				
						0.50	MADE GROUND: Light grey, slightly clayey, slightly sandy, angular to subangular, fine to coarse GRAVEL including limestone.			
0.45	D2									
0.45	J3			At 0.45m: PID reading = 16.8ppm.						
0.80	D4						Dense, grey, slightly sandy, very clayey, subangular to subrounded, fine to coarse GRAVEL and cobbles. Gravel includes sandstone and limestone with pockets of gravelly clay.			
1.00	D6			Seepage (1) at 0.80m.						
1.00	J8			At 1.00m: PID reading = 2.2ppm.						
1.00-1.45	D7					(1.50)				
1.20-1.60	SPT(C) 50/245		DRY	3,6/9,12,19,10						
1.00-4.45	B5									
1.95	J9			At 1.75m: PID reading = 0.5ppm.		2.00				
2.00-2.45	SPT N=27	1.70	DRY	2,3/5,7,7,8			Dense, brown, slightly clayey, silty, very sandy angular to subrounded, fine to coarse GRAVEL including sandstone, limestone and siltstone.			
2.00-2.45	B10									
2.80	D11					(1.50)				
3.00-3.45	B12			At 2.80m: PID reading = 0.6ppm.						
3.00-3.45	SPT N=6	2.90	MOIST	1,1/1,1,2,2						
3.50	D13					3.50	Soft, brown grey, slightly silty, slightly gravelly CLAY. Gravel is subangular to subrounded, fine and medium gravel including sandstone and siltstone.			
3.80	D14									
4.00	HV 31kPa			At 3.80m: PID reading = 0.8ppm.						
4.00-4.45	U15 0.45	4.00	DRY	16 blows						
4.50	D16									
4.80	D17									
5.00-5.45	B18			At 4.80m: PID reading = 0.8ppm.						
5.00-5.45	SPT N=2	4.90	DRY	1,0/1,0,1,0						
5.00-5.45	D19									
5.80	D20									
6.00-6.45	U21 0.45 - 17kPa	5.90	DRY	At 5.80m: PID reading = 1.1ppm. 17 blows		(5.00)				
6.50	D22									
6.80	D23									
7.00-7.45	B24			At 6.80m: PID reading = 1.2ppm.						
7.00-7.45	SPT N=5	6.90	DRY	1,0/1,1,1,2						
7.00-7.45	D25									
7.80	D26			At 7.80m: PID reading = 0.2ppm.						
8.00	HV 20kPa									

Remarks
SPT at 17.50m - No recovery due to cobble in shoe.
Samples marked as "J" comprise 1 x amber jar and 1 x vial.
Water added from 7.00m to 9.00m.
Water added from 6.00m to 7.00m.
Water added from 2.00m to 3.50m.
Excavating from 0.00m to 1.20m for 1.00 hour.
Chiselling from 0.50m to 1.00m for 1.00 hour.

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH01

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH02

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 24.00m 200mm cased to 10.00m		Kronospan Limited	41236
	Location	**Dates** 09/08/2013-14/08/2013	**Engineer** Ramboll UK Limited	**Sheet** 2/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
8.00-8.45	U27 0.45	7.90	DRY	16 blows					▼1	
8.50	D28			At 8.50m: PID reading = 0.2ppm.		8.50 (0.50)	Loose grey, slightly clayey SILT.			
8.80	D29					9.00				
9.00-9.45 9.00-9.45 9.00-9.45	SPT N=8 B30 D31	8.90	8.00	1,1/1,2,2,3		(0.60)	Firm, locally soft, grey, slightly clayey, slightly sandy, slightly gravely SILT. Gravel is subangular to subrounded, fine to coarse including sandstone, limestone and siltstone.			
9.80	D32			At 9.50m: PID reading = 0.4ppm.		9.60	Soft, locally firm, brown, slightly silty, slightly gravelly CLAY. Gravel is subangular to subrounded, fine and medium including sandstone, siltstone and quartz.		▼2	
10.00 10.00-10.45	HV 17kPa U33 0.30	9.90	DRY	18 blows		(1.35)			▽1	
10.50 10.50-11.00	D35 B34			Water strike(1) at 10.50m, rose to 8.00m in 20 mins. At 10.50m: PID reading = 0.3ppm.		10.95	Dense, grey brown, slightly sandy, subangular to subrounded, fine to coarse GRAVEL with medium cobble content. Gravel includes sandstone, limestone and quartz.			
11.00 11.00	D36 D37			At 11.00m: PID reading = 0.3ppm.						
11.50-11.85 11.50-11.95 11.50-12.00	SPT 50/200 D39 B38	11.40	11.00	5,11/14,18,18		(1.65)			▽2	
12.00	D40			At 12.00m: PID reading = 0.3ppm.						
12.50	D41			Water strike(2) at 12.60m, rose to 10.00m in 20 mins.		12.60 (0.40)	Very stiff, brown, sandy, slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone and quartz.			
13.00-13.33 13.00-3.45 13.00-13.45	SPT 45/182 D43 B42	12.40	12.00	5,8/14,17,14		13.00	Dense, brown, clayey, very silty, gravelly fine to coarse SAND with medium cobble content. Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone and quartz.			
13.60	D44			At 13.60m: PID reading = 0.2ppm.		(1.30)				
14.00	D45									
14.30	D46			At 14.30m: PID reading = 0.2ppm.		14.30	Very stiff, slightly sandy, slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone and quartz.			
14.50-14.95 14.50-14.95 14.50-15.00	D48 SPT N=27 B47	14.50	11.00	1,1/2,9,8,8						
15.50	D49			At 15.50m: PID reading = 0.2ppm.						
16.00-16.45	SPT N=25	15.90	12.00	2,3/5,5,7,8						

Remarks
Chiselling from 10.50m to 11.00m for 1.00 hour. Chiselling from 15.00m to 17.00m for 4.00 hours.

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH01

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH02

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 24.00m 200mm cased to 10.00m		Kronospan Limited	41236
	Location	**Dates** 09/08/2013-14/08/2013	**Engineer** Ramboll UK Limited	**Sheet** 3/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
16.00-16.45 16.00-16.45	B50 D51									
17.00	D52			At 17.00m: PID reading = 0.2ppm.						
17.50-17.83 17.50-17.95	SPT 32/180 B53	17.40	DRY	5,8/2,16,14						
18.50	D54			At 18.60m: PID reading = 0.1ppm.						
19.00-19.35 19.00-19.45 19.00-19.45	SPT 50/195 B55 D56	18.90	10.00	9,9/9,18,23		(11.15)				
20.00	D57			At 20.00m: PID reading = 0.2ppm.						
20.50-20.95 20.50-20.95 20.50-20.95	SPT 50/295 B58 D59	20.40	12.00	8,8/10,11,19,10						
21.00	D60			At 21.00m: PID reading = 0.1ppm.						
21.50	D61									
22.00-22.37 22.00-22.50	SPT 56/217 D62	22.00	9.00	7,9/12,17,27						
23.00	D63			At 23.00m: PID reading = 0.1ppm.						
23.50-23.83 23.50-23.95 23.50-23.95	SPT 50/180 B64 D65	23.40	23.40	8,10/16,19,15						

Remarks
Chiselling from 19.00m to 21.00m for 3.50 hours.

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH01

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH02

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 24.00m 200mm cased to 10.00m		Kronospan Limited	41236
	Location	**Dates**	**Engineer**	**Sheet**
		09/08/2013- 14/08/2013	Ramboll UK Limited	4/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
25.00-25.34 25.00-25.45	SPT 50/190 D66	24.50	25.00	7,11/15,20,15		25.45	Complete at 25.45m			

Remarks

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH01

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH03

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 25.00m 200mm cased to 11.00m		Kronospan Limited	41236
	Location	**Dates** 09/08/2013-13/08/2013	**Engineer** Ramboll UK Limited	**Sheet** 1/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.20)	MADE GROUND: Concrete.			
						0.20				
						(0.10)	MADE GROUND: Screed concrete.			
						0.30				
						(0.25)	MADE GROUND: Grey, slightly clayey, slightly sandy, angular to subangular, fine to coarse GRAVEL including limestone.			
0.50	D1					0.55				
0.50	J2			At 0.50m: PID reading = 0.5ppm						
0.80	D4						Dense, grey, slightly clayey, silty, very sandy, subangular and subrounded, fine to coarse GRAVEL with cobbles and pockets of gravelly clay. Gravel includes sandstone and limestone.			
0.80-1.20	B3									
1.00	D5									
1.00	J6			At 1.00m: PID reading = 0.6ppm						
1.20	D8									
1.20-1.65	SPT(C) N=36	1.20		7,10/10,9,8,9						
1.20-1.65	B7									
						(2.15)				
1.80	D9									
2.00-2.45	SPT(C) N=37	2.00		6,8/9,9,9,10						
2.00	D11			At 2.00m: PID reading = 0.6ppm						
2.00	J12									
2.00-2.45	B10									
						2.70				
2.70	D13			At 2.70m : PID reading = 0.7ppm			Soft, brown grey, silty, slightly gravelly CLAY with pockets of clayey silty. Gravel is subangular to subrounded, fine to coarse of sandstone and siltstone.		▼1	
3.00-3.45	U14 0.45 - 49kPa	3.00	DRY	26 blows						
3.50	D15									
3.90	D16			Water strike(1) at 3.90m, rose to 2.80m in 20 mins, sealed at 6.60m.					▽1	
3.90	J17									
4.00-4.45	B18	4.00	3.40							
4.00-4.45	D19			At 3.90m: PID reading = 0.50ppm						
4.00-4.45	SPT N=7	4.00	3.40	1,1/1,2,2,2						
4.80	D20									
5.00-5.45	U21 0.45	5.00	4.80	At 4.80m: PID reading = 0.8ppm 18 blows						
5.50	D22									
5.80	D23									
6.00-6.45	B24			At 5.80m: PID reading = 0.7ppm						
6.00-6.45	SPT N=6	6.00	5.70	1,2/1,1,2,2						
6.00-6.45	D25	6.00	5.70							
						(7.30)				
6.80	D26								▼2	
7.00-7.45	U27 0.45	7.00	DRY	At 6.80m: PID reading = 0.8ppm 16 blows						
7.50	D28									
7.80	D29			At 7.80m: PID reading = 0.5ppm						

Remarks
Samples marked as "J" comprise 1 x amber jar and 1 x vial.
Sample "J" at 3.90m = water sample.
Excavating from 0.00m to 1.20m for 1.00 hour.

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH03

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH03

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 25.00m 200mm cased to 11.00m		Kronospan Limited	41236
	Location	**Dates** 09/08/2013-13/08/2013	**Engineer** Ramboll UK Limited	**Sheet** 2/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
8.00-8.45	SPT N=7	8.00	DRY	1,1/2,1,2,2						
8.00-8.45	B30									
8.00-8.45	D31	8.00	DRY							
8.80	D32			Water strike(2) at 8.80m, rose to 6.75m in 20 mins.					▽2	
9.00-9.45	B34									
9.00-9.45	D35	9.00	6.70	At 8.80m: PID reading = 0.3ppm						
9.00-9.45	SPT N=8	9.00	6.70	1,1/2,1,2,3						
9.80	D36			At 9.80m: PID reading = 0.4ppm						
10.00-10.45	B37					10.00				
10.00-10.45	SPT N=22	10.00	7.30	6,7/6,6,5,5			Medium dense, brown, clayey, very silty, slighty gravelly, fine to coarse SAND with low cobble content. Gravel is subangular to subrounded, fine to coarse including sandstone and siltstone.			
10.00-10.45	D38	10.00	7.30			(1.00)				
						11.00				
							Firm, locally stiff, grey, slightly silty, slightly gravelly, sandy CLAY. Gravel is subangular to subrounded, fine to coarse including sandstone and siltstone.			
11.50	HV 65kPa									
11.50-11.95	U39 0.45	11.50	DRY	49 blows		(1.40)				
12.00	D40			At 12.00m: PID reading = 0.2ppm						
						12.40				
12.50	D41						Very stiff, brown, slightly sandy, slightly gravelly CLAY. Gravel is subangular to subrounded, fine and medium including sandstone, siltstone and quartz.			
13.00-13.32	SPT 50/167	13.00	DRY	5,8/18,25,7						
13.00-13.45	B42									
13.00-13.45	D43									
14.00	D44			At 14.00m: PID reading = 0.3ppm						
14.50-14.88	SPT 50/229	14.50	DRY	7,16/14,16,15,5						
14.50-14.95	B45									
14.50-14.95	D46									
				At 15.00m: PID reading = 0.1ppm						
15.50	D47									
16.00-16.39	SPT(C) 50/237	16.00	DRY	9,15/14,14,17,5						

Remarks

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH03

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH03

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 25.00m 200mm cased to 11.00m		Kronospan Limited	41236
	Location	**Dates** 09/08/2013-13/08/2013	**Engineer** Ramboll UK Limited	**Sheet** 3/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
16.00-16.45	B48									
17.00	D49			At 17.00m: PID reading = 0.2ppm						
17.50-17.82	SPT 50/171	17.50	DRY	8,12,17,18,15						
17.50-17.95	B50									
18.50	D51			At 18.50m: PID reading 0.1ppm		(12.60)				
19.00-19.45	SPT(C) N=50	19.00	DRY	9,13/16,16,18						
19.00-19.45	B52									
20.50	D53			At 20.50m: PID reading = 0.2ppm						
21.00-21.31	SPT 50/156	21.00	DRY	12,17/18,20,12						
21.00-21.45	B54									
22.00	D55			At 22.00m: PID reading = 0.1ppm						
22.50-22.81	SPT(C) 50/157	22.50	DRY	8,14/15,15,20						
22.50	B56									
				At 24.00m: PID reading = 0.1ppm						

Remarks
Chiselling from 19.60m to 20.10m for 0.75 hours.

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH03

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH03

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 25.00m 200mm cased to 11.00m		Kronospan Limited	41236
	Location	**Dates**	**Engineer**	**Sheet**
		09/08/2013- 13/08/2013	Ramboll UK Limited	4/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
24.00	D57									
24.50-24.81 24.50	SPT 50/161 D58	24.50	DRY	7,11/14,20,16		25.00	Complete at 25.00m			

Remarks

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH03

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH04

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 12.00m 200mm cased to 10.00m		Kronospan Limited	41236
	Location	**Dates** 15/08/2013-19/08/2013	**Engineer** Ramboll UK Limited	**Sheet** 1/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.30)	MADE GROUND: Concrete.			
0.30-0.70	B1					0.30	MADE GROUND: Brown, slightly sandy, slightly clayey, angular to subangular, fine to coarse GRAVEL including limestone.			
0.50	D2					(0.40)				
0.50	J3			At 0.50m: PID reading = 0.2ppm.		0.70	Dense, brown grey, slightly clayey, silty, very sandy, subangular to rounded, fine to coarse GRAVEL. Gravel includes sandstone, siltstone and limestone.			
0.70-1.20	B4									
0.80	D5									
1.00-1.45	B6									
1.20-1.65	SPT(C) N=39		DRY	4,7/9,9,10,11						
1.20	D7			At 1.20m: PID reading = 0.1ppm						
1.20	J8									
1.80	D9					(2.20)				
2.00-2.45	SPT(C) N=16	1.70	DRY	3,3/5,5,3,3			Below 2.00m, medium dense.			
2.00-2.45	B10									
2.20	D11									
2.20	J12			A 2.20m: PID reading = 0.1ppm.						
2.80	D13									
2.90	D14			At 2.80m: PID reading = 0.4ppm.		2.90	Soft, brown grey, silty, slightly sandy, slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including sandstone and siltstone.		▼1	
3.00-3.45	U15 0.45 - 42kPa	2.90	DRY	22 blows						
3.50	D16									
3.80	D17									
4.00-4.45	B18			At 3.80m: PID reading = 0.2ppm.						
4.00-4.45	SPT N=6	3.80	DRY	1,1/1,1,2,2		(2.40)				
4.00-4.45	D19									
4.80	D20			At 4.80m: PID reading = 0.4ppm Water strike(1) at 5.00m, rose to 3.00m in 20 mins.					▽1	
5.00-5.45	U21 0.45 - 23kPa	4.90	3.00	26 blows		5.30	Grey, slightly silty, slightly sandy, angular to rounded, fine to coarse GRAVEL including sandstone, limestone and siltstone.			
5.50	D22					(0.70)				
5.80	D23									
6.00-6.45	B24			At 5.80m: PID reading = 0.3ppm		6.00	Soft, grey, silty CLAY.			
6.00-6.45	SPT N=6	4.90	3.00	1,1/1,1,2,2						
6.00-6.45	D25									
6.80	D26									
7.00	HV 31kPa			At 6.80m: PID reading = 0.6ppm.						
7.00-7.45	U27 0.45	6.90	6.00	22 blows		(2.50)				
7.50	D28									
7.80	D29			At 7.80m: PID reading = 0.3ppm.						

Remarks
Excavating from 0.00m to 1.20m for 1.00 hour.

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH04

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH04

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 12.00m 200mm cased to 10.00m		Kronospan Limited	41236
	Location	**Dates** 15/08/2013-19/08/2013	**Engineer** Ramboll UK Limited	**Sheet** 2/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
8.00-8.45 8.00-8.45 8.00-8.45	SPT N=4 B30 D31	7.50	5.00	1,1/1,1,1,1,1		8.50	Very stiff, brown, slightly sandy, slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including siltstone and quartz.			
9.00-9.45	U32 0.45 - 90kPa	8.90	3.50	79 blows						
9.50	D33									
9.80	D34									
10.00-10.45	B35			At 9.80m: PID reading = 0.3ppm.						
10.00-10.35 10.00-10.45	SPT 50/200 D36	9.90	SEEP	7,10/15,19,16						
11.00	D37			At 11.00m: PID reading = 0.3ppm						
11.50-11.85 11.50-11.95 11.50-11.95	SPT 50/202 B38 D39	11.40	SEEP	8,12/17,20,13						
12.50	D40			At 12.50m: PID reading = 0.2ppm.						
13.00-13.39 13.00-13.45 13.00-13.45	SPT 53/235 B41 D42	12.00	DRY	7,7/12,16,18,7						
14.00	D43			At 14.00m: PID reading = 0.1ppm.						
14.50-14.83 14.50 14.50-14.95	SPT 47/180 D45 B44	12.00	DRY	6,9/13,17,17						
15.50	D46			At 15.50m: PID reading = 0.2ppm.						
16.00-16.33	SPT 52/175	12.00	DRY	10,13/17,22,13						

Remarks
Chiselling from 16.00m to 16.30m for 0.50 hours.

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH04

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH04

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 12.00m 200mm cased to 10.00m		Kronospan Limited	41236

Location	Dates	Engineer	Sheet
	15/08/2013- 19/08/2013	Ramboll UK Limited	3/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
16.00-16.45	B47					(16.50)				
17.00	D48			At 17.00m: PID reading = 0.2ppm						
17.50-17.87 17.50-17.95 17.50-17.95	SPT 45/220 B49 D50	12.00	DRY	7,11/14,17,14						
18.50	D51			At 18.50m: PID reading = 0.1ppm						
19.00-19.37 19.00-19.45 19.00-19.45	SPT 50/215 B52 D53	12.00	DRY	8,11/13,18,19						
20.00	D54			At 20.00m: PID reading = 0.2ppm						
20.50-20.87 20.50-20.95 20.50-20.95	SPT 50/215 B55 D56	12.00	SEEP	7,9/14,18,18						
21.50	D57			At 21.50m: PID readings = 0.2ppm						
22.00-22.37 22.00-22.45 22.00-22.45	SPT 50/220 B58 D59	12.00	SEEP	7,10/12,17,21						
23.00	D60			At 23.00m: PID reading = 0.1ppm						
23.50-23.86 23.50-23.95 23.50-23.95	SPT 50/210 B61 D62	12.00	SEEP	6,11/13,18,19						

Remarks
Chiselling from 16.00m to 16.30m for 0.50 hours.

Scale (approx)	Logged By
1:40	TPB

Figure No.
41236.BH04

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH04

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 12.00m 200mm cased to 10.00m		Kronospan Limited	41236
	Location	**Dates**	**Engineer**	**Sheet**
		15/08/2013- 19/08/2013	Ramboll UK Limited	4/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
25.00	D63					25.00	Complete at 25.00m			

Remarks

Scale (approx)	Logged By
1:40	TPB

Figure No. 41236.BH04

SPT Summary

IAN FARMER ASSOCIATES

Standard Penetration Test Results

Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

Engineer : Ramboll UK Limited

Job Number 41236

Sheet 1 / 2

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
BH01	1.20	1.35	1.65	CPT	2	3	4	2	2	5	N=13	
BH01	2.00	2.15	2.45	CPT	3	4	3	3	5	4	N=15	
BH01	4.00	4.15	4.45	SPT	1	2	1	1	2	2	N=6	
BH01	6.00	6.15	6.45	SPT	2	3	2	2	2	2	N=8	
BH01	7.00	7.15	7.45	SPT	3	4	3	5	4	5	N=17	
BH01	8.00	8.15	8.38	CPT	7	8	14	16	20		50/225mm	
BH01	9.00	9.15	9.38	SPT	3	11	13	16	16	5	50/229mm	
BH01	10.00	10.15	10.39	CPT	8	11	14	13	15	8	50/235mm	
BH01	11.50	11.65	11.88	CPT	6	9	13	14	15	4	46/228mm	
BH01	13.00	13.15	13.38	CPT	7	14	16	18	16		50/225mm	
BH01	14.50	14.65	14.88	CPT	8	16	15	16	19		50/225mm	
BH01	16.00	16.15	16.38	CPT	9	18	18	16	16		50/225mm	
BH01	17.50	17.65	17.88	CPT	9	11	13	16	17	4	50/227mm	
BH01	19.00	19.15	19.38	CPT	6	7	11	15	16	8	50/231mm	
BH01	20.50	20.65	20.88	SPT	5	7	12	14	17	6	49/228mm	
BH01	22.00	22.15	22.37	SPT	6	8	12	18	20		50/224mm	
BH01	23.50	23.65	23.88	SPT	4	10	17	16	17		50/225mm	
BH01	25.00	25.15	25.37	SPT	8	11	16	16	18		50/222mm	
BH02	1.20	1.35	1.60	CPT	3	6	9	12	19	10	50/245mm	
BH02	2.00	2.15	2.45	SPT	2	3	5	7	7	8	N=27	
BH02	3.00	3.15	3.45	SPT	1	1	1	1	2	2	N=6	
BH02	5.00	5.15	5.45	SPT	1	0	1	0	1	0	N=2	
BH02	7.00	7.15	7.45	SPT	1	0	1	1	1	2	N=5	
BH02	9.00	9.15	9.45	SPT	1	1	1	2	2	3	N=8	
BH02	11.50	11.65	11.85	SPT	5	11	14	18	18		50/200mm	
BH02	13.00	13.15	13.33	SPT	5	8	14	17	14		45/182mm	
BH02	14.50	14.65	14.95	SPT	1	1	2	9	8	8	N=27	
BH02	16.00	16.15	16.45	SPT	2	3	5	5	7	8	N=25	
BH02	17.50	17.65	17.83	SPT	5	8	2	16	14		32/180mm	
BH02	19.00	19.15	19.35	SPT	9	9	9	18	23		50/195mm	
BH02	20.50	20.65	20.95	SPT	8	8	10	11	19	10	50/295mm	
BH02	22.00	22.15	22.37	SPT	7	9	12	17	27		56/217mm	
BH02	23.50	23.65	23.83	SPT	8	10	16	19	15		50/180mm	
BH02	25.00	25.15	25.34	SPT	7	11	15	20	15		50/190mm	
BH03	1.20	1.35	1.65	CPT	7	10	10	9	8	9	N=36	
BH03	2.00	2.15	2.45	CPT	6	8	9	9	9	10	N=37	
BH03	4.00	4.15	4.45	SPT	1	1	1	2	2	2	N=7	
BH03	6.00	6.15	6.45	SPT	1	2	1	1	2	2	N=6	
BH03	8.00	8.15	8.45	SPT	1	1	2	1	2	2	N=7	
BH03	9.00	9.15	9.45	SPT	1	1	2	1	2	3	N=8	
BH03	10.00	10.15	10.45	SPT	6	7	6	6	5	5	N=22	
BH03	13.00	13.15	13.32	SPT	5	8	18	25	7		50/167mm	
BH03	14.50	14.65	14.88	SPT	7	16	14	16	15	5	50/229mm	

IAN FARMER ASSOCIATES

Standard Penetration Test Results

Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

Engineer : Ramboll UK Limited

Job Number 41236

Sheet 2 / 2

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
BH03	16.00	16.15	16.39	CPT	9	15	14	14	17	5	50/237mm	
BH03	17.50	17.65	17.82	SPT	8	12	17	18	15		50/171mm	
BH03	19.00	19.15	19.45	CPT	9	13	16	16	18		N=50	
BH03	21.00	21.15	21.31	SPT	12	17	18	20	12		50/156mm	
BH03	22.50	22.65	22.81	CPT	8	14	15	15	20		50/157mm	
BH03	24.50	24.65	24.81	SPT	7	11	14	20	16		50/161mm	
BH04	1.20	1.35	1.65	CPT	4	7	9	9	10	11	N=39	
BH04	2.00	2.15	2.45	CPT	3	3	5	5	3	3	N=16	
BH04	4.00	4.15	4.45	SPT	1	1	1	1	2	2	N=6	
BH04	6.00	6.15	6.45	SPT	1	1	1	1	2	2	N=6	
BH04	8.00	8.15	8.45	SPT	1	1	1	1	1	1	N=4	
BH04	10.00	10.15	10.35	SPT	7	10	15	19	16		50/200mm	
BH04	11.50	11.65	11.85	SPT	8	12	17	20	13		50/202mm	
BH04	13.00	13.15	13.39	SPT	7	7	12	16	18	7	53/235mm	
BH04	14.50	14.65	14.83	SPT	6	9	13	17	17		47/180mm	
BH04	16.00	16.15	16.33	SPT	10	13	17	22	13		52/175mm	
BH04	17.50	17.65	17.87	SPT	7	11	14	17	14		45/220mm	
BH04	19.00	19.15	19.37	SPT	8	11	13	18	19		50/215mm	
BH04	20.50	20.65	20.87	SPT	7	9	14	18	18		50/215mm	
BH04	22.00	22.15	22.37	SPT	7	10	12	17	21		50/220mm	
BH04	23.50	23.65	23.86	SPT	6	11	13	18	19		50/210mm	

Instrumentation Table

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH01

Installation Type	Dimensions	Client	Job Number
		Kronospan Limited	41236

Location	Ground Level (mOD)	Engineer	Sheet
		Ramboll UK Limited	1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
				0.20	Concrete
					Cement/Bentonite Grout
	▽1			2.00	
					Slotted Standpipe
				3.00	
	▽2				

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
					5 min	10 min	15 min	20 min	
		1.90 10.90	1.70 10.50					1.70	3.00

Groundwater Observations During Drilling

Date	Start of Shift					End of Shift				
	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type :

Date	Instrument [A]			Remarks
	Time	Depth (m)	Level (mOD)	

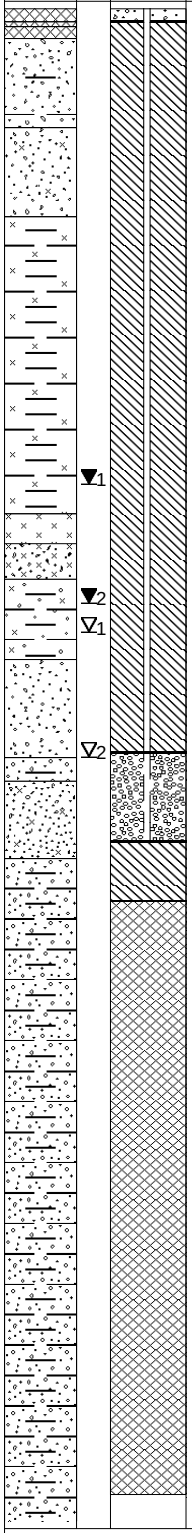
Remarks

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH02

Installation Type	Dimensions	Client	Job Number
Standpipe		Kronospan Limited	41236

Location	Ground Level (mOD)	Engineer	Sheet
		Ramboll UK Limited	1/1



Instr (A)	Level (mOD)	Depth (m)	Description
		0.20	Concrete
		12.50	Cement/Bentonite Grout
		14.00	Slotted Standpipe
		15.00	Cement/Bentonite Grout
		25.00	General Backfill

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	Readings 10 min	Readings 15 min	Readings 20 min	Depth Sealed (m)
		10.50 12.60						8.00 10.00	

Groundwater Observations During Drilling

Date	Start of Shift Time	Start of Shift Depth Hole (m)	Start of Shift Casing Depth (m)	Start of Shift Water Depth (m)	Start of Shift Water Level (mOD)	End of Shift Time	End of Shift Depth Hole (m)	End of Shift Casing Depth (m)	End of Shift Water Depth (m)	End of Shift Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type :

Date	Instrument [A] Time	Instrument [A] Depth (m)	Instrument [A] Level (mOD)	Remarks

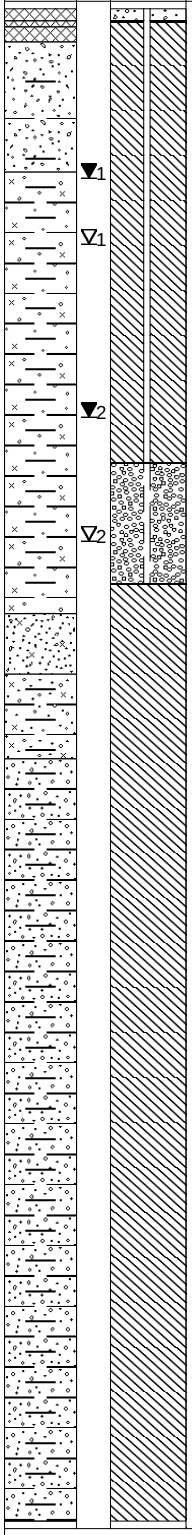
Remarks

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH03

Installation Type	Dimensions	Client	Job Number
Standpipe		Kronospan Limited	41236

Location	Ground Level (mOD)	Engineer	Sheet
		Ramboll UK Limited	1/1



Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	Readings 10 min	Readings 15 min	Readings 20 min	Depth Sealed (m)
		3.90 8.80	3.50 8.50		3.10 7.90	2.90 7.20	2.80 6.90	2.80 6.75	6.60

Groundwater Observations During Drilling

Date	Start of Shift Time	Start of Shift Depth Hole (m)	Start of Shift Casing Depth (m)	Start of Shift Water Depth (m)	Start of Shift Water Level (mOD)	End of Shift Time	End of Shift Depth Hole (m)	End of Shift Casing Depth (m)	End of Shift Water Depth (m)	End of Shift Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type :

Date	Instrument [A] Time	Instrument [A] Depth (m)	Instrument [A] Level (mOD)	Remarks

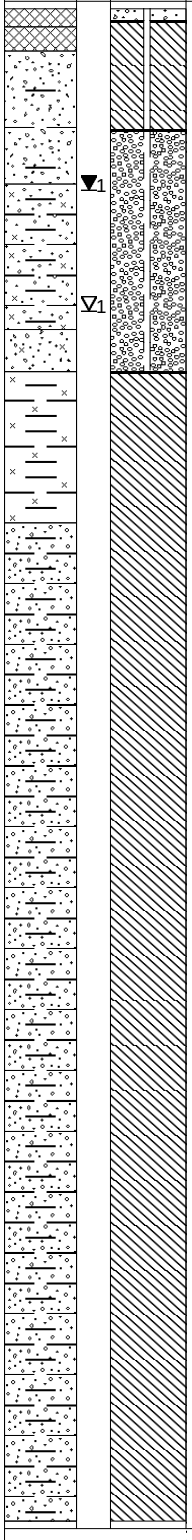
Remarks

IAN FARMER ASSOCIATES

Site	Borehole Number
New Boiler Plant Civils Works Ground Investigation	BH04

Installation Type	Dimensions	Client	Job Number
Standpipe		Kronospan Limited	41236

Location	Ground Level (mOD)	Engineer	Sheet
		Ramboll UK Limited	1/1



Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	Readings 10 min	Readings 15 min	Readings 20 min	Depth Sealed (m)
		5.00	4.90		3.00	3.00	3.00	3.00	

Groundwater Observations During Drilling

Date	Start of Shift Time	Start of Shift Depth Hole (m)	Start of Shift Casing Depth (m)	Start of Shift Water Depth (m)	Start of Shift Water Level (mOD)	End of Shift Time	End of Shift Depth Hole (m)	End of Shift Casing Depth (m)	End of Shift Water Depth (m)	End of Shift Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type :

Date	Instrument [A] Time	Instrument [A] Depth (m)	Instrument [A] Level (mOD)	Remarks

Remarks

APPENDIX 3

LABORATORY TESTS

APPENDIX 3

GENERAL NOTES ON LABORATORY TESTS ON SOILS

A3.1 GENERAL

A3.1.1 Where applicable all tests are carried out in accordance with the relevant British Standard. The laboratory test procedures are as below:

Test Name	**Procedures BS1377:1990 Part:Clause**
Moisture Content	2:3
Liquid Limit	2:4
Plastic Limit and Plastic Index	2:5
Linear Shrinkage	2:6
Particle Size Distribution	2:9
Loss on Ignition	3:4*
Sulphate content	3:5
Chloride Content	3:7*
pH Value	3:9
Compaction Test	4:3*
Moisture condition Value	4:5
California Bearing Ratio	4:7
Consolidation	5:3
Bulk Density	7:2*
Laboratory Vane Tests	7:3*
Shear Box	7:4*
Triaxial Compression	
Total Stress Single-Stage	7:8
Total Stress Multi-Stage	7:9
Effective Stress	Note 1*
Permeability	Note 2*
Desiccation	Note 3*
In-situ density by Sand replacement	Part 9
Core Cutter	Part 9
Nuclear density	Part 9

	BS812 Part:Clause
Ten % fines (Dry and Soaked)	111
Aggregate crushing value	110
Particle density and water absorption	2
Particle size distribution	103
Moisture content – oven drying	109
Soundness	121

	BS:1881 Part:Clause
Chloride Content	124:10.2
Sulphate content	124:10.3
Curing/density and compressive strength of concrete tubes	116-111-114
Location of reinforcement	204
Carbonation	Note 4
Resistivity	Note 5
Sampling of concrete dust by drilling	Note 6
Half cell potential	Note 7

Note 1 - Manual of soils laboratory testing volume 3: 1985, section 19.2 by K.H. Head
Note 2 - Manual of soils laboratory testing volume 2: 1985, section 10.7 by K.H. Head
Note 3 - BRE Information paper IP4 issued February 1993
Note 4 - BRE Information paper IP6/81
Note 5 - In-house document number 109
Note 6 - In-house document number 112
Note 7 - ASTM C876-91
* Tests are not included in UKAS accreditation

A3.1.2 Any discussion in this report is based on the values and results obtained from the appropriate tests. Due allowance should be made, when considering any result in isolation, of the possible inaccuracy of any such individual result. Details of the accuracy of results are included in this section, where applicable.

IAN FARMER ASSOCIATES

Unit 4 Faraday Close, Pattinson North Industrial Estate, Washington, Tyne & Wear, NE38 8QJ.
Tel. 0191 4828500 Fax. 0191 4828520 Email. lab@ifawashington.co.uk Internet.www.ianfarmerassociates.co.uk

Ian Farmer Associates (1998) Ltd
17 Rivington Court
Warrington
Cheshire
WA1 4RT

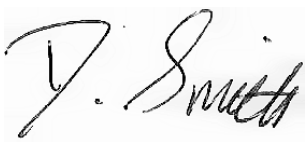
F.A.O. Mr A Latimer

TEST REPORT - 41236/1

Site :	New Boiler Plant Civils Works Ground Investigation
Job Number :	41236
Originating Client :	Kronospan Limited
Originating Reference :	41236
Date Sampled :	Not Given
Date Scheduled :	20/08/2013
Date Testing Started :	28/08/13
Date Testing Finished :	06/09/13

Remarks :

- First Report for above Job Number
- Samples will be disposed of 28 days after the report is issued unless otherwise agreed
- This report may contain results from tests which are not included within the scope of the UKAS accreditation. Please see final sheet for details.

Authorised By:  Daniel Smith

Position : Laboratory Supervisor Date : 06/09/13

IAN FARMER ASSOCIATES

Laboratory Test Report - 41236/1

Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

Job Number 41236

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY AND LIQUIDITY INDEX

Borehole/ Trial Pit	Depth (m)	Sample	Natural / Sieved	Natural Moisture Content %	Sample Passing 425µm Sieve		Liquid Limit %	Plastic Limit %	Plasticity Index %	Liquidity Index	Class	Description / Remarks
					Percentage %	Moisture Content %						
BH01	3.00	U13	Natural	34								Grey silty CLAY
BH01	4.00	D17	Natural	34	100	34	36	20	16	0.88	CI	Grey silty CLAY
BH01	5.00	U20	Natural	27								Grey silty CLAY
BH01	7.00	D26	Sieved	6.3	100	6.3	20	15	5	-1.74	ML	Grey sandy gravelly SILT / CLAY
BH01	9.00	D31	Natural	6.9	90	7.1	19	9	10	-0.19	CL	Brown CLAY
BH01	11.00	D34	Natural	8.2	77	9.2	26	10	16	-0.05	CL	Brown gravelly CLAY
BH01	14.00	D38	Natural	12								Brown sandy gravelly CLAY
BH01	17.00	D42	Natural	9.9	96	10	24	15	9	-0.56	CL	Brown silty sandy CLAY
BH01	20.50	D47	Natural	15								Brown gravelly CLAY
BH01	22.00	D50	Natural	10	88	11	29	12	17	-0.06	CL	Brown CLAY
BH01	24.50	D54	Natural	19								Brown CLAY
BH02	4.00	U15	Natural	30								Grey silty CLAY
BH02	6.00	U21	Natural	34								Grey silty CLAY
BH02	6.50	D22	Natural	31	100	31	34	28	6	0.50	ML	Grey SILT / CLAY
BH02	8.00	U27	Natural	23								Grey silty CLAY
BH02	9.80	D32	Natural	12	87	13	22	11	11	0.18	CL	Brown gravelly CLAY
BH02	10.00	U33	Natural	9.6								Grey silty gravelly CLAY
BH02	16.00	D51	Natural	18	99	18	35	18	17	0.00	CL/CI	Brown silty CLAY
BH02	19.00	D56	Natural	12	97	12	22	13	9	-0.11	CL	Brown sandy CLAY
BH02	21.50	D61	Natural	12								Brown gravelly sandy CLAY
BH02	23.50	D65	Natural	13	96	13	28	14	14	-0.07	CL	Brown CLAY
BH03	3.00	U14	Natural	30								Grey silty CLAY
BH03	5.50	D22	Natural	23	100	23	29	21	8	0.25	CL	Grey silty CLAY
BH03	7.00	U27	Natural	27								Grey silty CLAY
BH03	9.00	D35	Natural	29	100	29	32	26	6	0.50	ML	Grey SILT / CLAY
BH03	11.50	U39	Natural	14								Brown sandy gravelly CLAY
BH03	12.50	D41	Natural	8.0	84	8.6	22	12	10	-0.34	CL	Brown gravelly sandy CLAY
BH03	15.50	D47	Natural	9.9	94	10	22	9	13	0.08	CL	Brown gravelly sandy CLAY
BH03	18.50	D51	Natural	10								Brown gravelly sandy CLAY
BH03	20.50	D53	Natural	11	95	11	25	10	15	0.07	CL	Brown sandy CLAY
BH03	24.50	D58	Natural	13	98	13	31	16	15	-0.20	CL	Brown CLAY
BH04	3.00	U15	Natural	19								Brown silty CLAY
BH04	4.00	D19	Natural	30	100	30	40	20	20	0.50	CI	Brown CLAY
BH04	10.00	D36	Natural	11	85	13	23	12	11	0.09	CL	Brown sandy gravelly CLAY
BH04	13.00	D42	Natural	11								Brown sandy CLAY
BH04	15.50	D46	Natural	9.7	91	10	25	14	11	-0.36	CL	Brown sandy CLAY

Method of Preparation : BS 1377:PART 1:1990:7.4 Preparation of samples for classification tests BS 1377:PART 2:1990:4.2 & 5.2 Sample preparations

Method of Test : BS 1377:PART 2:1990:3.2 Determination of moisture content 4.3 Determination of the liquid limit 5.3 Determination of the plastic limit and plasticity index

IAN FARMER ASSOCIATES

Laboratory Test Report - 41236/1

Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

Job Number 41236

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY AND LIQUIDITY INDEX

Borehole/ Trial Pit	Depth (m)	Sample	Natural / Sieved	Natural Moisture Content %	Sample Passing 425µm Sieve		Liquid Limit %	Plastic Limit %	Plasticity Index %	Liquidity Index	Class	Description / Remarks
					Percentage %	Moisture Content %						
BH04	19.00	D53	Natural	11	76	13	29	15	14	-0.14	CL	Brown gravelly sandy CLAY
BH04	22.00	D59	Natural	8.7								Brown sandy CLAY
BH04	23.50	D62	Natural	12	13	56	29	13	16	2.69	CL	Brown sandy CLAY

Method of Preparation : BS 1377:PART 1:1990:7.4 Preparation of samples for classification tests BS 1377:PART 2:1990:4.2 & 5.2 Sample preparations

Method of Test : BS 1377:PART 2:1990:3.2 Determination of moisture content 4.3 Determination of the liquid limit 5.3 Determination of the plastic limit and plasticity index

IAN FARMER ASSOCIATES

Laboratory Test Report - 41236/1

Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

Job Number 41236

DETERMINATION OF MOISTURE CONTENT / BULK DENSITY / DRY DENSITY

Borehole/ Trial Pit	Depth (m)	Sample	Moisture Content %	Bulk Density (Mg/m^3)	Dry Density (Mg/m^3)	Description / Remarks
BH01	5.00	U20	27	1.84	1.45	Grey silty CLAY
BH02	4.00	U15	30	1.99	1.53	Grey silty CLAY
BH02	8.00	U27	23	1.97	1.60	Grey silty CLAY
BH02	10.00	U33	9.6	2.13	1.94	Grey silty gravelly CLAY
BH03	11.50	U39	14	2.03	1.79	Brown sandy gravelly CLAY
BH04	7.00	U27	28	1.90	1.49	Grey SILT

Method of Preparation : BS 1377:PART 1:1990:8.2,8.3,8.4

Method of Test : BS 1377:PART 2:1990:7 Determination of Density

IAN FARMER ASSOCIATES

Laboratory Test Report - 41236/1

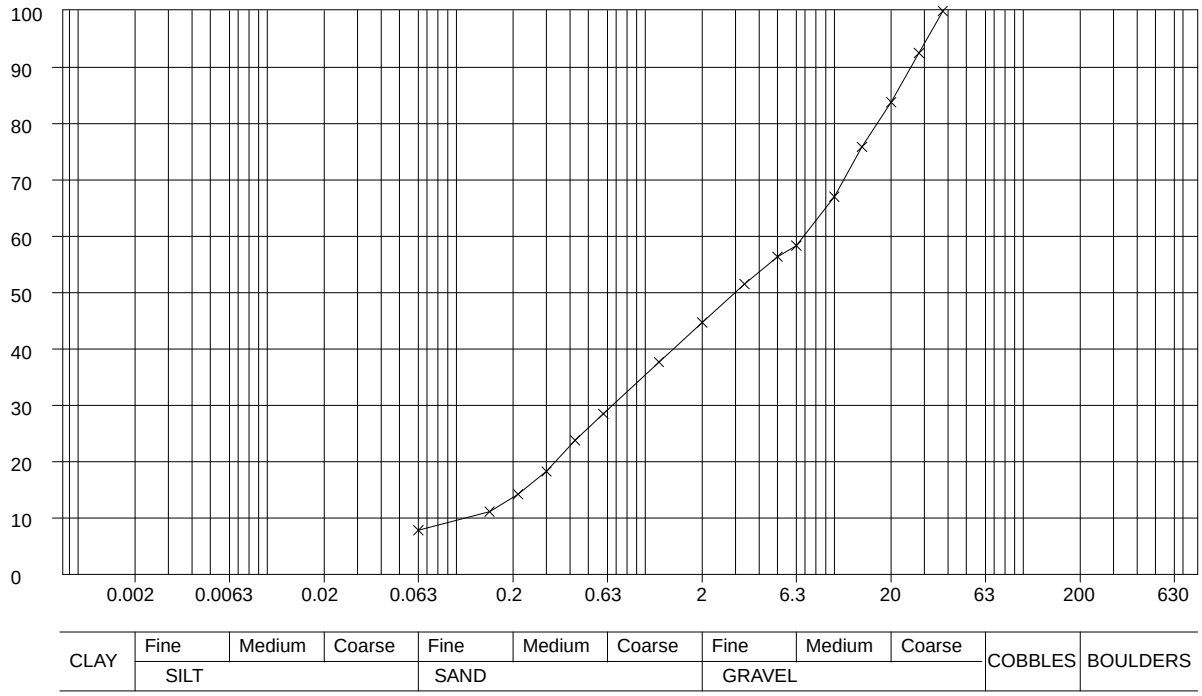
Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

Job Number 41236

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
BH01	2.00	B11	N/A	Brown silty clayey sandy GRAVEL



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	93
20 mm	84
14 mm	76
10 mm	67
6.3 mm	58
5 mm	56
3.35 mm	52
2 mm	45
1.18 mm	38
600 µm	29
425 µm	24
300 µm	18
212 µm	14
150 µm	11
63 µm	8

Grading Analysis	
D85	21.1 mm
D60	7.0 mm
D10	120.0 µm
Uniformity Coefficient	58.3

Particle Proportions	
Cobbles + Boulders	0%
Gravel	55%
Sand	37%
Silt/Clay	8%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

IAN FARMER ASSOCIATES

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Site : New Boiler Plant Civils Works Ground Investigation

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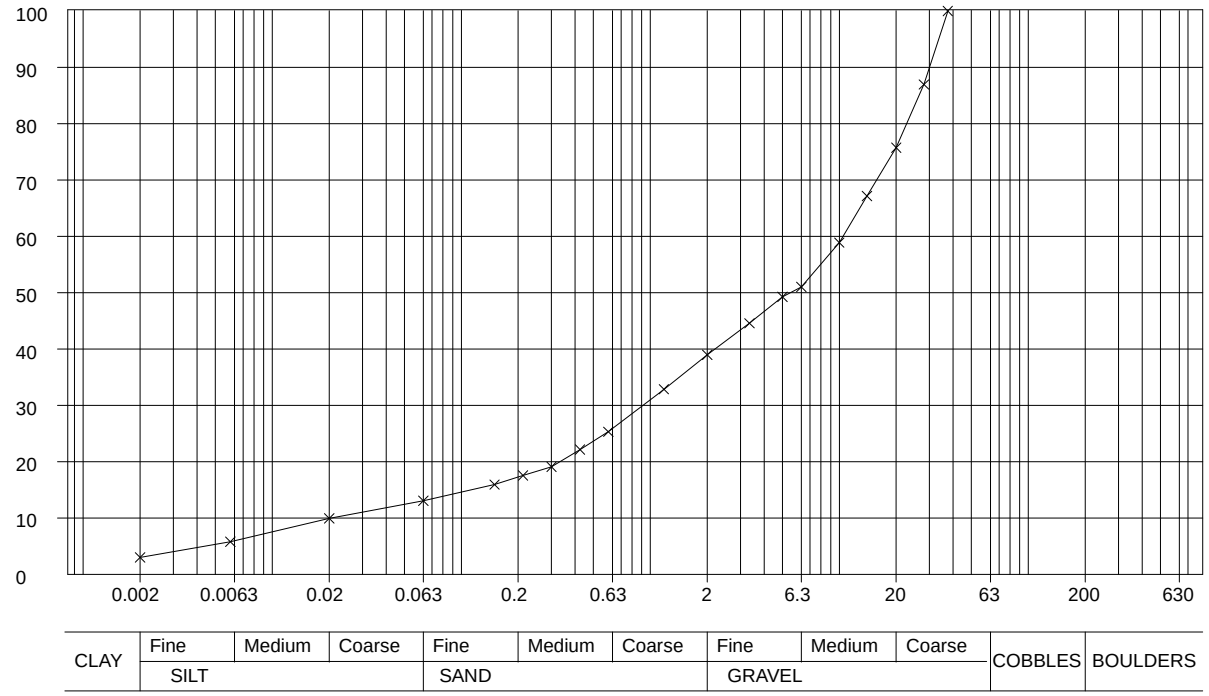
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
BH02	2.00	B10	Pipette	Brown clayey silty sandy GRAVEL



Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	87
20 mm	76
14 mm	67
10 mm	59
6.3 mm	51
5 mm	49
3.35 mm	45
2 mm	39
1.18 mm	33
600 µm	25
425 µm	22
300 µm	19
212 µm	18
150 µm	16
63 µm	13
20 µm	10
6 µm	6
2 µm	3

Grading Analysis	
D85	26.6 mm
D60	10.5 mm
D10	21.0 µm
Uniformity Coefficient	501.5

Particle Proportions	
Cobbles + Boulders	0%
Gravel	61%
Sand	26%
Silt	10%
Clay	3%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

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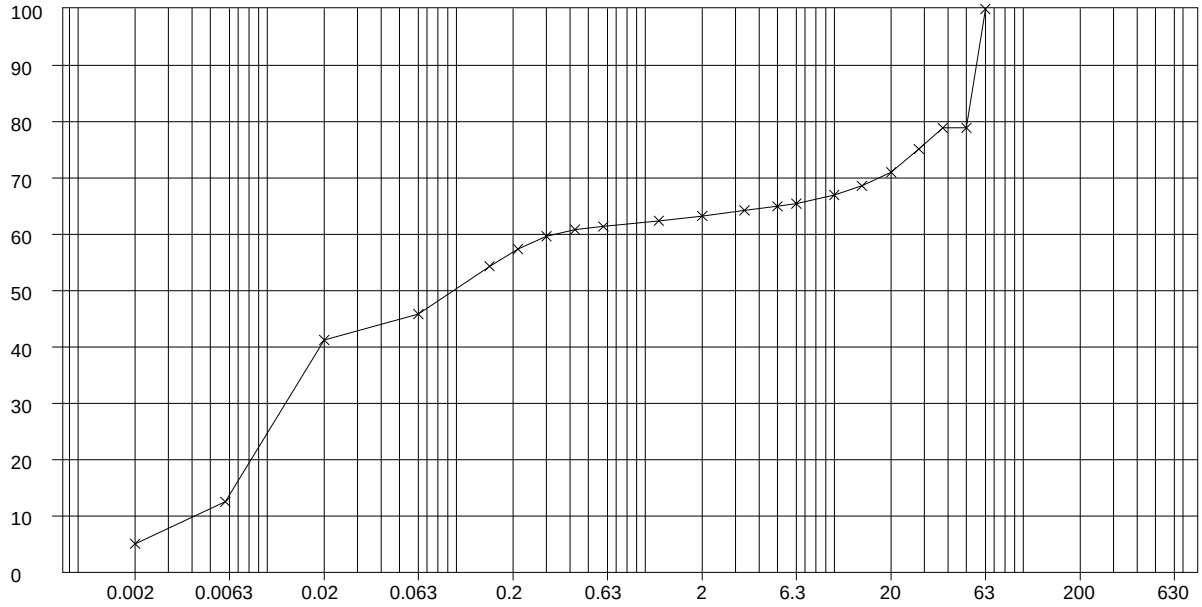
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
BH02	9.00	B30	Pipette	Brown clayey sandy gravelly SILT



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	79
37.5 mm	79
28 mm	75
20 mm	71
14 mm	69
10 mm	67
6.3 mm	65
5 mm	65
3.35 mm	64
2 mm	63
1.18 mm	62
600 µm	61
425 µm	61
300 µm	60
212 µm	57
150 µm	54
63 µm	46
20 µm	41
6 µm	13
2 µm	5

Grading Analysis	
D85	53.8 mm
D60	334.4 µm
D10	5.0 µm
Uniformity Coefficient	66.9

Particle Proportions	
Cobbles + Boulders	4%
Gravel	32%
Sand	18%
Silt	41%
Clay	5%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

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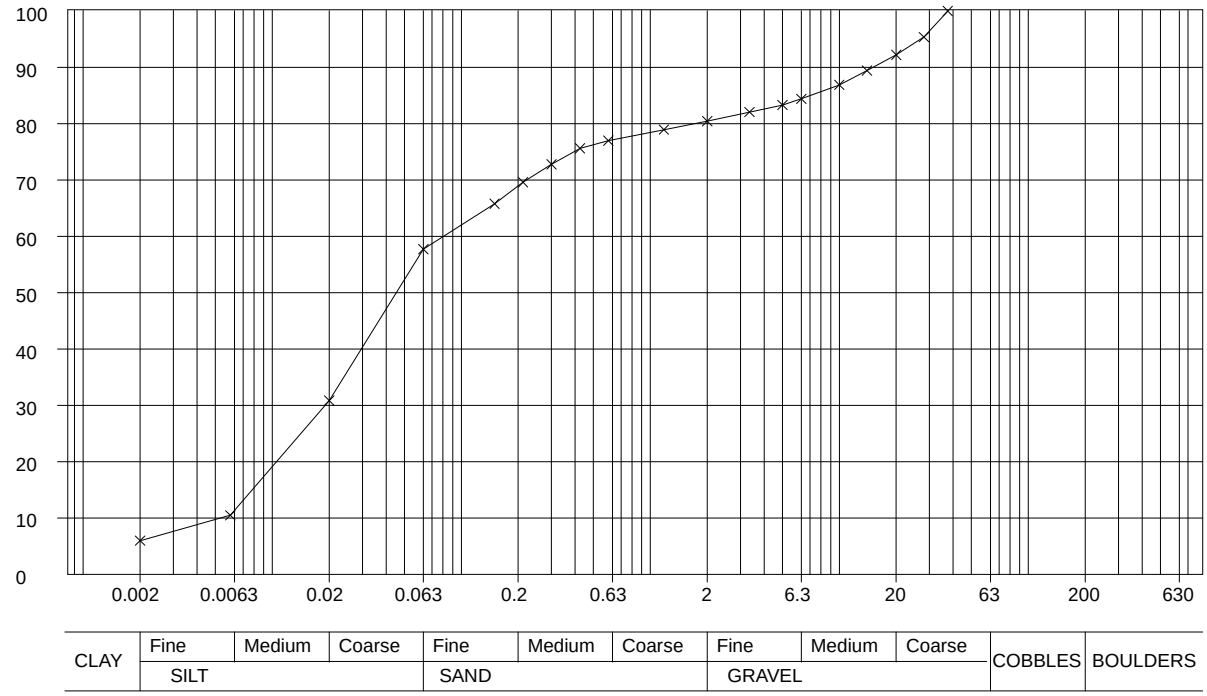
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
BH02	11.50	B38	Pipette	Brown sandy gravelly CLAY



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Grading Analysis	
D85	7.2 mm
D60	87.5 µm
D10	6.0 µm
Uniformity Coefficient	14.6

Particle Proportions	
Cobbles + Boulders	0%
Gravel	20%
Sand	24%
Silt	51%
Clay	6%

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	95
20 mm	92
14 mm	89
10 mm	87
6.3 mm	84
5 mm	83
3.35 mm	82
2 mm	80
1.18 mm	79
600 µm	77
425 µm	76
300 µm	73
212 µm	70
150 µm	66
63 µm	58
20 µm	31
6 µm	10
2 µm	6

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

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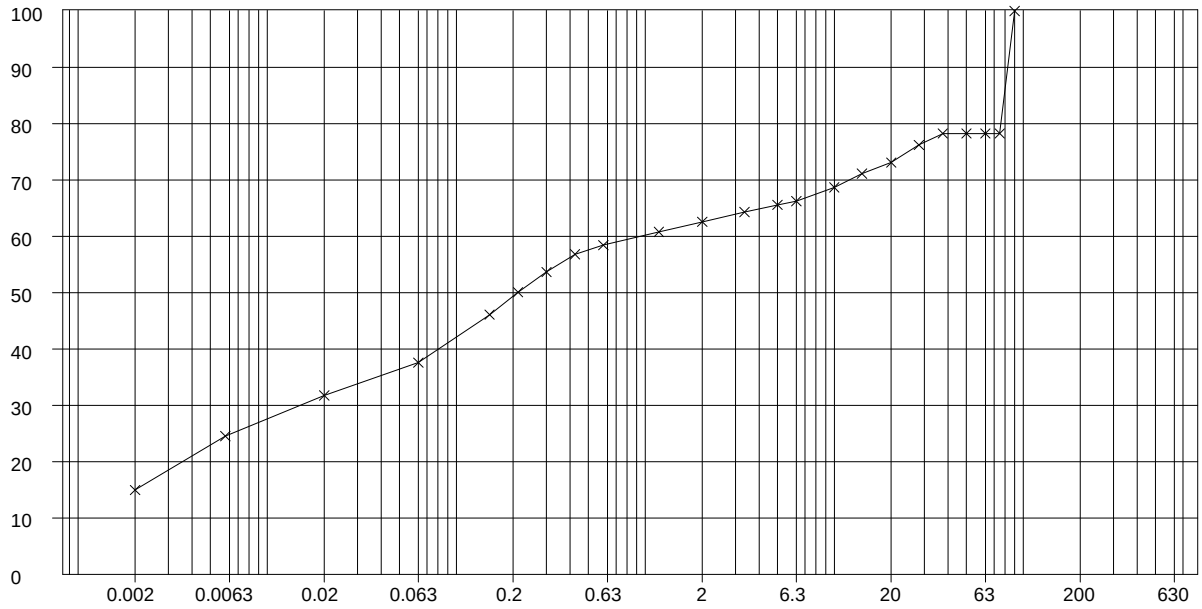
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
BH02	13.00	B42	Pipette	Brown clayey gravelly silty SAND includes cobbles



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Grading Analysis	
D85	79.6 mm
D60	980.9 µm
D10	-
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	22%
Gravel	16%
Sand	25%
Silt	22%
Clay	15%

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	78
63 mm	78
50 mm	78
37.5 mm	78
28 mm	76
20 mm	73
14 mm	71
10 mm	69
6.3 mm	66
5 mm	66
3.35 mm	64
2 mm	63
1.18 mm	61
600 µm	58
425 µm	57
300 µm	54
212 µm	50
150 µm	46
63 µm	38
20 µm	32
6 µm	25
2 µm	15

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

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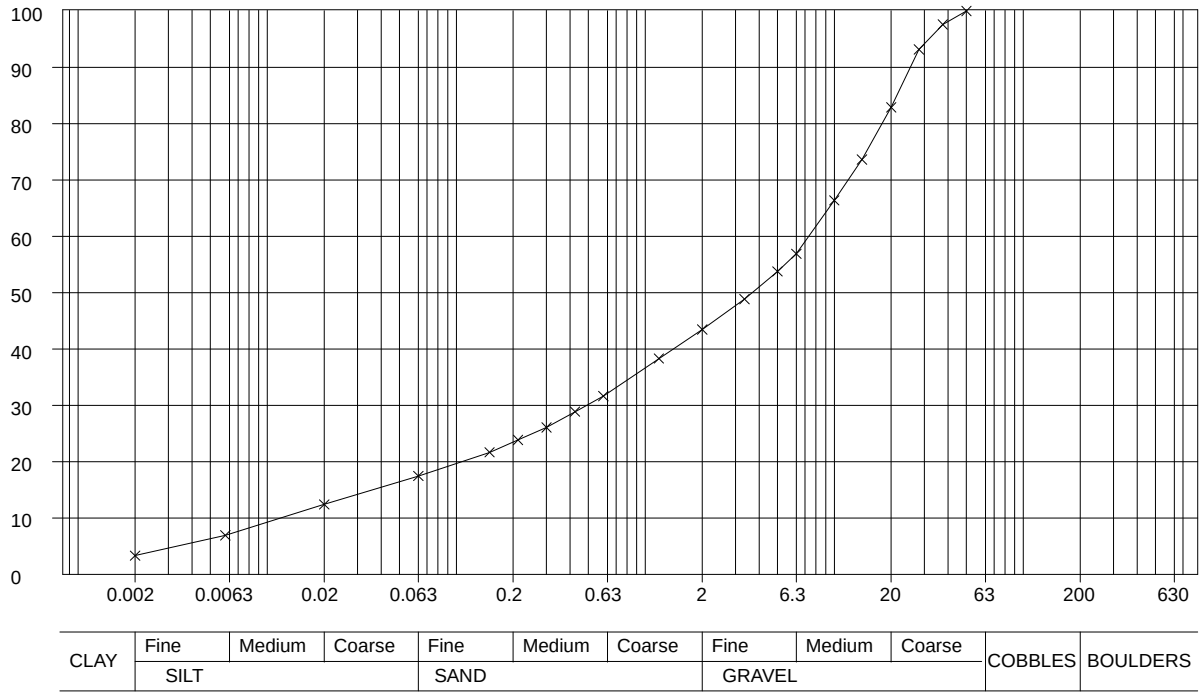
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
BH03	1.20	B7	Pipette	Brown clayey silty snady GRAVEL



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
28 mm	93
20 mm	83
14 mm	74
10 mm	66
6.3 mm	57
5 mm	54
3.35 mm	49
2 mm	43
1.18 mm	38
600 µm	32
425 µm	29
300 µm	26
212 µm	24
150 µm	22
63 µm	17
20 µm	12
6 µm	7
2 µm	3

Grading Analysis	
D85	21.6 mm
D60	7.5 mm
D10	14.0 µm
Uniformity Coefficient	535.8

Particle Proportions	
Cobbles + Boulders	0%
Gravel	57%
Sand	26%
Silt	14%
Clay	3%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

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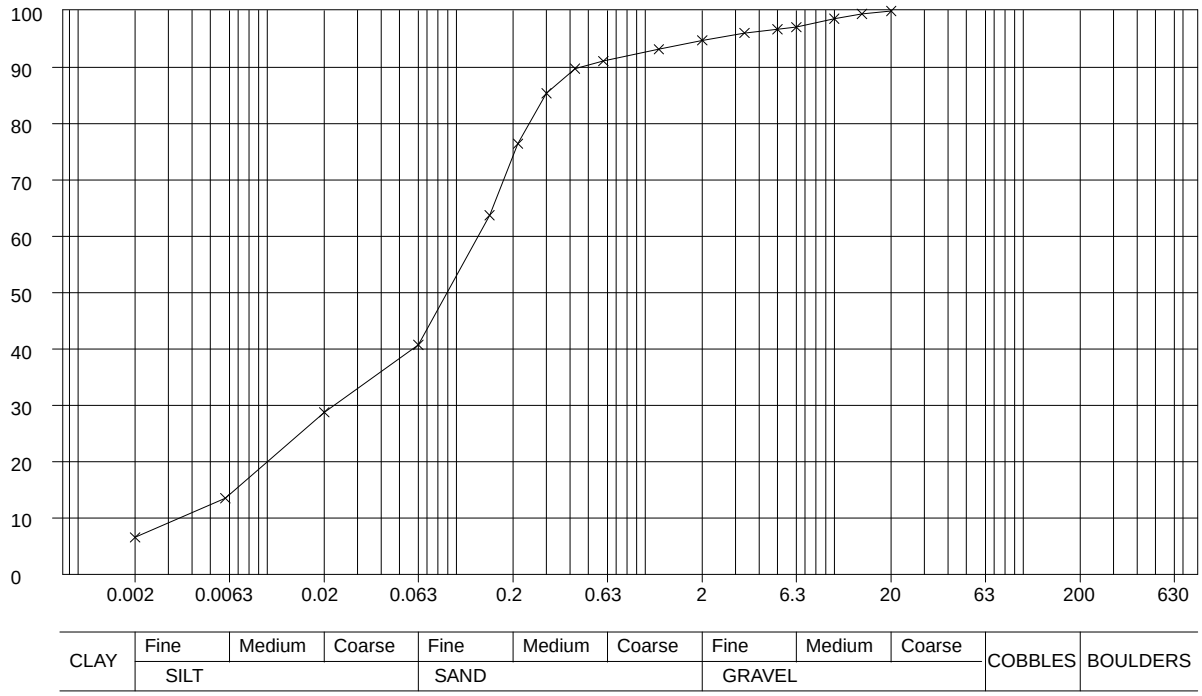
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
BH03	10.00	B37	Pipette	Brown clayey gravelly silty SAND



Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	100
20 mm	100
14 mm	100
10 mm	99
6.3 mm	97
5 mm	97
3.35 mm	96
2 mm	95
1.18 mm	93
600 µm	91
425 µm	90
300 µm	85
212 µm	76
150 µm	64
63 µm	41
20 µm	29
6 µm	14
2 µm	7

Grading Analysis	
D85	295.9 µm
D60	135.8 µm
D10	4.0 µm
Uniformity Coefficient	34.0

Particle Proportions	
Cobbles + Boulders	0%
Gravel	5%
Sand	55%
Silt	34%
Clay	7%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

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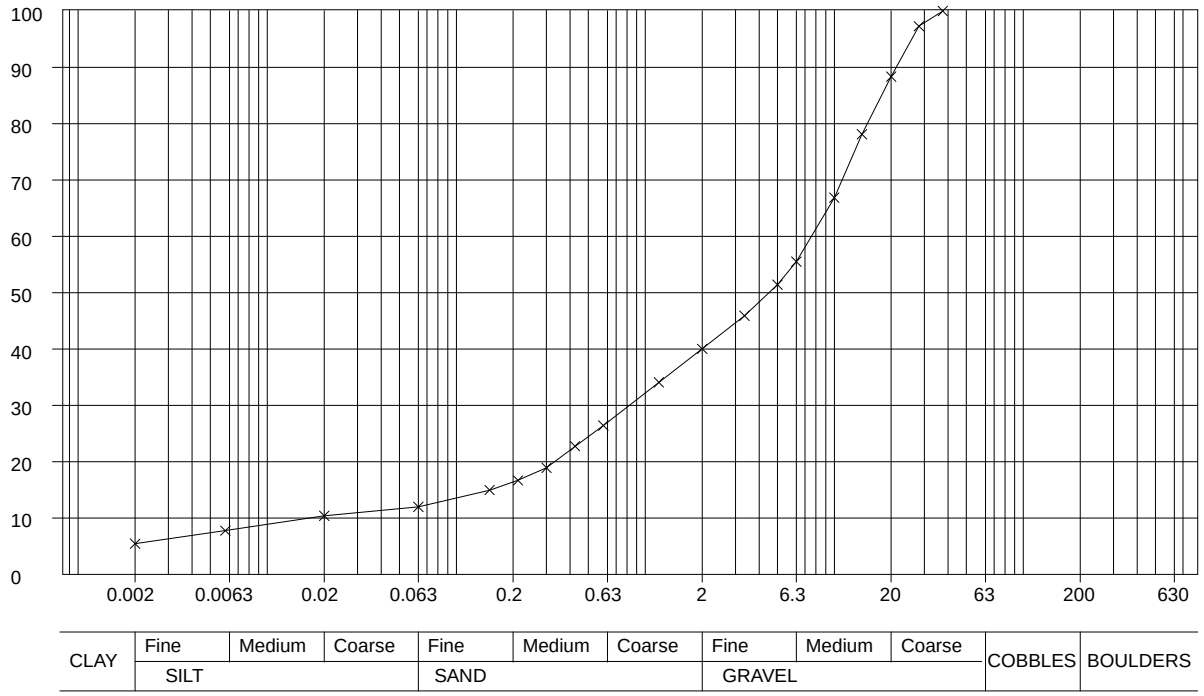
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
BH04	2.00	B10	Pipette	Brown clayey silty sandy GRAVEL



Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	97
20 mm	88
14 mm	78
10 mm	67
6.3 mm	56
5 mm	51
3.35 mm	46
2 mm	40
1.18 mm	34
600 µm	26
425 µm	23
300 µm	19
212 µm	17
150 µm	15
63 µm	12
20 µm	10
6 µm	8
2 µm	5

Grading Analysis	
D85	18.0 mm
D60	7.8 mm
D10	18.0 µm
Uniformity Coefficient	431.0

Particle Proportions	
Cobbles + Boulders	0%
Gravel	60%
Sand	28%
Silt	6%
Clay	5%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

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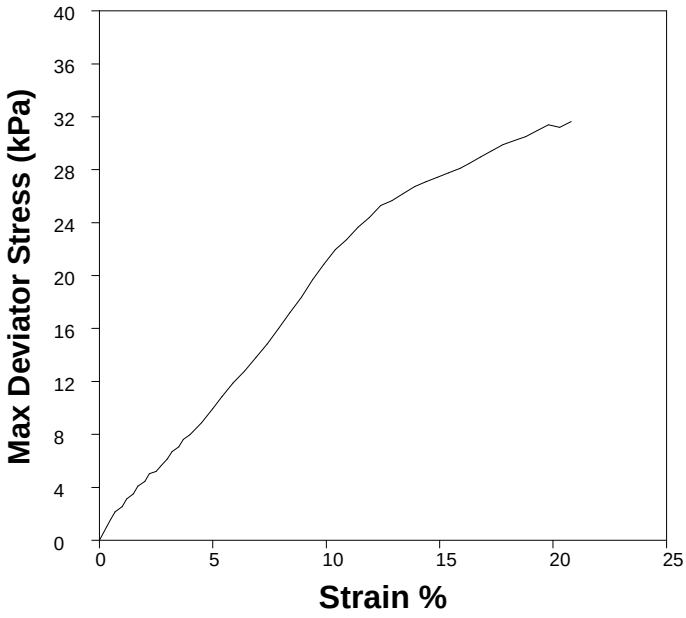
Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

Job Number 41236

DETERMINATION OF MOISTURE CONTENT, DENSITY AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE (DEFINITIVE METHOD)

Borehole / Trial Pit	Depth (m)	Sample	Description
BH01	3.00	U13	Grey silty CLAY



Initial Specimen	**Length of Sample (mm)**	342
	Depth from top of sample (mm)	21
	Condition of Sample:	Undisturbed
	Orientation:	Vertical

Test Type		Single Stage
Length of Specimen (mm)		201.9
Diameter of Specimen (mm)		105.9
Moisture Content (%)		34
Bulk Density (Mg/m³)		1.93
Dry Density (Mg/m³)		1.44
Membrane Thickness (mm)		0.4
Membrane Type		Latex
Rate of Strain (%/min)		1.98
Test Results	**Measured Cell Pressure (kPa)**	80
	Strain at Failure (%)	20.8
	Membrane Correction (kPa)	1.5
	Corrected Deviator Stress (kPa)	30
	Shear Stress (kPa)	**15**
	Mode of Failure (B/P/C)	**Plastic**

Method of Preparation : BS 1377:PT1:1990:7.4.2 Moisture Content, BS 1377:PT1:1990:8.3 Preparation of undisturbed samples for testing or BS 1377:PT1:1990 :7.7.5.2 Preparation of disturbed samples for testing.

Method of Test : BS 1377:PT2:1990:3.2 Determination of moisture content, BS 1377:PT2:1990:7.2 Determination of density by linear measurement and BS1377:PT7:1990:8.4 Determination of undrained shear strength in triaxial compression without measurement of pore pressure (definitive method)

Remarks : Membrane Type: Latex

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Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

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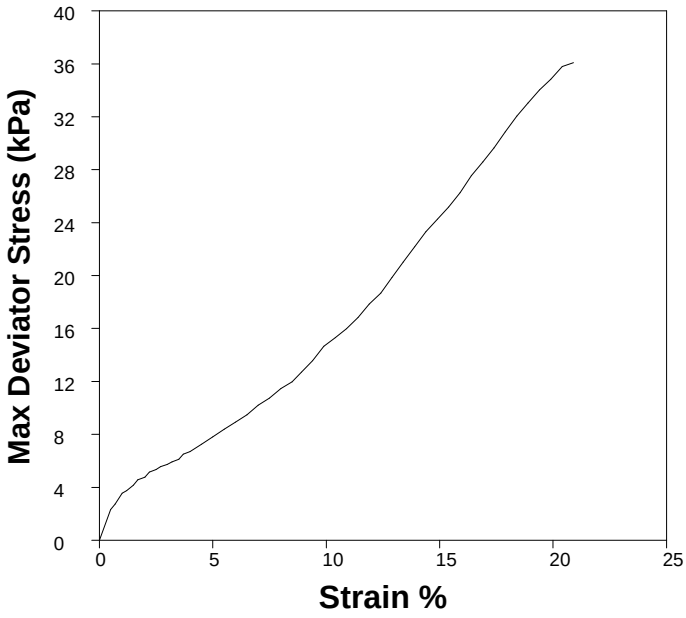
DETERMINATION OF MOISTURE CONTENT, DENSITY AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE (DEFINITIVE METHOD)

Borehole / Trial Pit	Depth (m)	Sample	Description
BH02	6.00	U21	Grey silty CLAY



Initial Specimen	**Length of Sample (mm)**	3621
	Depth from top of sample (mm)	38
	Condition of Sample:	Undisturbed
	Orientation:	Vertical

Test Type		Single Stage
Length of Specimen (mm)		201.2
Diameter of Specimen (mm)		102.5
Moisture Content (%)		34
Bulk Density (Mg/m³)		2.15
Dry Density (Mg/m³)		1.60
Membrane Thickness (mm)		0.53
Membrane Type		Latex
Rate of Strain (%/min)		1.99
Test Results	**Measured Cell Pressure (kPa)**	150
	Strain at Failure (%)	20.9
	Membrane Correction (kPa)	2.0
	Corrected Deviator Stress (kPa)	34
	Shear Stress (kPa)	**17**
	Mode of Failure (B/P/C)	**Plastic**

Method of Preparation : BS 1377:PT1:1990:7.4.2 Moisture Content, BS 1377:PT1:1990:8.3 Preparation of undisturbed samples for testing or BS 1377:PT1:1990 :7.7.5.2 Preparation of disturbed samples for testing.

Method of Test : BS 1377:PT2:1990:3.2 Determination of moisture content, BS 1377:PT2:1990:7.2 Determination of density by linear measurement and BS1377:PT7:1990:8.4 Determination of undrained shear strength in triaxial compression without measurement of pore pressure (definitive method)

Remarks : Membrane Type: Latex

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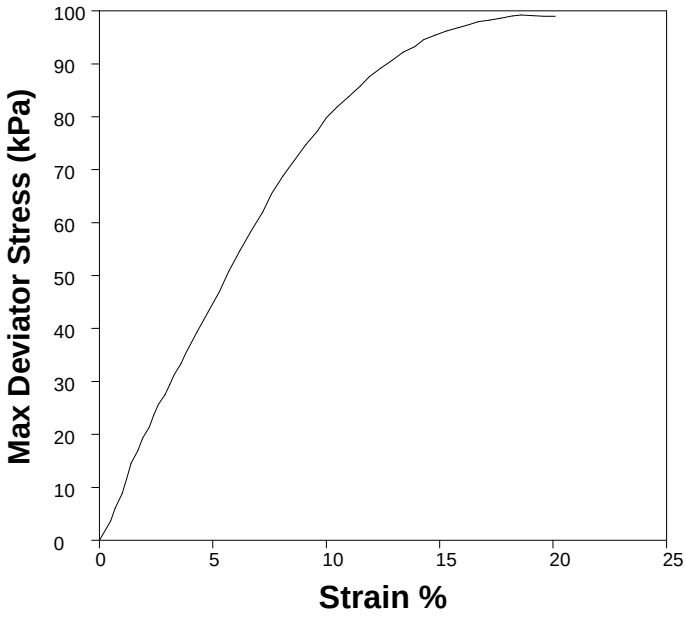
DETERMINATION OF MOISTURE CONTENT, DENSITY AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE (DEFINITIVE METHOD)

Borehole / Trial Pit	Depth (m)	Sample	Description
BH03	3.00	U14	Grey silty CLAY



Initial Specimen	Length of Sample (mm)	382
	Depth from top of sample (mm)	14
	Condition of Sample:	Undisturbed
	Orientation:	Vertical

Test Type		Single Stage
Length of Specimen (mm)		209.2
Diameter of Specimen (mm)		104.7
Moisture Content (%)		30
Bulk Density (Mg/m³)		1.92
Dry Density (Mg/m³)		1.47
Membrane Thickness (mm)		0.4
Membrane Type		Latex
Rate of Strain (%/min)		1.91
Test Results	**Measured Cell Pressure (kPa)**	80
	Strain at Failure (%)	18.6
	Membrane Correction (kPa)	1.4
	Corrected Deviator Stress (kPa)	98
	Shear Stress (kPa)	**49**
	Mode of Failure (B/P/C)	**Plastic**

Method of Preparation : BS 1377:PT1:1990:7.4.2 Moisture Content, BS 1377:PT1:1990:8.3 Preparation of undisturbed samples for testing or BS 1377:PT1:1990 :7.7.5.2 Preparation of disturbed samples for testing.

Method of Test : BS 1377:PT2:1990:3.2 Determination of moisture content, BS 1377:PT2:1990:7.2 Determination of density by linear measurement and BS1377:PT7:1990:8.4 Determination of undrained shear strength in triaxial compression without measurement of pore pressure (definitive method)

Remarks : Membrane Type: Latex

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Site : New Boiler Plant Civils Works Ground Investigation

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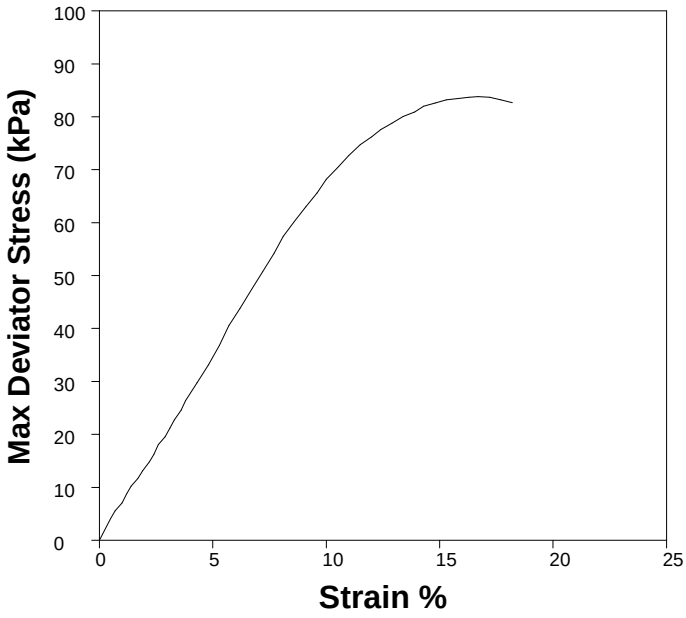
DETERMINATION OF MOISTURE CONTENT, DENSITY AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE (DEFINITIVE METHOD)

Borehole / Trial Pit	Depth (m)	Sample	Description
BH04	3.00	U15	Brown silty CLAY



Initial Specimen	**Length of Sample (mm)**	411
	Depth from top of sample (mm)	13
	Condition of Sample:	Undisturbed
	Orientation:	Vertical

Test Type		Single Stage
Length of Specimen (mm)		209.1
Diameter of Specimen (mm)		101.3
Moisture Content (%)		19
Bulk Density (Mg/m³)		1.53
Dry Density (Mg/m³)		1.29
Membrane Thickness (mm)		0.21
Membrane Type		Latex
Rate of Strain (%/min)		1.91
Test Results	**Measured Cell Pressure (kPa)**	80
	Strain at Failure (%)	16.7
	Membrane Correction (kPa)	0.7
	Corrected Deviator Stress (kPa)	83
	Shear Stress (kPa)	**42**
	Mode of Failure (B/P/C)	**Compound**

Method of Preparation : BS 1377:PT1:1990:7.4.2 Moisture Content, BS 1377:PT1:1990:8.3 Preparation of undisturbed samples for testing or BS 1377:PT1:1990 :7.7.5.2 Preparation of disturbed samples for testing.

Method of Test : BS 1377:PT2:1990:3.2 Determination of moisture content, BS 1377:PT2:1990:7.2 Determination of density by linear measurement and BS1377:PT7:1990:8.4 Determination of undrained shear strength in triaxial compression without measurement of pore pressure (definitive method)

Remarks : Membrane Type: Latex

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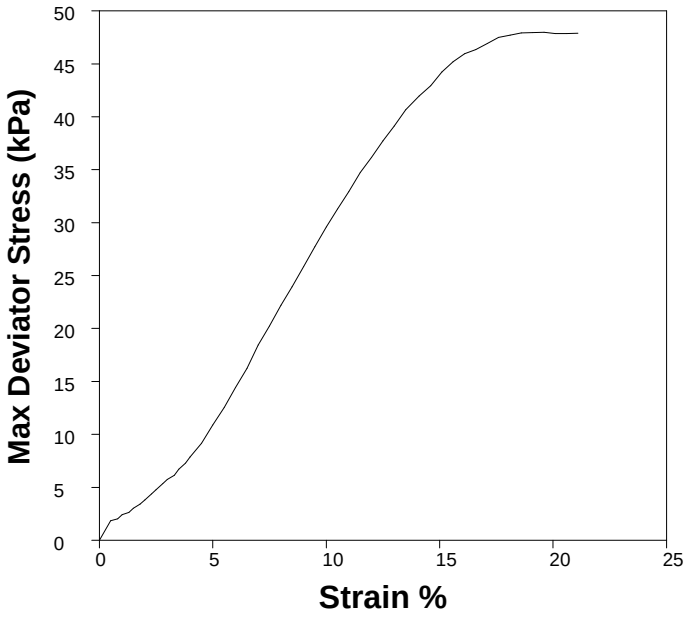
DETERMINATION OF MOISTURE CONTENT, DENSITY AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE (DEFINITIVE METHOD)

Borehole / Trial Pit	Depth (m)	Sample	Description
BH04	5.00	U21	Grey gravelly SAND



Initial Specimen	Length of Sample (mm)	372
	Depth from top of sample (mm)	21
	Condition of Sample:	Undisturbed
	Orientation:	Vertical

Test Type		Single Stage
Length of Specimen (mm)		199.3
Diameter of Specimen (mm)		104.2
Moisture Content (%)		27
Bulk Density (Mg/m³)		2.12
Dry Density (Mg/m³)		1.67
Membrane Thickness (mm)		0.4
Membrane Type		Latex
Rate of Strain (%/min)		2.01
Test Results	**Measured Cell Pressure (kPa)**	120
	Strain at Failure (%)	19.6
	Membrane Correction (kPa)	1.4
	Corrected Deviator Stress (kPa)	47
	Shear Stress (kPa)	**23**
	Mode of Failure (B/P/C)	**Plastic**

Method of Preparation : BS 1377:PT1:1990:7.4.2 Moisture Content, BS 1377:PT1:1990:8.3 Preparation of undisturbed samples for testing or BS 1377:PT1:1990 :7.7.5.2 Preparation of disturbed samples for testing.

Method of Test : BS 1377:PT2:1990:3.2 Determination of moisture content, BS 1377:PT2:1990:7.2 Determination of density by linear measurement and BS1377:PT7:1990:8.4 Determination of undrained shear strength in triaxial compression without measurement of pore pressure (definitive method)

Remarks : Membrane Type: Latex

IAN FARMER ASSOCIATES

Laboratory Test Report - 41236/1

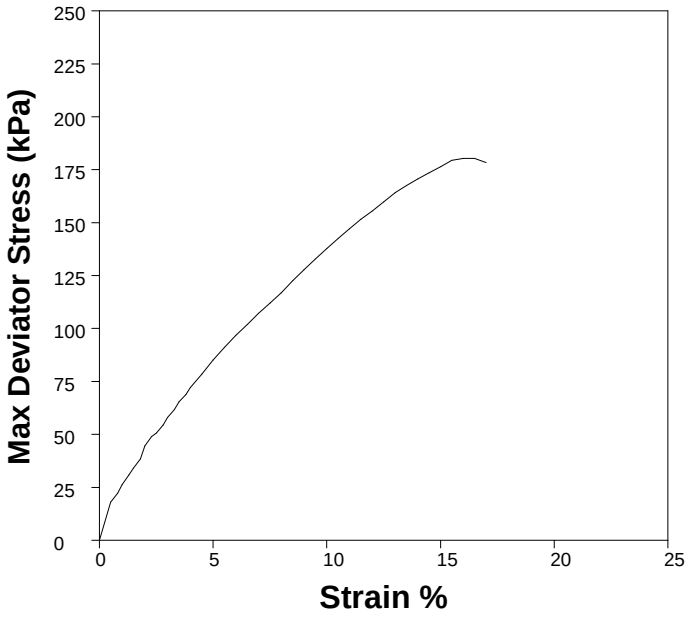
Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

Job Number 41236

DETERMINATION OF MOISTURE CONTENT, DENSITY AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE (DEFINITIVE METHOD)

Borehole / Trial Pit	Depth (m)	Sample	Description
BH04	9.00	U32	Grey sandy CLAY



Initial Specimen		
	Length of Sample (mm)	292
	Depth from top of sample (mm)	22
	Condition of Sample:	Undisturbed
	Orientation:	Vertical

Test Type		Single Stage
Length of Specimen (mm)		199.8
Diameter of Specimen (mm)		103.3
Moisture Content (%)		19
Bulk Density (Mg/m³)		2.26
Dry Density (Mg/m³)		1.89
Membrane Thickness (mm)		0.4
Membrane Type		Latex
Rate of Strain (%/min)		2.00
Test Results	Measured Cell Pressure (kPa)	200
	Strain at Failure (%)	16.5
	Membrane Correction (kPa)	1.3
	Corrected Deviator Stress (kPa)	179
	Shear Stress (kPa)	**90**
	Mode of Failure (B/P/C)	**Plastic**

Method of Preparation : BS 1377:PT1:1990:7.4.2 Moisture Content, BS 1377:PT1:1990:8.3 Preparation of undisturbed samples for testing or BS 1377:PT1:1990 :7.7.5.2 Preparation of disturbed samples for testing.

Method of Test : BS 1377:PT2:1990:3.2 Determination of moisture content, BS 1377:PT2:1990:7.2 Determination of density by linear measurement and BS1377:PT7:1990:8.4 Determination of undrained shear strength in triaxial compression without measurement of pore pressure (definitive method)

Remarks : Membrane Type: Latex

IAN FARMER ASSOCIATES

Laboratory Test Report - 41236/1

Site : New Boiler Plant Civils Works Ground Investigation

Client : Kronospan Limited

Job Number 41236

DETERMINATION OF EQUIVALENT SHEAR STRESS BY HAND VANE

Borehole/ Trial Pit	Depth (m)	Sample	Location	Readings	Size	Equivalent Shear Stress kN/m²	Description / Remarks
BH01	5.00	U20	Top	16.00 18.00 16.00	Small	28	Grey silty CLAY
BH02	4.00	U15	Top	108.00 106.00 110.00	Large	31	Grey silty CLAY
BH02	8.00	U27	Top	22.00 6.00 10.00	Small	20	Grey silty CLAY
BH02	10.00	U33	Top	10.00 12.00 9.00	Small	17	Grey silty gravelly CLAY
BH03	11.50	U39	Top	30.00 52.00 32.00	Small	65	Brown sandy gravelly CLAY
BH04	7.00	U27	Top	15.00 32.00 10.00	Small	31	Grey SILT

Method of Preparation : BS 1377:PART 1:1990:7.4.2 Moisture content, Preparation of undisturbed samples for testing BS 1377:PART 1:1990:8.3 Preparation of disturbed samples for testing BS1377 PART1:7.7.5.2

Method of Test : Tested using a Impact Hand Vane. Rate of Turning is by Hand. Tested in accordance with manufactures instruction.

IAN FARMER ASSOCIATES

Test Report : **41236/1**

Site : New Boiler Plant Civils Works Ground Investigation
Job Number : 41236
Originating Client : Kronospan Limited

All opinions and interpretations contained within this report are outside of our Scope of Accreditation.

The following tests contained within this report are not UKAS Accredited.
Hand Vane

Date of Issued : 06/09/13

Derwentside Environmental Testing Services

2139

Certificate of Analysis

Date: 29/08/2013

Certificate Number: 13-87509

Client: Ian Farmer Associates
17 Rivington Court
Hardwick Grange
Woolston
Warrington
Cheshire
WA1 4RT

Our Reference: 13-87509

Client Reference: 41236

Contract Title: New Boiler Plant Civils Works Ground Investigation

Description: 8 soil samples

Date Received: 22 August 2013

Date Started: 22 August 2013

Date Completed: 29 August 2013

Test Procedures: Identified by prefix DETSn, details available upon request.

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

Approved By:

Rob Brown, Business Manager

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. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28oC +/-2oC.

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
Soil Samples

Our Ref: 13-87509
Client Ref: 41236
Contract Title: New Boiler Plant Civils Works Ground Investigation

			Lab No.	547983	547984	547985	547986
			Sample ID	BH01	BH01	BH02	BH02
			Depth	1.20	11.00	2.00	8.80
			Sample Ref				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	/ /	/ /	12/08/2013	12/08/2013
			Sampling Time				
Test	**Units**	**DETSxx**	**LOD**				
Total Sulphate as SO4	%	DETSC 2321#	0.01	0.01	0.04	0.01	0.08
Sulphate Aqueous Extract as SO4	mg/l	DETSC 2076#	10	22	26	20	94
Total Sulphur as S	%	DETSC 2320	0.01	< 0.01	0.04	< 0.01	0.25
pH		DETSC 2008#		8.0	8.5	8.4	8.3

Summary of Chemical Analysis
Soil Samples

Our Ref: 13-87509
Client Ref: 41236
Contract Title: New Boiler Plant Civils Works Ground Investigation

			Lab No.	547987	547988	547989	547990
			Sample ID	BH02	BH03	BH04	BH04
			Depth	11.50	10.00	2.00	5.80
			Sample Ref				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	12/08/2013	/ /	15/08/2013	15/08/2013
			Sampling Time				
Test	**Units**	**DETSxx**	**LOD**				
Total Sulphate as SO4	%	DETSC 2321#	0.01	0.03	0.05	0.02	0.03
Sulphate Aqueous Extract as SO4	mg/l	DETSC 2076#	10	40	64	29	31
Total Sulphur as S	%	DETSC 2320	0.01	0.06	0.21	< 0.01	0.09
pH		DETSC 2008#		8.5	8.3	8.2	8.4

Sample Comments

DETS 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".

All samples received are listed below. However, those samples that have additional comments in relation to hold time and/or inappropriate containers are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations.

If no sampled date (soils) or date/time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters), this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Lab No.	Sample ID	Date Sampled	Containers Received	Deviating due to holding time being exceeded for test(s)	Deviating due to inappropriate container for test(s)	Deviating due to headspace presence in container for test(s)
547983	BH01 1.20 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
547984	BH01 11.00 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
547985	BH02 2.00 SOIL	12/08/2013	Plastic Tub 1 litre (1kg)			
547986	BH02 8.80 SOIL	12/08/2013	Plastic Tub 1 litre (1kg)			
547987	BH02 11.50 SOIL	12/08/2013	Plastic Tub 1 litre (1kg)			
547988	BH03 10.00 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
547989	BH04 2.00 SOIL	15/08/2013	Plastic Tub 1 litre (1kg)			
547990	BH04 5.80 SOIL	15/08/2013	Plastic Tub 1 litre (1kg)			

APPENDIX 4

CHEMICAL TESTS

APPENDIX 4

GENERAL NOTES ON CHEMICAL TESTS

A4.1 ANALYTICAL CHEMISTRY TEST METHODS FOR SOILS

Test/Determinand	Units	LOD	UKAS	Method Notes
Arsenic (total)	mg/kg	2.0	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Boron (water soluble)	mg/kg	0.2	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Cadmium (total)	mg/kg	0.5	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Chromium (hexavalent)	mg/kg	0.1		Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Chromium (total)	mg/kg	0.5	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Copper (total)	mg/kg	1.0	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Cyanide (free)	mg/kg	1.0	√	Free Cyanide is extracted by steam distillation at pH4 which liberates free cyanide. Cyanide is then analysed by titration with silver nitrate and rhodanene indicator. In house based on British Gas
Cyanide (complex)	mg/kg	1.0	√	Complex Cyanide is extracted by steam distillation with hydrochloric acid and copper sulphate after free cyanide has been removed. Cyanide is then analysed by titration with silver nitrate and rhodanene indicator. In house based on British Gas
Cyanide (total)	mg/kg	1.0	√	Total Cyanide is extracted as complex cyanide without first removing the free cyanide and titrated as above. Alternatively the free and complex cyanide values are added to give a total cyanide. In house based on British Gas.
Electrical Conductivity	mS/cm	0.01		A 2:1 water to soil extract is analysed using an EC meter. In house method
Lead (total)	mg/kg	5.0	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Mercury (total)	mg/kg	1.0	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Nickel (total)	mg/kg	1.0	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Organic Matter	%	0.2	√	Organic matter is oxidised using dichromate. The dichromate left is determined using UV/VIS and the concentration of organic matter calculated. In house based on Walkley and Black.
pH		0.1	√	Water is added to the soil and the pH determined by pH meter. In house method

Test/Determinand	Units	LOD	UKAS	Method Notes
Phenol (total mono)	mg/kg	0.5	√	Phenol is extracted by steam distillation with sodium chloride and the phenol is determined colourimetrically using UV/VIS. In house method
Polyaromatic Hydrocarbons (total & 16 EPA)	mg/kg	5.0	√	PAHs are extracted by dichloromethane under pressure in a soxtherm. The extract is then injected into a GC-FID where the separated PAHs are quantitatively determined. In house method, based on British Gas.
Selenium (total)	mg/kg	1.0	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Cyclohexane Extract	mg/kg	100		Soils are extracted in solvent and dried. Any extractable material is then determined gravimetrically. In house method
Toluene Extract	mg/kg	100		Soils are extracted in solvent and dried. Any extractable material is then determined gravimetrically. In house method
Dichloromethane Extract	mg/kg	100		Soils are extracted in solvent and dried. Any extractable material is then determined gravimetrically. In house method.
Sulphate (2:1 water soluble)	g/l	0.02	√	Soils are shaken in a 2:1 ratio with water. These are filtered and barium chloride added. Sulphate is then determined by measuring the turbidity by UV/VIS. In house based on MAFF.
Sulphate (total)	mg/kg	200	√	Total Sulphate is extracted using weak hydrochloric acid. The filtrate is then determined as water soluble is using BaCl and UV/VIS. In house based on MAFF.
Sulphide	mg/kg	10	√	Sulphide is extracted by steam distillation using Sulphuric acid and then determined by titration with sodium thiosulphate and iodine using starch as an indicator. In-house method.
Thiocyanate	mg/kg	0.1	√	Thiocyanate is extracted in water and then determined colourimetrically using UV/VIS. In house method.
Total Petroleum Hydrocarbons (C10-40)	mg/kg	50		TPHs are extracted in dichloromethane on soxtherm and determined by GC-FID. In house method.
Zinc (total)	mg/kg	10	√	Metals are extracted from soil in aqua-regia. The extracts are then analysed by ICP-OES. In house based on British Gas.
Anions (Flouride, Chloride, Bromide, Nitrite, Nitrate, Phosphate)				Anions are extracted in water and determined by ion chromatography. In house method
Cations inc. Ammonia				Cations are extracted in water and determined by ion chromatography. In house method

A4.2 ANALYTICAL CHEMISTRY TEST METHODS FOR WATER

Test/Determinand	Units	LOD	UKAS	Method Notes
Arsenic	µg/l	13	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
Boron	mg/l	0.05	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
Cadmium	µg/l	0.5	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
Chromium	µg/l	2.5	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
Copper	µg/l	3.0	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
Cyanide (free)	mg/l	0.1	√	Free Cyanide is extracted by steam distillation at pH4 which liberates free cyanide. Cyanide is then analysed by titration with silver nitrate and rhodanene indicator. In house.
Cyanide (complex)	mg/l	0.1	√	Complex Cyanide is extracted by steam distillation with hydrochloric acid and copper sulphate after free cyanide has been removed. Cyanide is then analysed by titration with silver nitrate and rhodanene indicator. In house.
Cyanide (total)	mg/l	0.1	√	Total Cyanide is extracted as complex cyanide without first removing the free cyanide and titrated as above. Alternatively the free and complex cyanide values are added to give a total cyanide. In house.
Electrical Conductivity	ms/cm	0.01		Samples are measured directly with an EC meter. In house method
Lead	µg/l	10	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
Mercury	µg/l	5.0	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
Nickel	µg/l	2.0	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
pH		0.1	√	Samples are measured directly with an pH meter. In house method
Phenol	mg/l	0.05	√	Phenol is extracted by steam distillation with sodium chloride and the phenol is determined colourimetrically using UV/VIS. In house method
Polyaromatic Hydrocarbons (total & 16 EPA)	µg/l	5.0		PAHs are extracted by dichloromethane under pressure in a soxtherm. The extract is then injected into a GC-FID where the separated PAHs are quantitatively determined. In house method.
Selenium	µg/l	10	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
Cyclohexane Extract	µg/l	10		Soils are extracted in solvent and dried. Any extractable material is then determined gravimetrically. In house method
Toluene Extract	µg/l	10		Soils are extracted in solvent and dried. Any extractable material is then determined gravimetrically. In house method
Dichloromethane Extract	µg/l	10		Soils are extracted in solvent and dried. Any extractable material is then determined gravimetrically. In house method

Test/Determinand	Units	LOD	UKAS	Method Notes
Sulphate	mg/l	20	√	Samples are filtered, BaCl added and the tubidity determined by UV/VIS. In house method
Sulphide	mg/l	0.2		Samples are titrated directly with sodium thiosulphate and iodine using starch as an indicator. In-house method.
Thiocyanate	mg/l	0.1	√	Thiocyanate in water is determined after filtration colourimetrically using UV/VIS. In house method.
Total Petroleum Hydrocarbons (C10-40)	µg/l	50		TPHs are extracted in dichloromethane on soxtherm and determined by GC-FID. In house method.
Zinc	µg/l	5.0	√	Metals in waters and leachates are filtered and determined by ICP-OES. In house method.
Anions (Flouride, Chloride, Bromide, Nitrite, Nitrate, Phosphate)				Anions are determined after filtration by ion chromatography. In house method
Cations inc. Ammonia				Cations are determined after filtration by ion chromatography. In house method

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Ian Farmer Associates
17 Rivington Court
Warrington
Cheshire
WA1 4RT

Attention: Hannah Hadwin

CERTIFICATE OF ANALYSIS

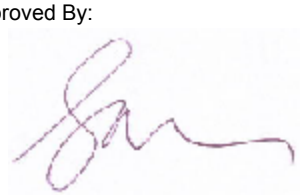
Date:	02 September 2013
Customer:	H_IANFARMER_WAR
Sample Delivery Group (SDG):	130818-17
Your Reference:	41236
Location:	Kronospan
Report No:	240305

We received 3 samples on Saturday August 17, 2013 and 2 of these samples were scheduled for analysis which was completed on Monday September 02, 2013. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
7955043	BH01		0.50	13/08/2013
7955044	BH01		0.95	13/08/2013
7955045	BH01		1.95	13/08/2013

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	7955043	7955044
			Customer Sample Reference	BH01	BH01
			AGS Reference		
			Depth (m)	0.50	0.95
			Container	1 kg Glass	Vial (ALE297)	1 kg Glass	Vial (ALE297)
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X		X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2		X		X
Chromium III	All	NDPs: 0 Tests: 2		X		X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2		X		X
Easily Liberated Sulphide	All	NDPs: 0 Tests: 2		X		X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2		X		X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2		X		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X		X
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X		X
PAH by GCMS	All	NDPs: 0 Tests: 2		X		X
pH	All	NDPs: 0 Tests: 2		X		X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X		X
Sample description	All	NDPs: 0 Tests: 2		X		X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X		X

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	7955043	7955044
			Customer Sample Reference	BH01	BH01
			AGS Reference		
			Depth (m)	0.50	0.95
			Container	1 kg Glass	Vial (ALE297)	1 kg Glass	Vial (ALE297)
Total Organic Carbon	All	NDPs: 0 Tests: 2		X		X	
Total Sulphur	All	NDPs: 0 Tests: 2		X		X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X		X	
VOC MS (S)	All	NDPs: 0 Tests: 2			X		X

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
7955043	BH01	0.50	Light Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
7955044	BH01	0.95	Light Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH01	BH01
			Depth (m)	0.50	0.95
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	13/08/2013	13/08/2013
			Sample Time	.	.
			Date Received	17/08/2013	17/08/2013
			SDG Ref	130818-17	130818-17
			Lab Sample No.(s)	7955043	7955044
			AGS Reference		
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 @ M	<0.01 @ M
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 @ M	<0.01 @ M
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 @ M	<0.015 @ M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 @ M	<0.035 @ M
Organic Carbon, Total	<0.2 %	TM132		1.13 #	<0.2 #
Sulphur, Total	<0.02 %	TM132		0.0259 #	<0.02 #
pH	1 pH Units	TM133		11.6 M	8.5 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M
Sulphide, Easily liberated	<15 mg/kg	TM180		<15 @ #	<15 @ #
Chromium, Trivalent	<0.9 mg/kg	TM181		7.25	20.9
Arsenic	<0.6 mg/kg	TM181		14.9 M	12.8 M
Barium	<0.6 mg/kg	TM181		26.5 #	28.1 #
Beryllium	<0.01 mg/kg	TM181		0.276 M	0.621 M
Boron	<0.7 mg/kg	TM181		3.25 #	1.56 #
Cadmium	<0.02 mg/kg	TM181		0.214 M	0.0353 M
Chromium	<0.9 mg/kg	TM181		7.25 M	20.9 M
Copper	<1.4 mg/kg	TM181		52 M	28.9 M
Lead	<0.7 mg/kg	TM181		9.16 M	16.4 M
Mercury	<0.14 mg/kg	TM181		4 M	0.733 M
Nickel	<0.2 mg/kg	TM181		12.2 M	30 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181		10.7 #	17.3 #
Zinc	<1.9 mg/kg	TM181		84.7 M	89.9 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243		0.0587 M	0.0366 M

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH01	BH01				
			Depth (m)	0.50	0.95				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	13/08/2013	13/08/2013				
			Sample Time	.	.				
			Date Received	17/08/2013	17/08/2013				
			SDG Ref	130818-17	130818-17				
			Lab Sample No.(s)	7955043	7955044				
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		107	98.7				
Acenaphthene-d10 % recovery**	%	TM218		103	95.7				
Phenanthrene-d10 % recovery**	%	TM218		99.4	96.7				
Chrysene-d12 % recovery**	%	TM218		93.7	86.3				
Perylene-d12 % recovery**	%	TM218		98.2	84.3				
Naphthalene	<9 µg/kg	TM218		<9 @ M	<9 M				
Acenaphthylene	<12 µg/kg	TM218		<12 @ M	<12 M				
Acenaphthene	<8 µg/kg	TM218		<8 @ M	<8 M				
Fluorene	<10 µg/kg	TM218		<10 @ M	<10 M				
Phenanthrene	<15 µg/kg	TM218		20 @ M	<15 M				
Anthracene	<16 µg/kg	TM218		<16 @ M	<16 M				
Fluoranthene	<17 µg/kg	TM218		23.9 @ M	<17 M				
Pyrene	<15 µg/kg	TM218		18.6 @ M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218		<14 @ M	<14 M				
Chrysene	<10 µg/kg	TM218		<10 @ M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 @ M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 @ M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218		<15 @ M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 @ M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 @ M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 @ M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	<118				

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH01	BH01				
			Depth (m)	0.50	0.95				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	13/08/2013	13/08/2013				
			Sample Time	.	.				
			Date Received	17/08/2013	17/08/2013				
			SDG Ref	130818-17	130818-17				
			Lab Sample No.(s)	7955043	7955044				
			AGS Reference						
Phenol	<100 µg/kg	TM157		<100	<100				
Pentachlorophenol	<100 µg/kg	TM157		<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100				
Nitrobenzene	<100 µg/kg	TM157		<100	<100				
Isophorone	<100 µg/kg	TM157		<100	<100				
Hexachloroethane	<100 µg/kg	TM157		<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100				
Diethyl phthalate	<100 µg/kg	TM157		<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100				
Dibenzofuran	<100 µg/kg	TM157		<100	<100				
Carbazole	<100 µg/kg	TM157		<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		347	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100				
Azobenzene	<100 µg/kg	TM157		<100	<100				
4-Nitrophenol	<100 µg/kg	TM157		<100	<100				
4-Nitroaniline	<100 µg/kg	TM157		<100	<100				
4-Methylphenol	<100 µg/kg	TM157		<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100				
4-Chloroaniline	<100 µg/kg	TM157		<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100				
3-Nitroaniline	<100 µg/kg	TM157		<100	<100				
2-Nitrophenol	<100 µg/kg	TM157		<100	<100				
2-Nitroaniline	<100 µg/kg	TM157		<100	<100				
2-Methylphenol	<100 µg/kg	TM157		<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100				

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH01	BH01				
			Depth (m)	0.50	0.95				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	13/08/2013	13/08/2013				
			Sample Time	.	.				
			Date Received	17/08/2013	17/08/2013				
			SDG Ref	130818-17	130818-17				
			Lab Sample No.(s)	7955043	7955044				
			AGS Reference						
2-Chlorophenol	<100 µg/kg	TM157		<100	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100				
Acenaphthylene	<100 µg/kg	TM157		<100	<100				
Acenaphthene	<100 µg/kg	TM157		<100	<100				
Anthracene	<100 µg/kg	TM157		<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100				
Chrysene	<100 µg/kg	TM157		<100	<100				
Fluoranthene	<100 µg/kg	TM157		<100	<100				
Fluorene	<100 µg/kg	TM157		<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100				
Phenanthrene	<100 µg/kg	TM157		<100	<100				
Pyrene	<100 µg/kg	TM157		<100	<100				
Naphthalene	<100 µg/kg	TM157		<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100				

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH01	BH01				
			Depth (m)	0.50	0.95				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	13/08/2013	13/08/2013				
			Sample Time	.	.				
			Date Received	17/08/2013	17/08/2013				
			SDG Ref	130818-17	130818-17				
			Lab Sample No.(s)	7955043	7955044				
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		115 2	129 2				
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		95.5 2 M	<44 2 M				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 2 M	<5 2 M				
Benzene	<10 µg/kg	TM089		<10 2 M	<10 2 M				
Toluene	<2 µg/kg	TM089		<2 2 M	<2 2 M				
Ethylbenzene	<3 µg/kg	TM089		<3 2 M	<3 2 M				
m,p-Xylene	<6 µg/kg	TM089		<6 2 M	<6 2 M				
o-Xylene	<3 µg/kg	TM089		<3 2 M	<3 2 M				
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9 2	<9 2				
sum of detected BTEX by GC	<24 µg/kg	TM089		<24 2	<24 2				
Aliphatics >C5-C6	<10 µg/kg	TM089		<10 2	<10 2				
Aliphatics >C6-C8	<10 µg/kg	TM089		11.5 2	<10 2				
Aliphatics >C8-C10	<10 µg/kg	TM089		21.9 2	<10 2				
Aliphatics >C10-C12	<10 µg/kg	TM089		26.5 2	<10 2				
Aliphatics >C12-C16	<100 µg/kg	TM173		279	2520				
Aliphatics >C16-C21	<100 µg/kg	TM173		2220	2420				
Aliphatics >C21-C35	<100 µg/kg	TM173		28500	5460				
Aliphatics >C35-C44	<100 µg/kg	TM173		5630	2090				
Total Aliphatics >C12-C44	<100 µg/kg	TM173		36600	12500				
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10 2	<10 2				
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10 2	<10 2				
Aromatics >EC8-EC10	<10 µg/kg	TM089		15 2	<10 2				
Aromatics >EC10-EC12	<10 µg/kg	TM089		17.3 2	<10 2				
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	425				
Aromatics >EC16-EC21	<100 µg/kg	TM173		1050	<100				
Aromatics >EC21-EC35	<100 µg/kg	TM173		4410	<100				
Aromatics >EC35-EC44	<100 µg/kg	TM173		1110	<100				
Aromatics >EC40-EC44	<100 µg/kg	TM173		259	175				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		5960	<100				
Total Aliphatics >C5-35	<100 µg/kg	TM173		31000	10400				
Total Aromatics >C5-35	<100 µg/kg	TM173		4880	<100				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		35900	10400				

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH01	BH01
			Depth (m)	0.50	0.95
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	13/08/2013	13/08/2013
			Sample Time	.	.
			Date Received	17/08/2013	17/08/2013
			SDG Ref	130818-17	130818-17
			Lab Sample No.(s)	7955043	7955044
			AGS Reference		
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		42700	12500

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH01	BH01				
			Depth (m)	0.50	0.95				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	13/08/2013	13/08/2013				
			Sample Time	.	.				
			Date Received	17/08/2013	17/08/2013				
			SDG Ref	130818-17	130818-17				
			Lab Sample No.(s)	7955043	7955044				
			AGS Reference						
Dibromofluoromethane**	%	TM116		90.9 2	109 2				
Toluene-d8**	%	TM116		98.9 2	101 2				
4-Bromofluorobenzene**	%	TM116		107 2	106 2				
Dichlorodifluoromethane	<4 µg/kg	TM116		<4 2 M	<4 2 M				
Chloromethane	<7 µg/kg	TM116		<7 2	<7 2				
Vinyl Chloride	<10 µg/kg	TM116		<10 2	<10 2				
Bromomethane	<13 µg/kg	TM116		<13 2 M	<13 2 M				
Chloroethane	<14 µg/kg	TM116		<14 2 M	<14 2 M				
Trichlorofluorormethane	<6 µg/kg	TM116		<6 2 M	<6 2 M				
1,1-Dichloroethene	<10 µg/kg	TM116		<10 2 #	<10 2 #				
Carbon Disulphide	<7 µg/kg	TM116		<7 2 M	<7 2 M				
Dichloromethane	<10 µg/kg	TM116		<10 2 #	<10 2 #				
Methyl Tertiary Butyl Ether	<11 µg/kg	TM116		<11 2 M	<11 2 M				
trans-1,2-Dichloroethene	<11 µg/kg	TM116		<11 2 M	<11 2 M				
1,1-Dichloroethane	<8 µg/kg	TM116		<8 2 M	<8 2 M				
cis-1,2-Dichloroethene	<5 µg/kg	TM116		<5 2 M	<5 2 M				
2,2-Dichloropropane	<12 µg/kg	TM116		<12 2 M	<12 2 M				
Bromochloromethane	<14 µg/kg	TM116		<14 2 M	<14 2 M				
Chloroform	<8 µg/kg	TM116		<8 2 M	<8 2 M				
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 2 M	<7 2 M				
1,1-Dichloropropene	<11 µg/kg	TM116		<11 2 M	<11 2 M				
Carbontetrachloride	<14 µg/kg	TM116		<14 2 M	<14 2 M				
1,2-Dichloroethane	<5 µg/kg	TM116		<5 2 M	<5 2 M				
Benzene	<9 µg/kg	TM116		<9 2 M	<9 2 M				
Trichloroethene	<9 µg/kg	TM116		<9 2 M	<9 2 M				
1,2-Dichloropropane	<12 µg/kg	TM116		<12 2 M	<12 2 M				
Dibromomethane	<9 µg/kg	TM116		<9 2 M	<9 2 M				
Bromodichloromethane	<7 µg/kg	TM116		<7 2 M	<7 2 M				
cis-1,3-Dichloropropene	<14 µg/kg	TM116		<14 2 M	<14 2 M				
Toluene	<5 µg/kg	TM116		<5 2 M	<5 2 M				
trans-1,3-Dichloropropene	<100 µg/kg	TM116		<100 2	<100 2				
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 2 M	<10 2 M				

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	BH01	BH01
Depth (m)	0.50	0.95
Sample Type	Soil/Solid	Soil/Solid
Date Sampled	13/08/2013	13/08/2013
Sample Time	.	.
Date Received	17/08/2013	17/08/2013
SDG Ref	130818-17	130818-17
Lab Sample No.(s)	7955043	7955044
AGS Reference		

Component	LOD/Units	Method		
1,3-Dichloropropane	<7 µg/kg	TM116	<7 2 #	<7 2 #
Tetrachloroethene	<5 µg/kg	TM116	<5 2 M	<5 2 M
Dibromochloromethane	<13 µg/kg	TM116	<13 2 M	<13 2 M
1,2-Dibromoethane	<12 µg/kg	TM116	<12 2 M	<12 2 M
Chlorobenzene	<5 µg/kg	TM116	<5 2 M	<5 2 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 2 M	<10 2 M
Ethylbenzene	<4 µg/kg	TM116	<4 2 M	<4 2 M
p/m-Xylene	<14 µg/kg	TM116	<14 2 #	<14 2 #
o-Xylene	<10 µg/kg	TM116	<10 2 M	<10 2 M
Styrene	<10 µg/kg	TM116	<10 2 M	<10 2 M
Bromoform	<10 µg/kg	TM116	<10 2 M	<10 2 M
Isopropylbenzene	<5 µg/kg	TM116	<5 2 M	<5 2 M
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10 2 #	<10 2 #
1,2,3-Trichloropropane	<17 µg/kg	TM116	<17 2 M	<17 2 M
Bromobenzene	<10 µg/kg	TM116	<10 2 M	<10 2 M
Propylbenzene	<11 µg/kg	TM116	<11 2 M	<11 2 M
2-Chlorotoluene	<9 µg/kg	TM116	<9 2 M	<9 2 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8 2 #	<8 2 #
4-Chlorotoluene	<12 µg/kg	TM116	<12 2 M	<12 2 M
tert-Butylbenzene	<12 µg/kg	TM116	<12 2 #	<12 2 #
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9 2 #	<9 2 #
sec-Butylbenzene	<10 µg/kg	TM116	<10 2 M	<10 2 M
4-Isopropyltoluene	<11 µg/kg	TM116	<11 2 M	<11 2 M
1,3-Dichlorobenzene	<6 µg/kg	TM116	<6 2 M	<6 2 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 2 M	<5 2 M
n-Butylbenzene	<10 µg/kg	TM116	<10 2 M	<10 2 M
1,2-Dichlorobenzene	<12 µg/kg	TM116	<12 2 M	<12 2 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14 2 M	<14 2 M
Tert-amyl methyl ether	<15 µg/kg	TM116	<15 2	<15 2
1,2,4-Trichlorobenzene	<6 µg/kg	TM116	<6 2 #	<6 2 #
Hexachlorobutadiene	<12 µg/kg	TM116	<12 2	<12 2
Naphthalene	<13 µg/kg	TM116	<13 2 M	<13 2 M

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH01	BH01
			Depth (m)	0.50	0.95
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	13/08/2013	13/08/2013
			Sample Time	.	.
			Date Received	17/08/2013	17/08/2013
			SDG Ref	130818-17	130818-17
			Lab Sample No.(s)	7955043	7955044
			AGS Reference		
1,2,3-Trichlorobenzene	<6 µg/kg	TM116		<6 2 M	<6 2 M

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH01 0.50 SOLID 13/08/2013 00:00:00 130818-17 7955043 TM048	29/8/13	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH01 0.95 SOLID 13/08/2013 00:00:00 130818-17 7955044 TM048	29/8/13	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)'	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	7955043	7955044
Customer Sample Ref.	BH01	BH01
AGS Ref.		
Depth	0.50	0.95
Type	SOLID	SOLID
Anions by Kone (soil)	30-Aug-2013	30-Aug-2013
Asbestos ID in Solid Samples	29-Aug-2013	29-Aug-2013
Chromium III	30-Aug-2013	30-Aug-2013
Cyanide Comp/Free/Total/Thiocyanate	23-Aug-2013	23-Aug-2013
Easily Liberated Sulphide	27-Aug-2013	27-Aug-2013
EPH CWG (Aliphatic) GC (S)	29-Aug-2013	30-Aug-2013
EPH CWG (Aromatic) GC (S)	29-Aug-2013	30-Aug-2013
GRO by GC-FID (S)	29-Aug-2013	29-Aug-2013
Hexavalent Chromium (s)	30-Aug-2013	30-Aug-2013
Metals in solid samples by OES	28-Aug-2013	29-Aug-2013
PAH by GCMS	29-Aug-2013	27-Aug-2013
pH	28-Aug-2013	28-Aug-2013
Phenols by HPLC (S)	30-Aug-2013	30-Aug-2013
Sample description	21-Aug-2013	21-Aug-2013
Semi Volatile Organic Compounds	29-Aug-2013	29-Aug-2013
Total Organic Carbon	29-Aug-2013	29-Aug-2013
Total Sulphur	02-Sep-2013	02-Sep-2013
TPH CWG GC (S)	29-Aug-2013	30-Aug-2013
VOC MS (S)	28-Aug-2013	28-Aug-2013

SDG:	130818-17	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240305
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Appendix
General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Ian Farmer Associates
17 Rivington Court
Warrington
Cheshire
WA1 4RT

Attention: Hannah Hadwin

CERTIFICATE OF ANALYSIS

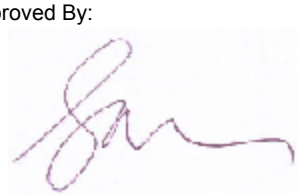
Date:	03 September 2013
Customer:	H_IANFARMER_WAR
Sample Delivery Group (SDG):	130815-130
Your Reference:	41236
Location:	Kronospan
Report No:	240370

We received 7 samples on Thursday August 15, 2013 and 5 of these samples were scheduled for analysis which was completed on Tuesday September 03, 2013. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
7940302	BH02		0.45	09/08/2013
7940304	BH02		1.00	09/08/2013
7940305	BH02		1.95	09/08/2013
7940306	BH03		0.50	09/08/2013
7940307	BH03		1.00	09/08/2013
7940308	BH03		2.05	09/08/2013
7977946	BH03	D	3.90	21/08/2013

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			7940302	BH02		0.45	1kg Glass
			7940304	BH02		1.00	Vial (ALE297)
			7940306	BH03		0.50	1kg Glass
			7940308	BH03		2.05	Vial (ALE297)
			7977946	BH03	D	3.90	1kg TUB
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1					X
Anions by Kone (soil)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 1					X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X		X		
CEN 2:1 Readings	All	NDPs: 0 Tests: 1					X
CEN 8:1 Readings	All	NDPs: 0 Tests: 1					X
Chromium III	All	NDPs: 0 Tests: 5	X	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5	X	X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1					X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1					X
Easily Liberated Sulphide	All	NDPs: 0 Tests: 5	X	X	X	X	X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 5	X	X	X	X	X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Fluoride	All	NDPs: 0 Tests: 1					X
Free Formaldehyde	All	NDPs: 0 Tests: 5	X	X	X	X	X

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container							
				1 kg Glass	Vial (ALE297)	1 kg Glass	Vial (ALE297)	1 kg Glass	Vial (ALE297)	1 kg Glass	1kg TUB
7940302	BH02		0.45		X		X		X		X
7940304	BH02		1.00	X		X		X		X	
7940306	BH03		0.50		X		X		X		X
7940308	BH03		2.05	X		X		X		X	
7977946	BH03	D	3.90		X		X		X		X

GRO by GC-FID (S)	All	NDPs: 0 Tests: 5	X X X X X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5	X X X X X
Loss on Ignition in soils	All	NDPs: 0 Tests: 1	X
Mercury Dissolved	All	NDPs: 0 Tests: 1	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 5	X X X X X
Mineral Oil	All	NDPs: 0 Tests: 1	X
PAH by GCMS	All	NDPs: 0 Tests: 5	X X X X X
PAH Value of soil	All	NDPs: 0 Tests: 1	X
PCBs by GCMS	All	NDPs: 0 Tests: 1	X
pH	All	NDPs: 0 Tests: 5	X X X X X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 5	X X X X X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X
Sample description	All	NDPs: 0 Tests: 5	X X X X X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2	X X
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			7940302	BH02		0.45	1kg Glass
			7940304	BH02		1.00	Vial (ALE297)
			7940306	BH03		0.50	1 kg Glass
			7940308	BH03		2.05	Vial (ALE297)
			7977946	BH03	D	3.90	1 kg Glass
							1kg TUB
Total Organic Carbon	All	NDPs: 0 Tests: 5					X X X X X
Total Sulphur	All	NDPs: 0 Tests: 5					X X X X X
TPH CWG GC (S)	All	NDPs: 0 Tests: 5					X X X X X
VOC MS (S)	All	NDPs: 0 Tests: 2					X X

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
7940302	BH02	0.45	Light Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	None
7940304	BH02	1.00	Light Brown	Sandy Loam	0.1 - 2 mm	Stones	None
7940306	BH03	0.50	Light Brown	Sandy Clay	0.1 - 2 mm	Stones	None
7940308	BH03	2.05	Light Brown	Sand	0.1 - 2 mm	Stones	None
7977946	BH03	3.90	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH02	BH02	BH03	BH03	BH03
			Depth (m)	0.45	1.00	0.50	2.05	3.90
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	09/08/2013	09/08/2013	09/08/2013	09/08/2013	21/08/2013
			Sample Time	.	.	.	.	.
			Date Received	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013
			SDG Ref	130815-130	130815-130	130815-130	130815-130	130815-130
			Lab Sample No.(s)	7940302	7940304	7940306	7940308	7977946
			AGS Reference					D
Loss on ignition	<0.7 %	TM018						1.71 M
Free Formaldehyde	<1 mg/kg	TM038		<1	<1	<1	<1	<1
Mineral oil >C10-C40	<1 mg/kg	TM061						12.2 #
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 M
Organic Carbon, Total	<0.2 %	TM132		0.313 #	<0.2 #	<0.2 #	<0.2 #	0.968 #
Sulphur, Total	<0.02 %	TM132		<0.02 #	0.0532 #	<0.02 #	<0.02 #	0.0981 #
pH	1 pH Units	TM133		8.99 M	8.85 M	8.84 M	8.37 M	7.58 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168						<3 M
PCB congener 52	<3 µg/kg	TM168						<3 M
PCB congener 101	<3 µg/kg	TM168						<3 M
PCB congener 118	<3 µg/kg	TM168						<3 M
PCB congener 138	<3 µg/kg	TM168						<3 M
PCB congener 153	<3 µg/kg	TM168						<3 M
PCB congener 180	<3 µg/kg	TM168						<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168						<21
Sulphide, Easily liberated	<15 mg/kg	TM180		<15 @ #	<15 @ #	<15 @ #	<15 @ #	<15 #
Chromium, Trivalent	<0.9 mg/kg	TM181		9.13	28.7	5.95	25.8	29.9
Arsenic	<0.6 mg/kg	TM181		8.71 M	13.3 M	13.1 M	12.5 M	8.77 M
Barium	<0.6 mg/kg	TM181		23.5 #	41.9 #	53.7 #	25 #	66.1 #
Beryllium	<0.01 mg/kg	TM181		0.29 M	0.94 M	0.237 M	0.432 M	1 M
Boron	<0.7 mg/kg	TM181		1.77 #	1.46 #	1.6 #	1.91 #	2.46 #
Cadmium	<0.02 mg/kg	TM181		0.0657 M	<0.02 M	0.129 M	<0.02 M	0.125 M
Chromium	<0.9 mg/kg	TM181		9.13 M	28.7 M	5.95 M	25.8 M	29.9 M
Copper	<1.4 mg/kg	TM181		34.2 M	34.2 M	44.1 M	29.8 M	25.3 M
Lead	<0.7 mg/kg	TM181		9.31 M	24.6 M	7.22 M	22.9 M	29.7 M
Mercury	<0.14 mg/kg	TM181		0.15 M	<0.14 M	0.224 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		12.4 M	35.3 M	11.2 M	31.2 M	43.9 M

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH02	BH02	BH03	BH03	BH03
			Depth (m)	0.45	1.00	0.50	2.05	3.90
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	09/08/2013	09/08/2013	09/08/2013	09/08/2013	21/08/2013
			Sample Time	.	.	.	.	.
			Date Received	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013
			SDG Ref	130815-130	130815-130	130815-130	130815-130	130815-130
			Lab Sample No.(s)	7940302	7940304	7940306	7940308	7977946
			AGS Reference					D
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181		10.2 #	25.2 #	7.75 #	19.4 #	23.2 #
Zinc	<1.9 mg/kg	TM181		49 M	95.4 M	53.9 M	117 M	95.7 M
ANC @ pH 4	<0.03 mol/kg	TM182						0.0574
ANC @ pH 6	<0.03 mol/kg	TM182						0.0303
Polyaromatic hydrocarbons, Total 17	<10 mg/kg	TM213						<10
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243		0.274 M	0.585 M	0.0121 M	0.0143 M	0.0144 M

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH02	BH02	BH03	BH03	BH03
			Depth (m)	0.45	1.00	0.50	2.05	3.90
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	09/08/2013	09/08/2013	09/08/2013	09/08/2013	21/08/2013
			Sample Time	.	.	.	.	.
			Date Received	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013
			SDG Ref	130815-130	130815-130	130815-130	130815-130	130815-130
			Lab Sample No.(s)	7940302	7940304	7940306	7940308	7977946
			AGS Reference					D
Naphthalene-d8 % recovery**	%	TM218		90.9	101	94.3	101	104
Acenaphthene-d10 % recovery**	%	TM218		89.7	96	92.8	97.9	101
Phenanthrene-d10 % recovery**	%	TM218		91.8	92.5	94.8	95	98.6
Chrysene-d12 % recovery**	%	TM218		87.8	87.5	90.2	87.1	89.9
Perylene-d12 % recovery**	%	TM218		97.2	95.2	99.3	90	84.3
Naphthalene	<9 µg/kg	TM218		<9 M	<9 @ M	<9 M	<9 M	19.9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 @ M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 @ M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218		<10 M	<10 @ M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		<15 M	<15 @ M	<15 M	<15 M	77 M
Anthracene	<16 µg/kg	TM218		<16 M	<16 @ M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		<17 M	<17 @ M	<17 M	<17 M	24.2 M
Pyrene	<15 µg/kg	TM218		<15 M	<15 @ M	<15 M	<15 M	33 M
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	<14 @ M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218		<10 M	<10 @ M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	<15 @ M	<15 M	<15 M	27 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	<14 @ M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	<15 @ M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 @ M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 @ M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	<24 @ M	<24 M	<24 M	45.2 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	<118	<118	<118	226

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH03	BH03				
			Depth (m)	0.50	2.05				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	09/08/2013	09/08/2013				
			Sample Time	.	.				
			Date Received	15/08/2013	15/08/2013				
			SDG Ref	130815-130	130815-130				
			Lab Sample No.(s)	7940306	7940308				
			AGS Reference						
Phenol	<100 µg/kg	TM157		<100	<100				
Pentachlorophenol	<100 µg/kg	TM157		<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100				
Nitrobenzene	<100 µg/kg	TM157		<100	<100				
Isophorone	<100 µg/kg	TM157		<100	<100				
Hexachloroethane	<100 µg/kg	TM157		<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100				
Diethyl phthalate	<100 µg/kg	TM157		<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100				
Dibenzofuran	<100 µg/kg	TM157		<100	<100				
Carbazole	<100 µg/kg	TM157		<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100				
Azobenzene	<100 µg/kg	TM157		<100	<100				
4-Nitrophenol	<100 µg/kg	TM157		<100	<100				
4-Nitroaniline	<100 µg/kg	TM157		<100	<100				
4-Methylphenol	<100 µg/kg	TM157		<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100				
4-Chloroaniline	<100 µg/kg	TM157		<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100				
3-Nitroaniline	<100 µg/kg	TM157		<100	<100				
2-Nitrophenol	<100 µg/kg	TM157		<100	<100				
2-Nitroaniline	<100 µg/kg	TM157		<100	<100				
2-Methylphenol	<100 µg/kg	TM157		<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100				

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH03	BH03				
			Depth (m)	0.50	2.05				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	09/08/2013	09/08/2013				
			Sample Time	.	.				
			Date Received	15/08/2013	15/08/2013				
			SDG Ref	130815-130	130815-130				
			Lab Sample No.(s)	7940306	7940308				
			AGS Reference						
2-Chlorophenol	<100 µg/kg	TM157		<100	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100				
Acenaphthylene	<100 µg/kg	TM157		<100	<100				
Acenaphthene	<100 µg/kg	TM157		<100	<100				
Anthracene	<100 µg/kg	TM157		<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100				
Chrysene	<100 µg/kg	TM157		<100	<100				
Fluoranthene	<100 µg/kg	TM157		<100	<100				
Fluorene	<100 µg/kg	TM157		<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100				
Phenanthrene	<100 µg/kg	TM157		<100	<100				
Pyrene	<100 µg/kg	TM157		<100	<100				
Naphthalene	<100 µg/kg	TM157		<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100				

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH02	BH02	BH03	BH03	BH03
			Depth (m)	0.45	1.00	0.50	2.05	3.90
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	09/08/2013	09/08/2013	09/08/2013	09/08/2013	21/08/2013
			Sample Time	.	.	.	.	.
			Date Received	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013
			SDG Ref	130815-130	130815-130	130815-130	130815-130	130815-130
			Lab Sample No.(s)	7940302	7940304	7940306	7940308	7977946
			AGS Reference					D
GRO Surrogate % recovery**	%	TM089		105 2	97 2	99 2	101 2	72 2
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		69.9 2 M	<44 2 M	<44 2 M	<44 2 M	<44 2 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 2 M	<5 2 M	<5 2 M	<5 2 M	<5 2 M
Benzene	<10 µg/kg	TM089		<10 2 M	<10 2 M	<10 2 M	<10 2 M	<10 2 M
Toluene	<2 µg/kg	TM089		<2 2 M	<2 2 M	<2 2 M	<2 2 M	<2 2 M
Ethylbenzene	<3 µg/kg	TM089		<3 2 M	<3 2 M	<3 2 M	<3 2 M	<3 2 M
m,p-Xylene	<6 µg/kg	TM089		<6 2 M	<6 2 M	<6 2 M	<6 2 M	<6 2 M
o-Xylene	<3 µg/kg	TM089		<3 2 M	<3 2 M	<3 2 M	<3 2 M	<3 2 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9 2	<9 2	<9 2	<9 2	<9 2
sum of detected BTEX by GC	<24 µg/kg	TM089		<24 2	<24 2	<24 2	<24 2	<24 2
Aliphatics >C5-C6	<10 µg/kg	TM089		<10 2	<10 2	<10 2	<10 2	<10 2
Aliphatics >C6-C8	<10 µg/kg	TM089		<10 2	<10 2	<10 2	<10 2	<10 2
Aliphatics >C8-C10	<10 µg/kg	TM089		27.8 2	<10 2	<10 2	<10 2	<10 2
Aliphatics >C10-C12	<10 µg/kg	TM089		<10 2	<10 2	<10 2	<10 2	<10 2
Aliphatics >C12-C16	<100 µg/kg	TM173		1330	<100	<100	350	2280
Aliphatics >C16-C21	<100 µg/kg	TM173		13500	<100	<100	710	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		36000	<100	3170	4070	<100
Aliphatics >C35-C44	<100 µg/kg	TM173		4670	<100	681	631	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		55500	<100	3850	5760	2280
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10 2	<10 2	<10 2	<10 2	<10 2
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10 2	<10 2	<10 2	<10 2	<10 2
Aromatics >EC8-EC10	<10 µg/kg	TM089		18.9 2	<10 2	<10 2	<10 2	<10 2
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10 2	<10 2	<10 2	<10 2	<10 2
Aromatics >EC12-EC16	<100 µg/kg	TM173		2840	<100	<100	1210	716
Aromatics >EC16-EC21	<100 µg/kg	TM173		12100	<100	<100	<100	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		19600	<100	<100	2350	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173		2550	<100	393	135	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173		<100	<100	179	<100	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		37100	<100	<100	3340	<100
Total Aliphatics >C5-35	<100 µg/kg	TM173		50800	<100	3170	5130	2290
Total Aromatics >C5-35	<100 µg/kg	TM173		34600	<100	<100	3200	<100
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		85400	<100	3170	8330	2290

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH02	BH02	BH03	BH03	BH03
			Depth (m)	0.45	1.00	0.50	2.05	3.90
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	09/08/2013	09/08/2013	09/08/2013	09/08/2013	21/08/2013
			Sample Time	.	.	.	.	.
			Date Received	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013
			SDG Ref	130815-130	130815-130	130815-130	130815-130	130815-130
			Lab Sample No.(s)	7940302	7940304	7940306	7940308	7977946
			AGS Reference					D
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		92600	<100	3850	9100	2290

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH03	BH03				
			Depth (m)	0.50	2.05				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	09/08/2013	09/08/2013				
			Sample Time	.	.				
			Date Received	15/08/2013	15/08/2013				
			SDG Ref	130815-130	130815-130				
			Lab Sample No.(s)	7940306	7940308				
			AGS Reference						
Dibromofluoromethane**	%	TM116		105 2	110 2				
Toluene-d8**	%	TM116		102 2	101 2				
4-Bromofluorobenzene**	%	TM116		101 2	105 2				
Dichlorodifluoromethane	<4 µg/kg	TM116		<4 2 M	<4 2 M				
Chloromethane	<7 µg/kg	TM116		<7 2	<7 2				
Vinyl Chloride	<10 µg/kg	TM116		<10 2	<10 2				
Bromomethane	<13 µg/kg	TM116		<13 2 M	<13 2 M				
Chloroethane	<14 µg/kg	TM116		<14 2 M	<14 2 M				
Trichlorofluorormethane	<6 µg/kg	TM116		<6 2 M	<6 2 M				
1,1-Dichloroethene	<10 µg/kg	TM116		<10 2 #	<10 2 #				
Carbon Disulphide	<7 µg/kg	TM116		17.8 2 M	<7 2 M				
Dichloromethane	<10 µg/kg	TM116		<10 2 #	<10 2 #				
Methyl Tertiary Butyl Ether	<11 µg/kg	TM116		<11 2 M	<11 2 M				
trans-1,2-Dichloroethene	<11 µg/kg	TM116		<11 2 M	<11 2 M				
1,1-Dichloroethane	<8 µg/kg	TM116		<8 2 M	<8 2 M				
cis-1,2-Dichloroethene	<5 µg/kg	TM116		<5 2 M	<5 2 M				
2,2-Dichloropropane	<12 µg/kg	TM116		<12 2 M	<12 2 M				
Bromochloromethane	<14 µg/kg	TM116		<14 2 M	<14 2 M				
Chloroform	<8 µg/kg	TM116		<8 2 M	<8 2 M				
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 2 M	<7 2 M				
1,1-Dichloropropene	<11 µg/kg	TM116		<11 2 M	<11 2 M				
Carbontetrachloride	<14 µg/kg	TM116		<14 2 M	<14 2 M				
1,2-Dichloroethane	<5 µg/kg	TM116		<5 2 M	<5 2 M				
Benzene	<9 µg/kg	TM116		<9 2 M	<9 2 M				
Trichloroethene	<9 µg/kg	TM116		<9 2 M	<9 2 M				
1,2-Dichloropropane	<12 µg/kg	TM116		<12 2 M	<12 2 M				
Dibromomethane	<9 µg/kg	TM116		<9 2 M	<9 2 M				
Bromodichloromethane	<7 µg/kg	TM116		<7 2 M	<7 2 M				
cis-1,3-Dichloropropene	<14 µg/kg	TM116		<14 2 M	<14 2 M				
Toluene	<5 µg/kg	TM116		<5 2 M	<5 2 M				
trans-1,3-Dichloropropene	<100 µg/kg	TM116		<100 2	<100 2				
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 2 M	<10 2 M				

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH03	BH03				
			Depth (m)	0.50	2.05				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	09/08/2013	09/08/2013				
			Sample Time	.	.				
			Date Received	15/08/2013	15/08/2013				
			SDG Ref	130815-130	130815-130				
			Lab Sample No.(s)	7940306	7940308				
			AGS Reference						
1,3-Dichloropropane	<7 µg/kg	TM116		<7 2 #	<7 2 #				
Tetrachloroethene	<5 µg/kg	TM116		<5 2 M	<5 2 M				
Dibromochloromethane	<13 µg/kg	TM116		<13 2 M	<13 2 M				
1,2-Dibromoethane	<12 µg/kg	TM116		<12 2 M	<12 2 M				
Chlorobenzene	<5 µg/kg	TM116		<5 2 M	<5 2 M				
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 2 M	<10 2 M				
Ethylbenzene	<4 µg/kg	TM116		<4 2 M	<4 2 M				
p/m-Xylene	<14 µg/kg	TM116		<14 2 #	<14 2 #				
o-Xylene	<10 µg/kg	TM116		<10 2 M	<10 2 M				
Styrene	<10 µg/kg	TM116		<10 2 M	<10 2 M				
Bromoform	<10 µg/kg	TM116		<10 2 M	<10 2 M				
Isopropylbenzene	<5 µg/kg	TM116		<5 2 M	<5 2 M				
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 2 #	<10 2 #				
1,2,3-Trichloropropane	<17 µg/kg	TM116		<17 2 M	<17 2 M				
Bromobenzene	<10 µg/kg	TM116		<10 2 M	<10 2 M				
Propylbenzene	<11 µg/kg	TM116		<11 2 M	<11 2 M				
2-Chlorotoluene	<9 µg/kg	TM116		<9 2 M	<9 2 M				
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 2 #	<8 2 #				
4-Chlorotoluene	<12 µg/kg	TM116		<12 2 M	<12 2 M				
tert-Butylbenzene	<12 µg/kg	TM116		<12 2 #	<12 2 #				
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 2 #	<9 2 #				
sec-Butylbenzene	<10 µg/kg	TM116		<10 2 M	<10 2 M				
4-Isopropyltoluene	<11 µg/kg	TM116		<11 2 M	<11 2 M				
1,3-Dichlorobenzene	<6 µg/kg	TM116		<6 2 M	<6 2 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 2 M	<5 2 M				
n-Butylbenzene	<10 µg/kg	TM116		<10 2 M	<10 2 M				
1,2-Dichlorobenzene	<12 µg/kg	TM116		<12 2 M	<12 2 M				
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 2 M	<14 2 M				
Tert-amyl methyl ether	<15 µg/kg	TM116		<15 2	<15 2				
1,2,4-Trichlorobenzene	<6 µg/kg	TM116		<6 2 #	<6 2 #				
Hexachlorobutadiene	<12 µg/kg	TM116		<12 2	<12 2				
Naphthalene	<13 µg/kg	TM116		<13 2 M	<13 2 M				

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH03	BH03				
			Depth (m)	0.50	2.05				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	09/08/2013	09/08/2013				
			Sample Time	.	.				
			Date Received	15/08/2013	15/08/2013				
			SDG Ref	130815-130	130815-130				
			Lab Sample No.(s)	7940306	7940308				
			AGS Reference						
1,2,3-Trichlorobenzene	<6 µg/kg	TM116		<6 2 M	<6 2 M				

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH02 0.45 SOLID 09/08/2013 00:00:00 130815-130 7940302 TM048	29/08/13	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH03 0.50 SOLID 09/08/2013 00:00:00 130815-130 7940306 TM048	29/08/13	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

CEN 10:1 CUMULATIVE TWO STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/3

Client Reference		**Site Location**	Kronospan
Mass Sample taken (kg)	0.222	**Moisture Content Ratio (%)**	26.6
Mass of dry sample (kg)	0.175	**Dry Matter Content Ratio (%)**	79
Particle Size <4mm	>95%		

Case	
SDG	130815-130
Lab Sample Number(s)	7977946
Sampled Date	21-Aug-2013
Customer Sample Ref.	BH03 DZ
Depth (m)	3.90

Solid Waste Analysis

		Landfill Waste Acceptance Criteria Limits		
		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.968	3	5	6
Loss on Ignition (%)	1.71	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	12.2	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.58	-	<6 or >9	-
ANC to pH 6 (mol/kg)	0.0303	-	-	-
ANC to pH 4 (mol/kg)	0.0574	-	-	-

Eluate Analysis

	C_2 Concⁿ in 2:1 eluate	C_8 Concⁿ in 8:1 eluate	A_2 2:1 concⁿ leached	$A_{2\text{-}10}$ Cumulative concⁿ leached	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	mg/l		mg/kg				
Arsenic	0.000876	0.000455	0.00175	0.00513	0.5	2	25
Barium	0.0802	0.0141	0.16	0.231	20	100	300
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	0.04	1	5
Chromium	0.000383	<0.00022	0.000765	<0.0022	0.5	10	70
Copper	<0.00085	0.0009	<0.0017	<0.0085	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	0.01	0.2	2
Molybdenum	0.000623	0.00128	0.00124	0.0119	0.5	10	30
Nickel	0.000528	<0.00015	0.00105	<0.0015	0.4	10	40
Lead	0.000038	0.000173	0.0000759	0.00154	0.5	10	50
Antimony	0.000554	0.000409	0.00111	0.00429	0.06	0.7	5
Selenium	0.00436	0.00104	0.0087	0.015	0.1	0.5	7
Zinc	<0.00041	<0.00041	<0.000819	<0.0041	4	50	200
Chloride	135	6.4	270	240	800	15000	25000
Fluoride	0.659	<0.5	1.32	<5	10	150	500
Sulphate (soluble)	35.8	7.4	71.5	113	1000	20000	50000
Total Dissolved Solids	474	78.1	947	1320	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.032	<0.16	1	-	-
Dissolved Organic Carbon	5.44	<3	10.9	<30	500	800	1000

Leach Test Information

	2:1	8:1
Date Prepared	23-Aug-2013	28-Aug-2013
pH (pH Units)	7.911	7.004
Conductivity (µS/cm)	618.00	85.50
Temperature (°C)	21.60	18.80
Volume Leachant (Litres)	0.303	1.400
Volume of Eluate VE1 (Litres)	0.240	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

03/09/2013 08:50:11

08:49:24 03/09/2013

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM114		Leaching Procedure for CEN Two Stage BatchTest 2:1/8:1 Cumulative		
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition		
TM038	Based on: NASH, T. (1953). Biochem. J., 55:416-421	Determination of Formaldehyde using Dr Lange test kit		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)'	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM213	In-house Method	Rapid Determination of PAHs by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	7940302	7940304	7940306	7940308	7977946
Customer Sample Ref.	BH02	BH02	BH03	BH03	BH03
AGS Ref.					D
Depth	0.45	1.00	0.50	2.05	3.90
Type	SOLID	SOLID	SOLID	SOLID	SOLID
ANC at pH4 and ANC at pH 6					28-Aug-2013
Anions by Kone (soil)	30-Aug-2013	29-Aug-2013	30-Aug-2013	28-Aug-2013	30-Aug-2013
Anions by Kone (w)					02-Sep-2013
Asbestos ID in Solid Samples	29-Aug-2013		29-Aug-2013		
CEN 2:1 Leachate (2 Stage)					27-Aug-2013
CEN 2:1 Readings					29-Aug-2013
CEN 8:1 Leachate (2 Stage)					29-Aug-2013
CEN 8:1 Readings					30-Aug-2013
Chromium III	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	02-Sep-2013
Cyanide Comp/Free/Total/Thiocyanate	27-Aug-2013	27-Aug-2013	23-Aug-2013	27-Aug-2013	29-Aug-2013
Dissolved Metals by ICP-MS					02-Sep-2013
Dissolved Organic/Inorganic Carbon					03-Sep-2013
Easily Liberated Sulphide	27-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013	28-Aug-2013
EPH CWG (Aliphatic) GC (S)	02-Sep-2013	29-Aug-2013	29-Aug-2013	29-Aug-2013	30-Aug-2013
EPH CWG (Aromatic) GC (S)	02-Sep-2013	29-Aug-2013	29-Aug-2013	29-Aug-2013	30-Aug-2013
Fluoride					02-Sep-2013
Free Formaldehyde	02-Sep-2013	02-Sep-2013	02-Sep-2013	02-Sep-2013	02-Sep-2013
GRO by GC-FID (S)	28-Aug-2013	28-Aug-2013	28-Aug-2013	28-Aug-2013	30-Aug-2013
Hexavalent Chromium (s)	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	02-Sep-2013
Loss on Ignition in soils					28-Aug-2013
Mercury Dissolved					02-Sep-2013
Metals in solid samples by OES	29-Aug-2013	28-Aug-2013	29-Aug-2013	23-Aug-2013	28-Aug-2013
Mineral Oil					30-Aug-2013
PAH by GCMS	25-Aug-2013	30-Aug-2013	25-Aug-2013	28-Aug-2013	30-Aug-2013
PAH Value of soil					29-Aug-2013
PCBs by GCMS					30-Aug-2013
pH	28-Aug-2013	28-Aug-2013	28-Aug-2013	23-Aug-2013	30-Aug-2013
Phenols by HPLC (S)	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013
Phenols by HPLC (W)					02-Sep-2013
Sample description	21-Aug-2013	22-Aug-2013	21-Aug-2013	21-Aug-2013	23-Aug-2013
Semi Volatile Organic Compounds			29-Aug-2013	29-Aug-2013	
Total Dissolved Solids					30-Aug-2013
Total Organic Carbon	30-Aug-2013	29-Aug-2013	29-Aug-2013	02-Sep-2013	02-Sep-2013
Total Sulphur	02-Sep-2013	27-Aug-2013	02-Sep-2013	27-Aug-2013	27-Aug-2013
TPH CWG GC (S)	02-Sep-2013	29-Aug-2013	29-Aug-2013	30-Aug-2013	30-Aug-2013
VOC MS (S)			28-Aug-2013	28-Aug-2013	

SDG:	130815-130	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240370
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Appendix
General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Ian Farmer Associates
17 Rivington Court
Warrington
Cheshire
WA1 4RT

Attention: Hannah Hadwin

CERTIFICATE OF ANALYSIS

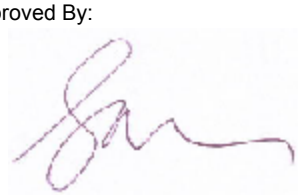
Date:	02 September 2013
Customer:	H_IANFARMER_WAR
Sample Delivery Group (SDG):	130818-16
Your Reference:	41236
Location:	Kronospan
Report No:	240306

We received 3 samples on Saturday August 17, 2013 and 3 of these samples were scheduled for analysis which was completed on Monday September 02, 2013. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
7955005	BH04		0.50	15/08/2013
7955007	BH04		1.20	15/08/2013
7955008	BH04		2.20	15/08/2013

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			7955005	BH04		0.50	1 kg Glass
			7955005	BH04		0.50	Vial (ALE297)
			7955007	BH04		1.20	1 kg Glass
			7955007	BH04		1.20	Vial (ALE297)
			7955008	BH04		2.20	1 kg Glass
			7955008	BH04		2.20	Vial (ALE297)
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 2			X		X			
Anions by Kone (soil)	All	NDPs: 0 Tests: 2			X				X	
Anions by Kone (w)	All	NDPs: 0 Tests: 2			X		X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1			X					
CEN 2:1 Readings	All	NDPs: 0 Tests: 2			X		X			
CEN 8:1 Readings	All	NDPs: 0 Tests: 2			X		X			
Chromium III	All	NDPs: 0 Tests: 2			X				X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2			X				X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2			X		X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2			X		X			
Easily Liberated Sulphide	All	NDPs: 0 Tests: 2			X				X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2			X				X	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2			X				X	
Fluoride	All	NDPs: 0 Tests: 2			X		X			
Free Formaldehyde	All	NDPs: 0 Tests: 2			X				X	

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

			Lab Sample No(s)	7955005	7955007	7955008
			Customer Sample Reference	BH04	BH04	BH04
			AGS Reference			
			Depth (m)	0.50	1.20	2.20
			Container	1 kg Glass	Vial (ALE297)	1 kg Glass	Vial (ALE297)	1 kg Glass	Vial (ALE297)
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X		X		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X				X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 2		X		X			
Mercury Dissolved	All	NDPs: 0 Tests: 2		X		X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X				X	
Mineral Oil	All	NDPs: 0 Tests: 2		X		X			
PAH by GCMS	All	NDPs: 0 Tests: 2		X				X	
PAH Value of soil	All	NDPs: 0 Tests: 2		X		X			
PCBs by GCMS	All	NDPs: 0 Tests: 2		X		X			
pH	All	NDPs: 0 Tests: 3		X		X		X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X				X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2		X		X			
Sample description	All	NDPs: 0 Tests: 3		X		X		X	
Total Dissolved Solids	All	NDPs: 0 Tests: 2		X		X			
Total Organic Carbon	All	NDPs: 0 Tests: 3		X		X		X	

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			7955005	BH04		0.50	1 kg Glass
			7955007	BH04		1.20	Vial (ALE297)
			7955008	BH04		2.20	1 kg Glass
							Vial (ALE297)
Total Sulphur	All	NDPs: 0 Tests: 2	X				X
TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X				X

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
7955005	BH04	0.50	Light Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	None
7955007	BH04	1.20	Green	Sandy Loam	0.1 - 2 mm	Stones	None
7955008	BH04	2.20	Green	Sandy Loam	0.1 - 2 mm	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH04	BH04	BH04			
			Depth (m)	0.50	1.20	2.20			
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
			Date Sampled	15/08/2013	15/08/2013	15/08/2013			
			Sample Time	.	.	.			
			Date Received	17/08/2013	17/08/2013	17/08/2013			
			SDG Ref	130818-16	130818-16	130818-16			
			Lab Sample No.(s)	7955005	7955007	7955008			
			AGS Reference						
Loss on ignition	<0.7 %	TM018		1.42 M	0.859 M				
Free Formaldehyde	<1 mg/kg	TM038		<1		<1			
Mineral oil >C10-C40	<1 mg/kg	TM061		30.5 #	22.7 #				
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M		<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M		<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M		<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M		<0.035 M			
Organic Carbon, Total	<0.2 %	TM132		0.208 #	0.333 #	<0.2 #			
Sulphur, Total	<0.02 %	TM132		<0.02 #		<0.02 #			
pH	1 pH Units	TM133		9.12 M	8.25 M	7.49 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #		<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 M		<1 M			
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168		<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21				
Sulphide, Easily liberated	<15 mg/kg	TM180		<15 & #		<15 & #			
Chromium, Trivalent	<0.9 mg/kg	TM181		4.63		29.4			
Arsenic	<0.6 mg/kg	TM181		14.5 M		12.8 M			
Barium	<0.6 mg/kg	TM181		16.7 #		30.3 #			
Beryllium	<0.01 mg/kg	TM181		0.21 M		0.0916 M			
Boron	<0.7 mg/kg	TM181		1.75 #		1.23 #			
Cadmium	<0.02 mg/kg	TM181		0.178 M		<0.02 M			
Chromium	<0.9 mg/kg	TM181		4.63 M		29.4 M			
Copper	<1.4 mg/kg	TM181		79.2 M		27.8 M			
Lead	<0.7 mg/kg	TM181		9.16 M		23.5 M			
Mercury	<0.14 mg/kg	TM181		0.292 M		<0.14 M			
Nickel	<0.2 mg/kg	TM181		10.1 M		38.1 M			

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH04	BH04	BH04			
			Depth (m)	0.50	1.20	2.20			
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
			Date Sampled	15/08/2013	15/08/2013	15/08/2013			
			Sample Time	.	.	.			
			Date Received	17/08/2013	17/08/2013	17/08/2013			
			SDG Ref	130818-16	130818-16	130818-16			
			Lab Sample No.(s)	7955005	7955007	7955008			
			AGS Reference						
Selenium	<1 mg/kg	TM181		<1 #		<1 #			
Vanadium	<0.2 mg/kg	TM181		6.38 #		26.6 #			
Zinc	<1.9 mg/kg	TM181		41.6 M		103 M			
ANC @ pH 4	<0.03 mol/kg	TM182		2.05	0.272				
ANC @ pH 6	<0.03 mol/kg	TM182		0.54	0.0966				
Polyaromatic hydrocarbons, Total 17	<10 mg/kg	TM213		<10	<10				
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243		0.0252 M		0.019 M			

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

GRO by GC-FID (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	BH04
Depth (m)	1.20
Sample Type	Soil/Solid
Date Sampled	15/08/2013
Sample Time	.
Date Received	17/08/2013
SDG Ref	130818-16
Lab Sample No.(s)	7955007
AGS Reference	

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	98 2
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 2 M
Benzene	<10 µg/kg	TM089	<10 2 M
Toluene	<2 µg/kg	TM089	<2 2 M
Ethylbenzene	<3 µg/kg	TM089	<3 2 M
m,p-Xylene	<6 µg/kg	TM089	<6 2 M
o-Xylene	<3 µg/kg	TM089	<3 2 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9 2
sum of detected BTEX by GC	<24 µg/kg	TM089	<24 2

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH04	BH04
			Depth (m)	0.50	2.20
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	15/08/2013	15/08/2013
			Sample Time	.	.
			Date Received	17/08/2013	17/08/2013
			SDG Ref	130818-16	130818-16
			Lab Sample No.(s)	7955005	7955008
			AGS Reference		
Naphthalene-d8 % recovery**	%	TM218		94.6	104
Acenaphthene-d10 % recovery**	%	TM218		94.6	105
Phenanthrene-d10 % recovery**	%	TM218		96.2	101
Chrysene-d12 % recovery**	%	TM218		94.4	91.3
Perylene-d12 % recovery**	%	TM218		103	88.3
Naphthalene	<9 µg/kg	TM218		<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M
Fluorene	<10 µg/kg	TM218		<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		<15 M	<15 M
Anthracene	<16 µg/kg	TM218		<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		<17 M	<17 M
Pyrene	<15 µg/kg	TM218		<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	<14 M
Chrysene	<10 µg/kg	TM218		<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	<118

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH04	BH04				
			Depth (m)	0.50	2.20				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	15/08/2013	15/08/2013				
			Sample Time	.	.				
			Date Received	17/08/2013	17/08/2013				
			SDG Ref	130818-16	130818-16				
			Lab Sample No.(s)	7955005	7955008				
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		97 2	95 2				
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44 2 M	<44 2 M				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 2 M	<5 2 M				
Benzene	<10 µg/kg	TM089		<10 2 M	<10 2 M				
Toluene	<2 µg/kg	TM089		<2 2 M	2.24 2 M				
Ethylbenzene	<3 µg/kg	TM089		<3 2 M	<3 2 M				
m,p-Xylene	<6 µg/kg	TM089		<6 2 M	<6 2 M				
o-Xylene	<3 µg/kg	TM089		<3 2 M	<3 2 M				
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9 2	<9 2				
sum of detected BTEX by GC	<24 µg/kg	TM089		<24 2	<24 2				
Aliphatics >C5-C6	<10 µg/kg	TM089		<10 2	<10 2				
Aliphatics >C6-C8	<10 µg/kg	TM089		<10 2	<10 2				
Aliphatics >C8-C10	<10 µg/kg	TM089		<10 2	<10 2				
Aliphatics >C10-C12	<10 µg/kg	TM089		<10 2	<10 2				
Aliphatics >C12-C16	<100 µg/kg	TM173		552	881				
Aliphatics >C16-C21	<100 µg/kg	TM173		1120	2450				
Aliphatics >C21-C35	<100 µg/kg	TM173		20500	9690				
Aliphatics >C35-C44	<100 µg/kg	TM173		4130	1660				
Total Aliphatics >C12-C44	<100 µg/kg	TM173		26300	14700				
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10 2	<10 2				
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10 2	<10 2				
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10 2	<10 2				
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10 2	<10 2				
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	501				
Aromatics >EC16-EC21	<100 µg/kg	TM173		<100	<100				
Aromatics >EC21-EC35	<100 µg/kg	TM173		3270	5740				
Aromatics >EC35-EC44	<100 µg/kg	TM173		968	396				
Aromatics >EC40-EC44	<100 µg/kg	TM173		190	<100				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		3810	6620				
Total Aliphatics >C5-35	<100 µg/kg	TM173		22200	13000				
Total Aromatics >C5-35	<100 µg/kg	TM173		2840	6230				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		25100	19200				

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH04	BH04				
			Depth (m)	0.50	2.20				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	15/08/2013	15/08/2013				
			Sample Time	.	.				
			Date Received	17/08/2013	17/08/2013				
			SDG Ref	130818-16	130818-16				
			Lab Sample No.(s)	7955005	7955008				
			AGS Reference						
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		30200	21300				

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH04 0.50 SOLID 15/08/2013 00:00:00 130818-16 7955005 TM048	29/08/13	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

CEN 10:1 CUMULATIVE TWO STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/3

Client Reference		**Site Location**	Kronospan
Mass Sample taken (kg)	0.192	**Moisture Content Ratio (%)**	10
Mass of dry sample (kg)	0.175	**Dry Matter Content Ratio (%)**	90.9
Particle Size <4mm	>95%		

Case	
SDG	130818-16
Lab Sample Number(s)	7955005
Sampled Date	15-Aug-2013
Customer Sample Ref.	BH04
Depth (m)	0.50

Solid Waste Analysis

		Landfill Waste Acceptance Criteria Limits		
		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.208	3	5	6
Loss on Ignition (%)	1.42	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	30.5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	9.12	-	<6 or >9	-
ANC to pH 6 (mol/kg)	0.54	-	-	-
ANC to pH 4 (mol/kg)	2.05	-	-	-

Eluate Analysis

	C_2 Concⁿ in 2:1 eluate	C_8 Concⁿ in 8:1 eluate	A_2 2:1 concⁿ leached	$A_{2\text{-}10}$ Cumulative concⁿ leached	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	mg/l		mg/kg				
Arsenic	0.00232	0.00315	0.00465	0.0303	0.5	2	25
Barium	0.0233	0.00529	0.0466	0.0797	20	100	300
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	0.04	1	5
Chromium	0.00108	0.000359	0.00216	0.00466	0.5	10	70
Copper	0.00472	0.00239	0.00946	0.0274	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	0.01	0.2	2
Molybdenum	0.018	0.00467	0.036	0.0665	0.5	10	30
Nickel	0.00101	<0.00015	0.00201	0.0015	0.4	10	40
Lead	0.000073	0.00642	0.000146	0.0547	0.5	10	50
Antimony	0.000163	0.00119	0.000327	0.0103	0.06	0.7	5
Selenium	0.000787	0.000446	0.00158	0.00497	0.1	0.5	7
Zinc	0.000872	0.00118	0.00175	0.0114	4	50	200
Chloride	26.9	2	53.9	57	800	15000	25000
Fluoride	0.526	<0.5	1.05	<5	10	150	500
Sulphate (soluble)	28.1	<2	56.3	41.7	1000	20000	50000
Total Dissolved Solids	304	73.3	609	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.032	<0.16	1	-	-
Dissolved Organic Carbon	11.5	3.04	23	43	500	800	1000

Leach Test Information

	2:1	8:1
Date Prepared	21-Aug-2013	27-Aug-2013
pH (pH Units)	8.336	9.017
Conductivity (µS/cm)	396.00	88.70
Temperature (°C)	21.90	21.70
Volume Leachant (Litres)	0.333	1.400
Volume of Eluate VE1 (Litres)	0.260	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

02/09/2013 15:35:09

15:35:02 02/09/2013

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

CEN 10:1 CUMULATIVE TWO STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/3

Client Reference		**Site Location**	Kronospan
Mass Sample taken (kg)	0.193	**Moisture Content Ratio (%)**	9.89
Mass of dry sample (kg)	0.175	**Dry Matter Content Ratio (%)**	91
Particle Size <4mm	>95%		

Case	
SDG	130818-16
Lab Sample Number(s)	7955007
Sampled Date	15-Aug-2013
Customer Sample Ref.	BH04
Depth (m)	1.20

Solid Waste Analysis

		Landfill Waste Acceptance Criteria Limits		
		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.333	3	5	6
Loss on Ignition (%)	0.859	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	22.7	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.25	-	<6 or >9	-
ANC to pH 6 (mol/kg)	0.0966	-	-	-
ANC to pH 4 (mol/kg)	0.272	-	-	-

Eluate Analysis

	C_2 Concⁿ in 2:1 eluate	C_8 Concⁿ in 8:1 eluate	A_2 2:1 concⁿ leached	$A_{2\text{-}10}$ Cumulative concⁿ leached	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	mg/l		mg/kg				
Arsenic	0.00159	0.00221	0.00318	0.0211	0.5	2	25
Barium	0.0247	0.003	0.0495	0.0648	20	100	300
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	0.04	1	5
Chromium	0.000831	0.00079	0.00166	0.00797	0.5	10	70
Copper	0.00457	0.00103	0.00915	0.0159	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	0.01	0.2	2
Molybdenum	0.00731	0.00176	0.0146	0.0265	0.5	10	30
Nickel	0.00213	<0.00015	0.00427	0.00341	0.4	10	40
Lead	0.000314	0.000156	0.000629	0.00181	0.5	10	50
Antimony	0.00059	0.000701	0.00118	0.00683	0.06	0.7	5
Selenium	0.000397	<0.00039	0.000795	<0.0039	0.1	0.5	7
Zinc	0.00241	<0.00041	0.00482	<0.0041	4	50	200
Chloride	14.4	<2	28.8	23	800	15000	25000
Fluoride	<0.5	<0.5	<1	<5	10	150	500
Sulphate (soluble)	27.5	<2	55	44	1000	20000	50000
Total Dissolved Solids	225	58.6	450	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.032	<0.16	1	-	-
Dissolved Organic Carbon	4.74	<3	9.48	<30	500	800	1000

Leach Test Information

	2:1	8:1
Date Prepared	21-Aug-2013	27-Aug-2013
pH (pH Units)	7.940	8.045
Conductivity (µS/cm)	283.00	69.20
Temperature (°C)	21.60	21.70
Volume Leachant (Litres)	0.333	1.400
Volume of Eluate VE1 (Litres)	0.280	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
02/09/2013 15:35:09

15:35:02 02/09/2013

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM114		Leaching Procedure for CEN Two Stage BatchTest 2:1/8:1 Cumulative		
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition		
TM038	Based on: NASH, T. (1953). Biochem. J., 55:416-421	Determination of Formaldehyde using Dr Lange test kit		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser		
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)'	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM213	In-house Method	Rapid Determination of PAHs by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	7955005	7955007	7955008
Customer Sample Ref.	BH04	BH04	BH04
AGS Ref.			
Depth	0.50	1.20	2.20
Type	SOLID	SOLID	SOLID
ANC at pH4 and ANC at pH 6	29-Aug-2013	23-Aug-2013	
Anions by Kone (soil)	30-Aug-2013		28-Aug-2013
Anions by Kone (w)	30-Aug-2013	30-Aug-2013	
Asbestos ID in Solid Samples	29-Aug-2013		
CEN 2:1 Leachate (2 Stage)	23-Aug-2013	23-Aug-2013	
CEN 2:1 Readings	29-Aug-2013	29-Aug-2013	
CEN 8:1 Leachate (2 Stage)	29-Aug-2013	29-Aug-2013	
CEN 8:1 Readings	29-Aug-2013	29-Aug-2013	
Chromium III	30-Aug-2013		30-Aug-2013
Cyanide Comp/Free/Total/Thiocyanate	23-Aug-2013		23-Aug-2013
Dissolved Metals by ICP-MS	30-Aug-2013	30-Aug-2013	
Dissolved Organic/Inorganic Carbon	30-Aug-2013	30-Aug-2013	
Easily Liberated Sulphide	27-Aug-2013		28-Aug-2013
EPH CWG (Aliphatic) GC (S)	29-Aug-2013		29-Aug-2013
EPH CWG (Aromatic) GC (S)	29-Aug-2013		29-Aug-2013
Fluoride	30-Aug-2013	30-Aug-2013	
Free Formaldehyde	02-Sep-2013		02-Sep-2013
GRO by GC-FID (S)	28-Aug-2013	28-Aug-2013	28-Aug-2013
Hexavalent Chromium (s)	30-Aug-2013		30-Aug-2013
Loss on Ignition in soils	30-Aug-2013	23-Aug-2013	
Mercury Dissolved	30-Aug-2013	30-Aug-2013	
Metals in solid samples by OES	29-Aug-2013		27-Aug-2013
Mineral Oil	29-Aug-2013	29-Aug-2013	
PAH by GCMS	25-Aug-2013		28-Aug-2013
PAH Value of soil	28-Aug-2013	27-Aug-2013	
PCBs by GCMS	30-Aug-2013	25-Aug-2013	
pH	28-Aug-2013	28-Aug-2013	29-Aug-2013
Phenols by HPLC (S)	30-Aug-2013		30-Aug-2013
Phenols by HPLC (W)	30-Aug-2013	30-Aug-2013	
Sample description	21-Aug-2013	21-Aug-2013	21-Aug-2013
Total Dissolved Solids	29-Aug-2013	29-Aug-2013	
Total Organic Carbon	29-Aug-2013	02-Sep-2013	02-Sep-2013
Total Sulphur	02-Sep-2013		27-Aug-2013
TPH CWG GC (S)	29-Aug-2013		30-Aug-2013

SDG:	130818-16	**Location:**	Kronospan	**Order Number:**	44995
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	240306
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Appendix
General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Ian Farmer Associates
17 Rivington Court
Warrington
Cheshire
WA1 4RT

Attention: Hannah Hadwin

CERTIFICATE OF ANALYSIS

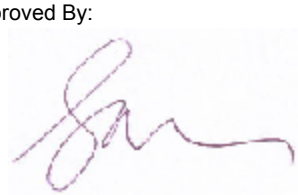
Date:	11 September 2013
Customer:	H_IANFARMER_WAR
Sample Delivery Group (SDG):	130831-95
Your Reference:	41236
Location:	Kronospan
Report No:	241440

We received 4 samples on Saturday August 31, 2013 and 4 of these samples were scheduled for analysis which was completed on Wednesday September 11, 2013. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
8026589	BH1		0.90	29/08/2013
8026591	BH2		7.33	29/08/2013
8026592	BH3		8.49	29/08/2013
8026593	BH4		2.46	29/08/2013

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			8026589		8026591		8026592		8026593	
Customer Sample Reference			BH1		BH2		BH3		BH4	
AGS Reference										
Depth (m)			0.90		7.33		8.49		2.46	
Container			1l Glass bottle (ALE	1lplastic (ALE221)	Vial (ALE297)	1l Glass bottle (ALE	1lplastic (ALE221)	Vial (ALE297)	1l Glass bottle (ALE	1lplastic (ALE221)	Vial (ALE297)	1l Glass bottle (ALE	1lplastic (ALE221)	Vial (ALE297)	1l Glass bottle (ALE	1lplastic (ALE221)	Vial (ALE297)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 4		X			X			X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 4		X			X			X			X			X	
Chromium III	All	NDPs: 0 Tests: 4		X			X			X			X			X	
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 4		X			X			X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X			X			X			X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4		X			X			X			X			X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X			X			X			X			X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X			X			X			X			X		
Free Formaldehyde	All	NDPs: 0 Tests: 4		X			X			X			X			X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 4			X			X			X			X			X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 4		X			X			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 4	X			X			X			X			X		
Metals by iCap-OES Unfiltered (W)	All	NDPs: 0 Tests: 4		X			X			X			X			X	
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 4	X			X			X			X			X		
pH Value	All	NDPs: 0 Tests: 4		X			X			X			X			X	

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

LIQUID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			8026589	BH1		0.90	1l Glass bottle (ALE
							1lplastic (ALE221)
							Vial (ALE297)
			8026591	BH2		7.33	1l Glass bottle (ALE
							1lplastic (ALE221)
							Vial (ALE297)
			8026592	BH3		8.49	1l Glass bottle (ALE
							1lplastic (ALE221)
							Vial (ALE297)
			8026593	BH4		2.46	1l Glass bottle (ALE
							1lplastic (ALE221)
							Vial (ALE297)
Phenols by HPLC (W)	All	NDPs: 0 Tests: 4	X	X	X	X	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 4	X	X	X	X	
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 4	X	X	X	X	
TPH CWG (W)	All	NDPs: 0 Tests: 4	X	X	X	X	
VOC MS (W)	All	NDPs: 0 Tests: 4	X	X	X	X	

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4		
			Depth (m)	0.90	7.33	8.49	2.46		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	29/08/2013	29/08/2013	29/08/2013	29/08/2013		
			Sample Time	.	.	.	.		
			Date Received	31/08/2013	31/08/2013	31/08/2013	31/08/2013		
			SDG Ref	130831-95	130831-95	130831-95	130831-95		
			Lab Sample No.(s)	8026589	8026591	8026592	8026593		
			AGS Reference						
Organic Carbon, Total	<3 mg/l	TM090		19.9 #	17 #	29.3 #	41.1 #		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		36.5 #	47.5 #	49.4 #	78.8 #		
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120		0.961 #	0.892 #	1.67 #	1.5 #		
Chromium, Trivalent	<0.03 mg/l	TM152		<0.03	<0.03	<0.03	<0.03		
Arsenic (diss.filt)	<0.12 µg/l	TM152		1.17 #	2.64 #	2.91 #	16 #		
Barium (diss.filt)	<0.03 µg/l	TM152		177 #	104 #	296 #	306 #		
Beryllium (diss.filt)	<0.07 µg/l	TM152		<0.07 #	<0.07 #	<0.07 #	<0.07 #		
Boron (diss.filt)	<9.4 µg/l	TM152		102 #	36.4 #	118 #	124 #		
Cadmium (diss.filt)	<0.1 µg/l	TM152		0.135 #	<0.1 #	0.2 #	0.1 #		
Chromium (diss.filt)	<0.22 µg/l	TM152		8.75 #	10.9 #	2.03 #	2.49 #		
Copper (diss.filt)	<0.85 µg/l	TM152		3.77 #	5.74 #	4.36 #	<0.85 #		
Lead (diss.filt)	<0.02 µg/l	TM152		0.021 #	0.316 #	0.86 #	0.111 #		
Nickel (diss.filt)	<0.15 µg/l	TM152		7.53 #	6.66 #	4.62 #	8.44 #		
Selenium (diss.filt)	<0.39 µg/l	TM152		0.912 #	<0.39 #	2.76 #	1.4 #		
Vanadium (diss.filt)	<0.24 µg/l	TM152		2.56 #	3.5 #	0.535 #	0.763 #		
Zinc (diss.filt)	<0.41 µg/l	TM152		1.06 #	<0.41 #	<0.41 #	<0.41 #		
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Sulphate	<2 mg/l	TM184		108 #	46.2 #	126 #	18.9 #		
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 ♦ #	<0.05 ♦ #	<0.05 ♦ #		
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM228		1220	217	1470	974		
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #		
pH	<1 pH Units	TM256		7.25 #	7.56 #	7.56 #	7.39 #		
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 2 #	<0.016 #	<0.016 2 #		
Free Formaldehyde	<0.5 mg/l	TM272		<0.5	<0.5	<0.5	<0.5		

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4		
			Depth (m)	0.90	7.33	8.49	2.46		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	29/08/2013	29/08/2013	29/08/2013	29/08/2013		
			Sample Time	.	.	.	.		
			Date Received	31/08/2013	31/08/2013	31/08/2013	31/08/2013		
			SDG Ref	130831-95	130831-95	130831-95	130831-95		
			Lab Sample No.(s)	8026589	8026591	8026592	8026593		
			AGS Reference						
Naphthalene (aq)	<0.1 µg/l	TM178		<0.2 #	<0.1 #	0.21 #	0.224 #		
Acenaphthene (aq)	<0.015 µg/l	TM178		0.0336 #	0.0153 #	0.0645 #	0.132 #		
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.022 #	<0.011 #	<0.022 #	0.0345 #		
Fluoranthene (aq)	<0.017 µg/l	TM178		0.063 #	0.0174 #	0.113 #	0.0608 #		
Anthracene (aq)	<0.015 µg/l	TM178		<0.03 #	<0.015 #	0.0304 #	<0.03 #		
Phenanthrene (aq)	<0.022 µg/l	TM178		0.123 #	0.0422 #	0.202 #	0.0783 #		
Fluorene (aq)	<0.014 µg/l	TM178		0.0468 #	0.0225 #	0.0636 #	0.099 #		
Chrysene (aq)	<0.013 µg/l	TM178		0.0669 #	<0.013 #	0.172 #	0.0542 #		
Pyrene (aq)	<0.015 µg/l	TM178		0.0707 #	0.0299 #	0.243 #	0.0778 #		
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.034 #	<0.017 #	0.065 #	<0.034 #		
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.0662 #	<0.023 #	0.171 #	0.0669 #		
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.0546 #	<0.027 #	0.126 #	<0.054 #		
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.0771 #	<0.009 #	0.29 #	0.0892 #		
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.125 #	<0.016 #	0.148 #	0.0343 #		
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.103 #	<0.016 #	0.28 #	0.0813 #		
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.086 #	<0.014 #	0.13 #	0.0502 #		
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		1.14	<0.247	2.33	1.18		

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4		
			Depth (m)	0.90	7.33	8.49	2.46		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	29/08/2013	29/08/2013	29/08/2013	29/08/2013		
			Sample Time	.	.	.	.		
			Date Received	31/08/2013	31/08/2013	31/08/2013	31/08/2013		
			SDG Ref	130831-95	130831-95	130831-95	130831-95		
			Lab Sample No.(s)	8026589	8026591	8026592	8026593		
			AGS Reference						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2-Chlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2-Methylphenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2-Nitroaniline (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
2-Nitrophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
3-Nitroaniline (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
4-Chloroaniline (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
4-Methylphenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
4-Nitrophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
4-Nitroaniline (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Azobenzene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Acenaphthylene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Acenaphthene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Anthracene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		6.77	<5	5.56	<5		
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4		
			Depth (m)	0.90	7.33	8.49	2.46		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	29/08/2013	29/08/2013	29/08/2013	29/08/2013		
			Sample Time	.	.	.	.		
			Date Received	31/08/2013	31/08/2013	31/08/2013	31/08/2013		
			SDG Ref	130831-95	130831-95	130831-95	130831-95		
			Lab Sample No.(s)	8026589	8026591	8026592	8026593		
			AGS Reference						
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Carbazole (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Chrysene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Dibenzofuran (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Diethyl phthalate (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5	<5	<5	<5		
Fluoranthene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Fluorene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Phenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Hexachloroethane (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Nitrobenzene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Naphthalene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Isophorone (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Phenanthrene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		
Pyrene (aq)	<1 µg/l	TM176		<1	<1	<1	<1		

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4		
			Depth (m)	0.90	7.33	8.49	2.46		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	29/08/2013	29/08/2013	29/08/2013	29/08/2013		
			Sample Time	.	.	.	.		
			Date Received	31/08/2013	31/08/2013	31/08/2013	31/08/2013		
			SDG Ref	130831-95	130831-95	130831-95	130831-95		
			Lab Sample No.(s)	8026589	8026591	8026592	8026593		
			AGS Reference						
GRO Surrogate % recovery**	%	TM245		92	95	95	95		
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #		
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #		
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #		
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #		
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #		
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #		
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11		
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28		
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		24	<10	125	48		
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		326	<10	2170	658		
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		350	<10	2290	706		
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	31	51		
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	44	40		
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	255	76		
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	330	167		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		351	<10	2630	878		

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4		
			Depth (m)	0.90	7.33	8.49	2.46		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	29/08/2013	29/08/2013	29/08/2013	29/08/2013		
			Sample Time	.	.	.	.		
			Date Received	31/08/2013	31/08/2013	31/08/2013	31/08/2013		
			SDG Ref	130831-95	130831-95	130831-95	130831-95		
			Lab Sample No.(s)	8026589	8026591	8026592	8026593		
			AGS Reference						
Dibromofluoromethane**	%	TM208		111	109	112	112		
Toluene-d8**	%	TM208		97.4	98.2	97.4	97.4		
4-Bromofluorobenzene**	%	TM208		96.1	94.9	94.7	94.4		
Dichlorodifluoromethane	<1 µg/l	TM208		<1	<1	<1	<1		
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #		
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1		
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dichloroethane	<1 µg/l	TM208		<1	<1	<1	<1		
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4		
			Depth (m)	0.90	7.33	8.49	2.46		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	29/08/2013	29/08/2013	29/08/2013	29/08/2013		
			Sample Time	.	.	.	.		
			Date Received	31/08/2013	31/08/2013	31/08/2013	31/08/2013		
			SDG Ref	130831-95	130831-95	130831-95	130831-95		
			Lab Sample No.(s)	8026589	8026591	8026592	8026593		
			AGS Reference						
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1	<1	<1	<1		
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1		
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1		
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4		
			Depth (m)	0.90	7.33	8.49	2.46		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	29/08/2013	29/08/2013	29/08/2013	29/08/2013		
			Sample Time	.	.	.	.		
			Date Received	31/08/2013	31/08/2013	31/08/2013	31/08/2013		
			SDG Ref	130831-95	130831-95	130831-95	130831-95		
			Lab Sample No.(s)	8026589	8026591	8026592	8026593		
			AGS Reference						
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1		

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		
TM272		Determination of Free Formaldehyde in waters using Dr Lange test kit		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	8026589	8026591	8026592	8026593
Customer Sample Ref.	BH1	BH2	BH3	BH4
AGS Ref.				
Depth	0.90	7.33	8.49	2.46
Type	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	07-Sep-2013	09-Sep-2013	09-Sep-2013	09-Sep-2013
Anions by Kone (w)	06-Sep-2013	09-Sep-2013	09-Sep-2013	09-Sep-2013
Chromium III	09-Sep-2013	10-Sep-2013	10-Sep-2013	10-Sep-2013
Conductivity (at 20 deg.C)	04-Sep-2013	05-Sep-2013	05-Sep-2013	05-Sep-2013
Cyanide Comp/Free/Total/Thiocyanate	04-Sep-2013	11-Sep-2013	11-Sep-2013	11-Sep-2013
Dissolved Metals by ICP-MS	09-Sep-2013	10-Sep-2013	10-Sep-2013	10-Sep-2013
EPH CWG (Aliphatic) Aqueous GC (W)	09-Sep-2013	09-Sep-2013	09-Sep-2013	09-Sep-2013
EPH CWG (Aromatic) Aqueous GC (W)	09-Sep-2013	09-Sep-2013	09-Sep-2013	09-Sep-2013
Free Formaldehyde	06-Sep-2013	06-Sep-2013	06-Sep-2013	06-Sep-2013
GRO by GC-FID (W)	05-Sep-2013	05-Sep-2013	05-Sep-2013	05-Sep-2013
Hexavalent Chromium (w)	06-Sep-2013	10-Sep-2013	10-Sep-2013	06-Sep-2013
Mercury Dissolved	06-Sep-2013	06-Sep-2013	06-Sep-2013	06-Sep-2013
Metals by iCap-OES Unfiltered (W)	05-Sep-2013	06-Sep-2013	06-Sep-2013	06-Sep-2013
PAH Spec MS - Aqueous (W)	10-Sep-2013	06-Sep-2013	10-Sep-2013	10-Sep-2013
pH Value	03-Sep-2013	06-Sep-2013	06-Sep-2013	06-Sep-2013
Phenols by HPLC (W)	09-Sep-2013	06-Sep-2013	09-Sep-2013	07-Sep-2013
SVOC MS (W) - Aqueous	10-Sep-2013	10-Sep-2013	10-Sep-2013	10-Sep-2013
Total Organic and Inorganic Carbon	05-Sep-2013	05-Sep-2013	05-Sep-2013	05-Sep-2013
TPH CWG (W)	09-Sep-2013	09-Sep-2013	09-Sep-2013	09-Sep-2013
VOC MS (W)	03-Sep-2013	03-Sep-2013	03-Sep-2013	03-Sep-2013

SDG:	130831-95	**Location:**	Kronospan	**Order Number:**	45029
Job:	H_IANFARMER_WAR-4	**Customer:**	Ian Farmer Associates	**Report Number:**	241440
Client Reference:	41236	**Attention:**	Hannah Hadwin	**Superseded Report:**	

Appendix
General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

APPENDIX 5

MONITORING

IAN FARMER ASSOCIATES
Geotechnical & Environmental Specialists

Gas and Groundwater Monitoring Results

Contract Number:	*41236*	**Gas Monitor:**	*GA2000*
Contract Name:	*Steam Boiler Foundation*	**Readings Taken By:**	*DW*
Date:	*29/08/2013*	**Checked By:**	*HH*

Background Readings:		O_2% v/v	CO_2% v/v	CH_4% v/v	CO ppm	H_2S ppm	
Weather Conditions:	*Sunny*	*20.9*	*0.0*	*0.0*	*0*	*0*	
Ground Conditions (dry / wet etc):	*Dry*						
Atmospheric Pressure (Start):	*1010mb*						
Atmospheric Pressure (Finish):	*1010mb*						

Hole No:	VOC ppm	O_2% v/v	CO_2% v/v	CH_4% v/v		LEL	CO ppm	H_2S ppm	Diff Pressure (Pa)	Gas flow Rate (l/hr)	Depth to base of well	SWL	LNAPL or DNAPL
	Steady	Steady	Steady	Peak	Steady	Steady	Steady	Steady	Steady	Range	mBGL	mBGL	mBGL
BH01	*0.0*	*17.3*	*1.9*	*0.4*	*0.4*	*7*	*0*	*0*	*0.00*	*-6.1*	*3.10*	*0.90*	*NR*
BH02	*0.0*	*13.8*	*3.3*	*0.4*	*0.4*	*9*	*0*	*0*	*0.00*	*0.0*	*13.40*	*7.33*	*NR*
BH03	*0.0*	*11.6*	*2.2*	*0.3*	*0.3*	*5*	*0*	*4*	*0.00*	*0.0*	*9.32*	*8.49*	*NR*
BH04	*0.0*	*20.0*	*0.3*	*0.1*	*0.1*	*2*	*0*	*0*	*0.00*	*-0.1*	*6.07*	*2.46*	*NR*

>>>> = Flow above detection limit of 30 l/hr, <<< = Negative flow greater than -10 l/hr. >Max = In excess of lower explosive limit.

Remarks: Water samples collected from all 4 Boreholes and dispatched to Alcontrol

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Groundwater Monitoring Results

Contract Number:	*41236*
Contract Name:	*Steam Boiler Foundation*
Date:	*29/08/2013*
Weather Conditions:	*Sunny*

Borehole Number	SWL	LNAPL DNAPL	pH	Temperature	Redox Potential	Dissolved Oxygen	Electrical Conductivity
	mBGL	mBGL		Steady	mv	ppm	µs/cm
BH01	*0.90*	*-*	*8.46*	*15.2*	*81.1*	*0.12*	*832*
BH02	*7.33*	*-*	*8.90*	*16.8*	*74.2*	*0.0*	*578*
BH03	*8.49*	*-*	*8.20*	*15.4*	*35.4*	*0.0*	*704*
BH04	*2.46*	*-*	*8.53*	*16.9*	*89.9*	*0.0*	*1296*

Remarks:

Readings Taken By:	DW
Checked By:	HH

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Gas and Groundwater Monitoring Results

Contract Number:	*41236*					**Gas Monitor:**	*GA2000*						
Contract Name:	*Steam Boiler Foundation*					**Readings Taken By:**	*HH*						
Date:	*13th September 2013*					**Checked By:**	*AL*						
Background Readings:	Weather Conditions:	*Drizzle*	O_2% v/v	CO_2% v/v	CH_4% v/v	CO ppm	H_2S ppm						
	Ground Conditions (dry / wet etc):	*Wet*											
	Atmospheric Pressure (Start):	*1009mb*	*21.0*	*0.0*	*0.0*	*0*	*0*						
	Atmospheric Pressure (Finish):	*1009mb*											

Hole No:	VOC ppm	O_2% v/v	CO_2% v/v	CH_4% v/v		LEL	CO ppm	H_2S ppm	Diff Pressure (Pa)	Gas flow Rate (l/hr)	Depth to base of well	SWL	LNAPL or DNAPL
	Steady	Steady	Steady	Peak	Steady	Steady	Steady	Steady	Steady	Range	mBGL	mBGL	mBGL
BH01	*Unable to locate due to large quantities of saw dust and wood debris*												
BH02	*0.0*	*16.3*	*3.1*	*0.2*	*0.2*	*3*	*0*	*0*	*-0.30*	*-0.3*	*13.40*	*5.91*	*NR*
BH03	*0.0*	*5.5*	*5.5*	*0.0*	*0.0*	*0*	*0*	*0*	*-14.10*	*0.9 to 1.7*	*9.36*	*7.40*	*NR*
BH04	*0.0*	*18.1*	*1.8*	*0.4*	*0.4*	*8*	*0*	*0*	*-0.39*	*-0.1*	*2.48*	*6.13*	*NR*

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Remarks:

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Gas and Groundwater Monitoring Results

Contract Number:	*41236*	**Gas Monitor:**	*GA2000*
Contract Name:	*Steam Boiler Foundation*	**Readings Taken By:**	*JM*
Date:	*20th September 2013*	**Checked By:**	*HH*

Background Readings:		O_2% v/v	CO_2% v/v	CH_4% v/v	CO ppm	H_2S ppm	
Weather Conditions:	*Overcast*	*20.8*	*0.0*	*0.0*	*0*	*0*	
Ground Conditions (dry / wet etc):	*Damp*						
Atmospheric Pressure (Start):	*1009 mb*						
Atmospheric Pressure (Finish):	*1009 mb*						

Hole No:	VOC ppm	O_2% v/v	CO_2% v/v	CH_4% v/v		LEL	CO ppm	H_2S ppm	Diff Pressure (Pa)	Gas flow Rate (l/hr)	Depth to base of well	SWL	LNAPL or DNAPL
	Steady	Steady	Steady	Peak	Steady	Steady	Steady	Steady	Steady	Range	mBGL	mBGL	mBGL
BH01	*0.8*	*17.1*	*4.2*	*0.1*	*0.1*	*1*	*0*	*0*	*0.01*	*0.0*	*3.00*	*0.89*	*NR*
BH02	*2.3*	*15.8*	*2.8*	*0.2*	*0.2*	*3*	*0*	*0*	*-0.23*	*-2.6 to 0.0*	*10.18*	*5.94*	*NR*
BH03	*0.3*	*5.5*	*5.7*	*0.0*	*0.0*	*0*	*0*	*0*	*-0.26*	*-7.0 to -0.3*	*9.24*	*7.62*	*NR*
BH04	*0.4*	*16.7*	*2.9*	*0.5*	*0.5*	*10*	*0*	*0*	*-0.29*	*-1.7 to 0.0*	*6.07*	*2.52*	*NR*

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Remarks:

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Gas and Groundwater Monitoring Results

Contract Number:	*41236*	**Gas Monitor:**	*GFM*
Contract Name:	*Steam Boiler Foundation*	**Readings Taken By:**	*DM*
Date:	*27th September 2013*	**Checked By:**	*HH*

Background Readings:		O_2% v/v	CO_2% v/v	CH_4% v/v	CO ppm	H_2S ppm	
Weather Conditions:	*Sunny*	*20.7*	*0.0*	*0.0*	*0*	*0*	
Ground Conditions (dry / wet etc):	*Dry*						
Atmospheric Pressure (Start):	*1004mb*						
Atmospheric Pressure (Finish):	*1004mb*						

Hole No:	VOC ppm	O_2% v/v	CO_2% v/v	CH_4% v/v		LEL	CO ppm	H_2S ppm	Diff Pressure (Pa)	Gas flow Rate (l/hr)	Depth to base of well	SWL	LNAPL or DNAPL
	Steady	Steady	Steady	Peak	Steady	Steady	Steady	Steady	Steady	Range	mBGL	mBGL	mBGL
BH01	*0.0*	*20.7*	*0.0*	*0.0*	*0.0*	*0*	*0*	*0*	*17*	*3.6*	*2.97*	*1.03*	*NR*
BH02	*0.0*	*20.5*	*0.1*	*0.0*	*0.0*	*0*	*0*	*0*	*26*	*5.2*	*13.13*	*6.45*	*NR*
BH03	*0.0*	*20.7*	*0.0*	*0.0*	*0.0*	*0*	*0*	*0*	*7*	*1.6*	*9.23*	*6.57*	*NR*
BH04	*0.0*	*20.7*	*0.0*	*0.0*	*0.0*	*0*	*0*	*0*	*0*	*0.0*	*6.07*	*2.65*	*NR*

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Remarks:

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Gas and Groundwater Monitoring Results

Contract Number:	*41236*	**Gas Monitor:**	*GFM*
Contract Name:	*Steam Boiler Foundation*	**Readings Taken By:**	*DM*
Date:	*10th October 2013*	**Checked By:**	*AL*

Background Readings:		O_2% v/v	CO_2% v/v	CH_4% v/v	CO ppm	H_2S ppm	
Weather Conditions:	*Mild, bright*	*20.7*	*0.0*	*0.0*	*0*	*0*	
Ground Conditions (dry / wet etc):	*Dry*						
Atmospheric Pressure (Start):	*1011mb*						
Atmospheric Pressure (Finish):	*1011mb*						

Hole No:	VOC ppm	O_2% v/v	CO_2% v/v	CH_4% v/v		LEL	CO ppm	H_2S ppm	Diff Pressure (Pa)	Gas flow Rate (l/hr)	Depth to base of well	SWL	LNAPL or DNAPL
	Steady	Steady	Steady	Peak	Steady	Steady	Steady	Steady	Steady	Range	mBGL	mBGL	mBGL
BH01	*0.0*	*20.6*	*0.0*	*0.0*	*0.0*	*0*	*0*	*0*	*0.00*	*0.0*	*2.97*	*0.85*	*NR*
BH02	*0.0*	*18.4*	*0.7*	*0.0*	*0.0*	*0*	*0*	*0*	*0.00*	*0.0*	*13.00*	*6.33*	*NR*
BH03	*0.0*	*20.7*	*0.0*	*0.0*	*0.0*	*0*	*0*	*0*	*0.00*	*0.0*	*9.23*	*6.22*	*NR*
BH04	*0.0*	*20.5*	*0.2*	*0.0*	*0.0*	*0*	*0*	*0*	*0.00*	*0.0*	*6.05*	*2.65*	*NR*

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Remarks:

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Gas and Groundwater Monitoring Results

Contract Number:	*41236*	**Gas Monitor:**	*GFM*
Contract Name:	*Steam Boiler Foundation*	**Readings Taken By:**	*DM*
Date:	*16th October 2013*	**Checked By:**	*AL*

Background Readings:		O_2% v/v	CO_2% v/v	CH_4% v/v	CO ppm	H_2S ppm	
Weather Conditions:	*Dull, rain*	*20.6*	*0.0*	*0.0*	*0*	*0*	
Ground Conditions (dry / wet etc):	*Wet*						
Atmospheric Pressure (Start):	*995mb*						
Atmospheric Pressure (Finish):	*995mb*						

Hole No:	VOC ppm	O_2% v/v	CO_2% v/v	CH_4% v/v		LEL	CO ppm	H_2S ppm	Diff Pressure (Pa)	Gas flow Rate (l/hr)	Depth to base of well	SWL	LNAPL or DNAPL
	Steady	Steady	Steady	Peak	Steady	Steady	Steady	Steady	Steady	Range	mBGL	mBGL	mBGL
BH01	*0.0*	*20.6*	*0.0*	*0.0*	*0.0*	*0*	*0*	*0*	*-1.00*	*-0.4*	*2.94*	*0.72*	*NR*
BH02	*0.0*	*17.8*	*0.7*	*0.0*	*0.0*	*2*	*0*	*0*	*0.00*	*0.0*	*13.00*	*6.37*	*NR*
BH03	*0.0*	*20.3*	*0.0*	*0.0*	*0.0*	*0*	*0*	*0*	*0.00*	*0.0*	*9.23*	*7.40*	*NR*
BH04	*0.0*	*20.5*	*0.0*	*0.0*	*0.0*	*0*	*0*	*0*	*0.00*	*0.0*	*6.05*	*2.40*	*NR*

>>>> = Flow above detection limit of 30 l/hr, <<< = Negative flow greater than -10 l/hr. >Max = In excess of lower explosive limit.

Remarks: