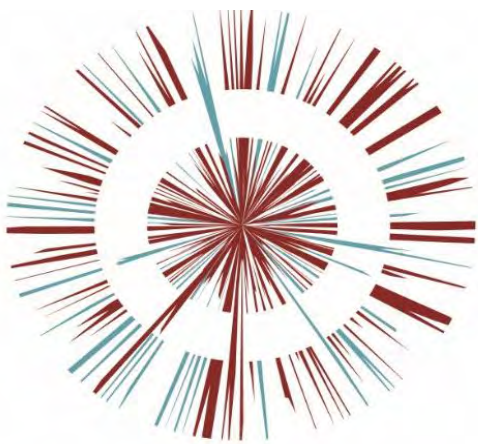




OMEGA ZONE 8, ST HELENS

Omega St Helens Ltd / T J Morris Ltd



Ground Investigation Report
& Remediation Strategy
Appendix D Part 18
OPP DOC. 2.22

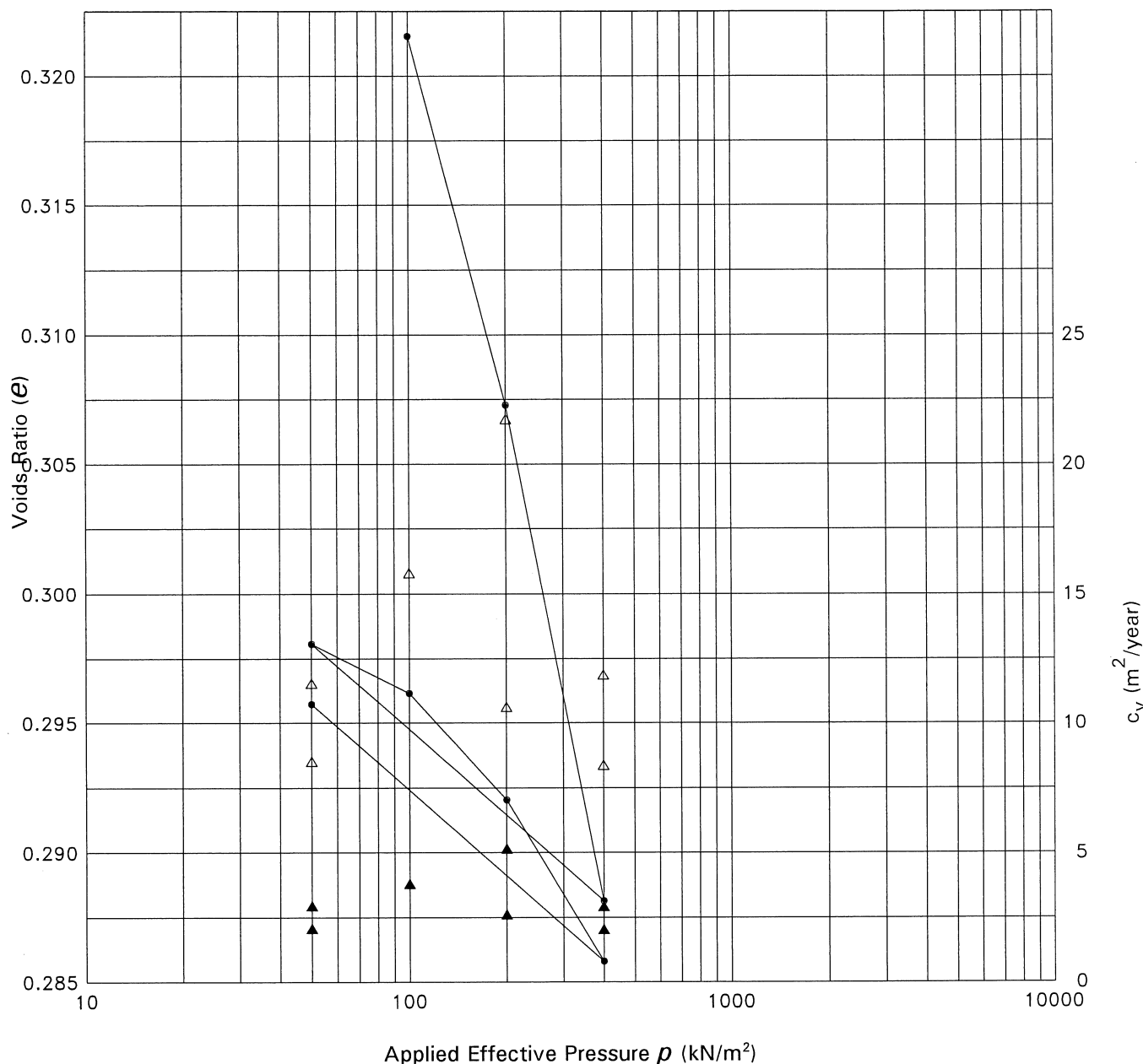
LABORATORY RESULTS - Consolidation $e/\log p$ Plot

Project Omega Development Gi

Project No PN194027
Borehole BH8A03
Sample Depth 5.00 - 5.45 m
Sample Type UT

Client

Symbols: Voids Ratio •, c_{v50} ▲, c_{v90} △



Applied Pressure kN/m^2	0-100	100-200	200-400	400-50	50-100	100-200	200-400	400-50		
m_v m^2/MN	0.15	0.11	0.07	0.02	0.03	0.03	0.02	0.02		
c_{v50} Log Time m^2/yr	-	2.61	2.04	2.94	3.80	5.15	2.92	2.07		
c_{v90} Root Time m^2/yr	-	10.62	8.37	11.53	15.80	21.74	11.86	8.51		
Voids Ratio	0.322	0.307	0.288	0.298	0.296	0.292	0.286	0.296		
Description N77783 Stiff reddish brown slightly sandy slightly gravelly CLAY			Specimen Diameter 74.520 mm Initial Height 18.910 mm Particle Density 2.65 Assumed Initial Voids Ratio 0.341			Initial Water Content 12.60 % Final Water Content 12.35 % Initial Saturation 97.91 % Initial Bulk Density 2.23 Mg/m^3 Initial Dry Density 1.98 Mg/m^3				

Remarks Laboratory temperature $20^\circ\text{C} \pm 3^\circ\text{C}$
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

LABORATORY RESULTS - Consolidation $e/\log p$ Plot

Project Omega Development Gi

Project No PN194027

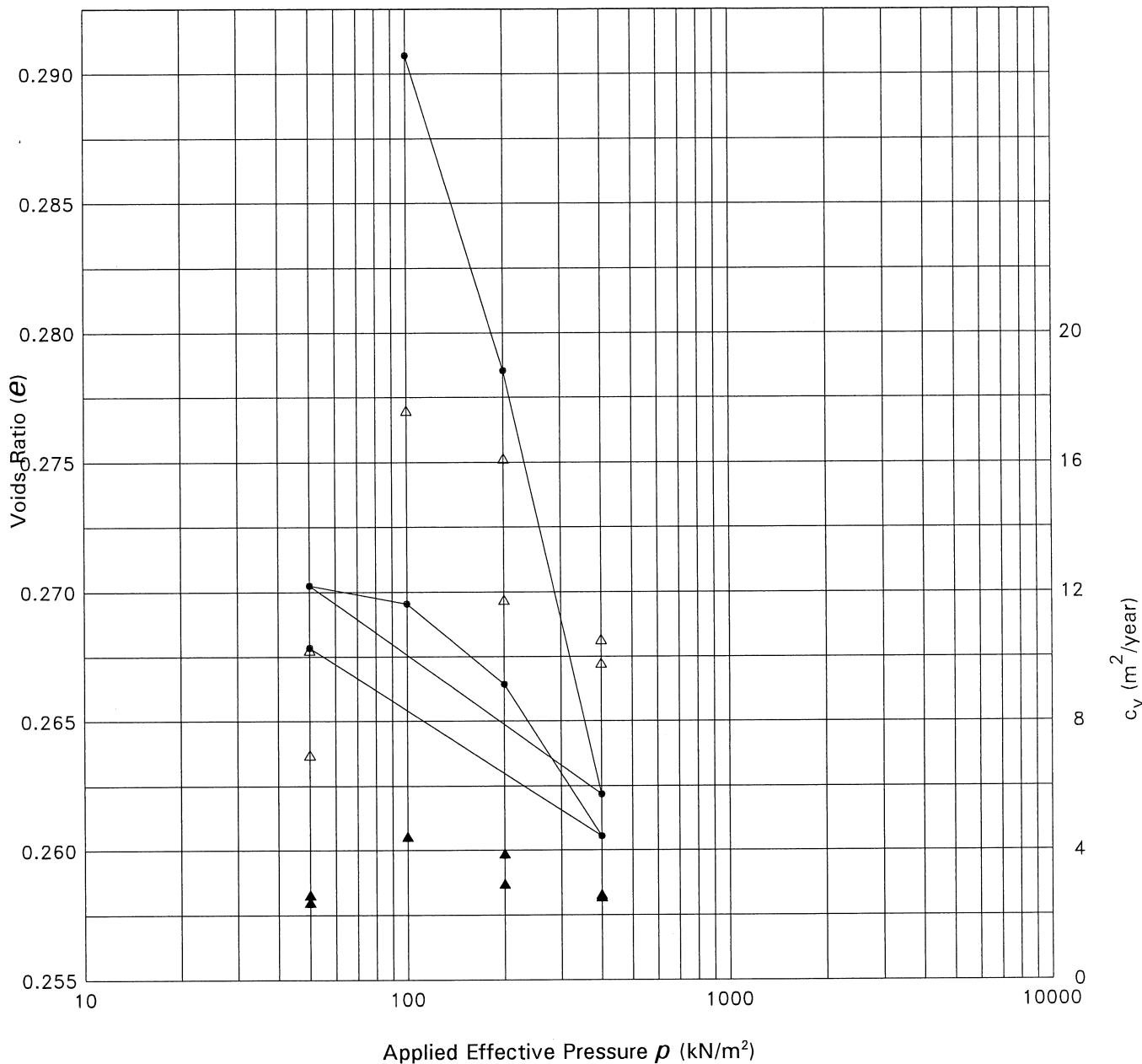
Borehole BH8A04

Sample Depth 3.00 - 3.45 m

Sample Type UT

Client

Symbols: Voids Ratio \bullet , c_{v50} \blacktriangle , c_{v90} \triangle



Applied Pressure kN/m^2	0-100	100-200	200-400	400-50	50-100	100-200	200-400	400-50		
m_v m^2/MN	0.30	0.09	0.06	0.02	0.01	0.02	0.02	0.02		
c_{v50} Log Time m^2/yr	-	2.96	2.56	2.40	4.43	3.90	2.63	2.62		
c_{v90} Root Time m^2/yr	-	11.75	9.79	6.96	17.60	16.11	10.52	10.20		
Voids Ratio	0.291	0.279	0.262	0.270	0.270	0.266	0.261	0.268		
Description N77653 Stiff reddish brown slightly sandy slightly gravelly CLAY			Specimen Diameter 74.540 mm Initial Height 18.800 mm Particle Density 2.65 Assumed Initial Voids Ratio 0.331			Initial Water Content 12.59 % Final Water Content 12.38 % Initial Saturation 100 % Initial Bulk Density 2.24 Mg/m^3 Initial Dry Density 1.99 Mg/m^3				

Remarks Laboratory temperature $20^\circ\text{C} \pm 3^\circ\text{C}$
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

LABORATORY RESULTS - Consolidation $e/\log p$ Plot

Project Omega Development Gi

Project No PN194027

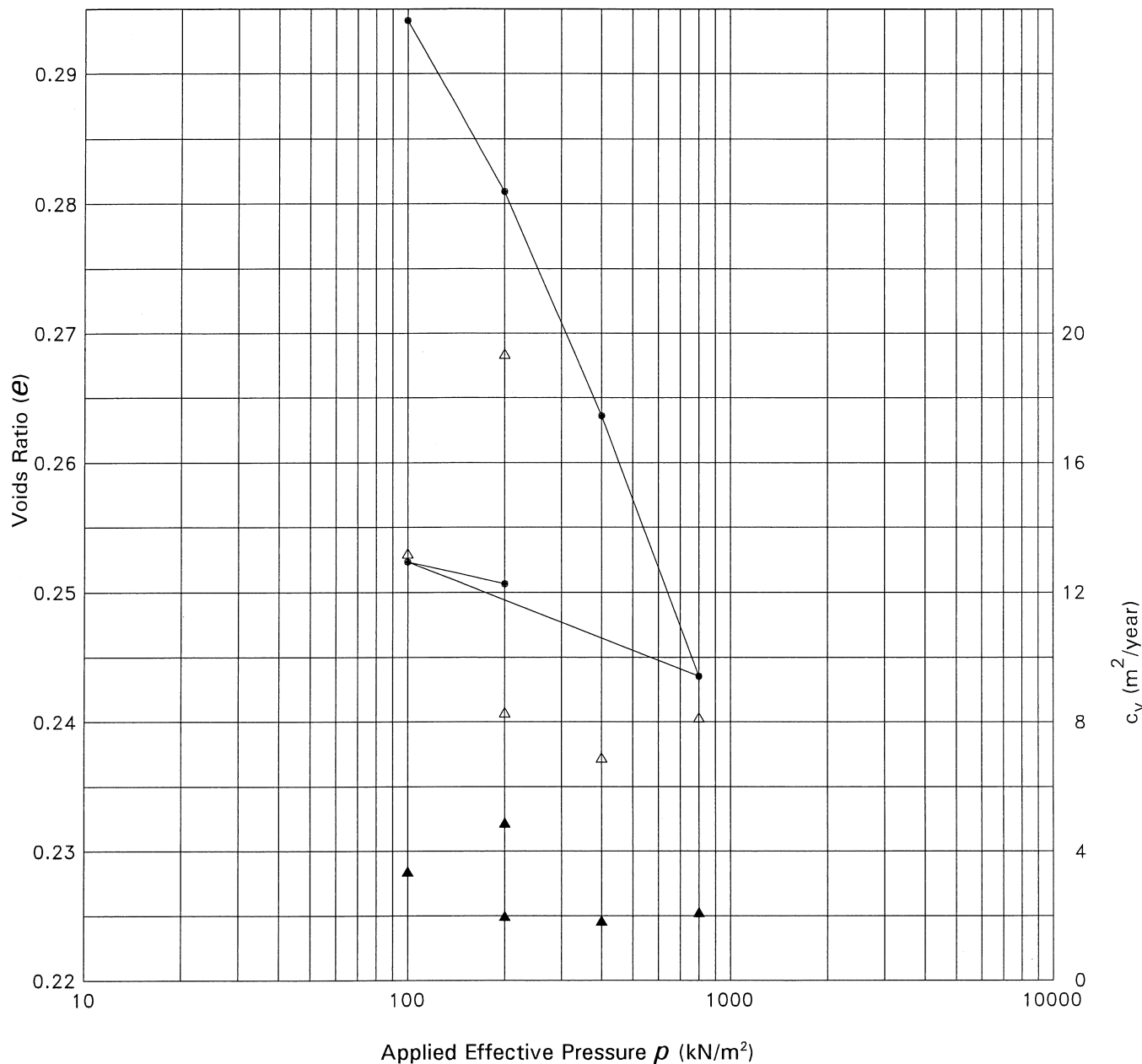
Borehole BH8A07

Sample Depth 3.00 - 3.45 m

Sample Type UT

Client

Symbols: Voids Ratio •, c_{v50} ▲, c_{v90} △



Applied Pressure kN/m^2	0-100	100-200	200-400	400-800	800-100	100-200				
m_v m^2/MN	0.27	0.10	0.07	0.04	0.01	0.01				
c_{v50} Log Time m^2/yr	-	1.99	1.84	2.10	3.37	4.88				
c_{v90} Root Time m^2/yr	-	8.29	6.90	8.14	13.19	19.35				
Voids Ratio	0.294	0.281	0.264	0.244	0.252	0.251				
Description N77609 Firm brown slightly gravelly slightly sandy CLAY	Specimen Diameter 74.530 mm Initial Height 18.880 mm Particle Density 2.65 Assumed Initial Voids Ratio 0.330						Initial Water Content 12.15 % Final Water Content 11.20 % Initial Saturation 97.56 % Initial Bulk Density 2.23 Mg/m^3 Initial Dry Density 1.99 Mg/m^3			

Remarks Laboratory temperature $20^\circ\text{C} \pm 3^\circ\text{C}$
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017



LABORATORY RESULTS - Consolidation $e/\log p$ Plot

Project Omega Development Gi

Project No PN194027

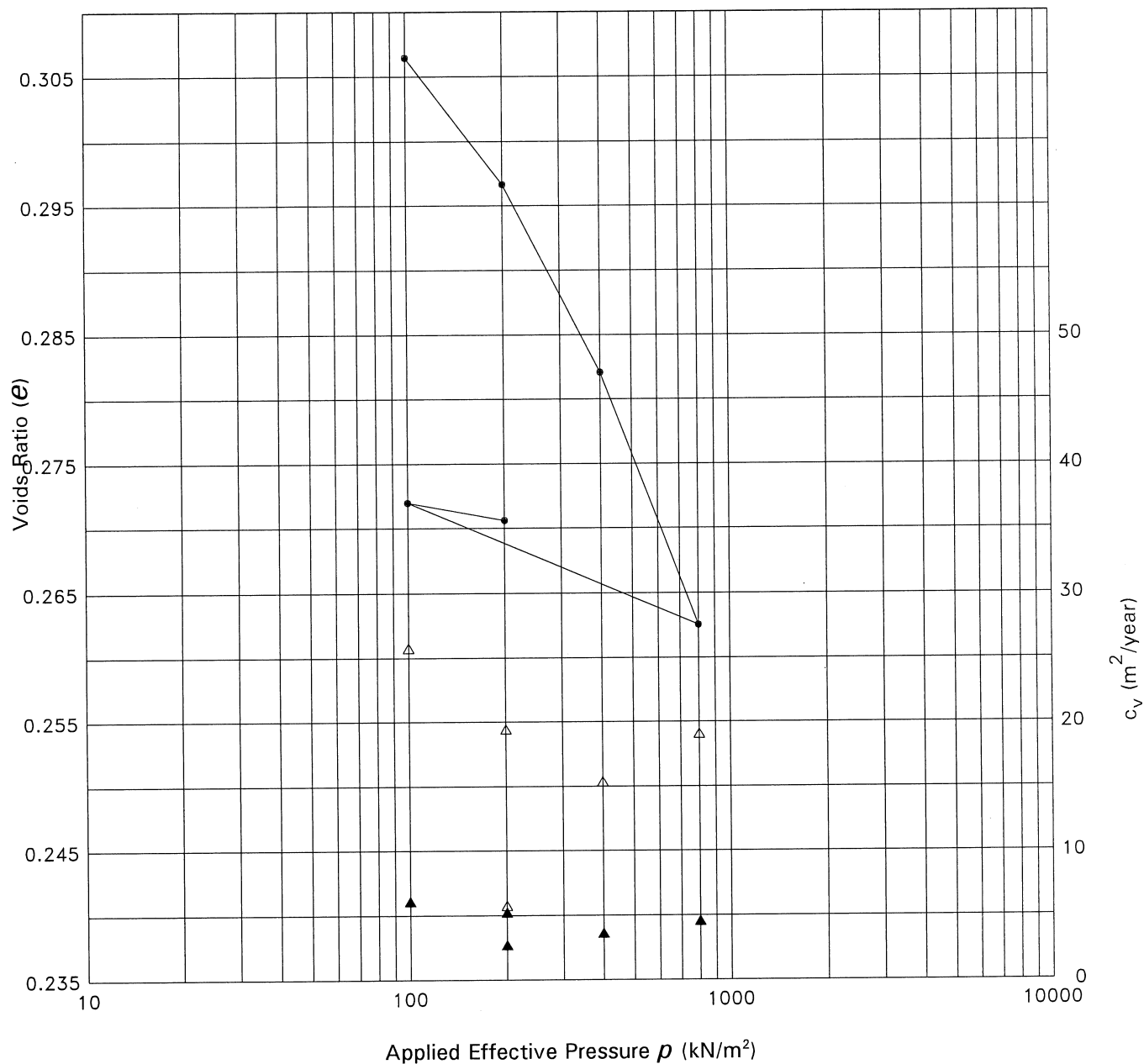
Borehole BH8A08

Sample Depth 3.00 - 3.45 m

Sample Type UT

Client

Symbols: Voids Ratio •, c_{v50} ▲, c_{v90} △



Applied Pressure	kN/m^2	0-100	100-200	200-400	400-800	800-1000	1000-2000				
m_v	m^2/MN	0.34	0.08	0.06	0.04	0.01	0.01				
c_{v50} Log Time	m^2/yr	-	5.22	3.61	4.57	6.08	2.69				
c_{v90} Root Time	m^2/yr	-	19.43	15.35	19.08	25.76	5.75				
Voids Ratio		0.306	0.297	0.282	0.263	0.272	0.271				
Description N77573 stiff reddish brown slightly sandy slightly gravelly CLAY				Specimen Diameter 74.540 mm Initial Height 18.740 mm Particle Density 2.65 Assumed Initial Voids Ratio 0.352				Initial Water Content 12.00 % Final Water Content 12.23 % Initial Saturation 90.35 % Initial Bulk Density 2.20 Mg/m^3 Initial Dry Density 1.96 Mg/m^3			

Remarks Laboratory temperature $20^\circ\text{C} \pm 3^\circ\text{C}$
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017


geotechnics

LABORATORY RESULTS - Point Load Strength Determination

Project OMEGA DEVELOPMENT GI

Project No: PN194027

Sample					w	W	D	Fail Load	Test Type/ Direction	De	De ²	Is	F	Is ₅₀
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	%	mm	mm	kN		mm	mm ²	MN/m ²		MN/m ²
BH8A02A	15.05-	C	N77822	Very weak reddish brown fine to coarse grained SANDSTONE.	8.8	85	85	0.45	D/PL	85.00	7225	0.063	1.270	0.079
	15.17					85	61	0.89	A/PD	81.25	6602	0.135	1.244	0.168
	(15.05-15.17)					85	60	0.68	A/PD	80.58	6494	0.104	1.240	0.129
BH8A02A	17.80-	C	N77823	Very weak reddish brown fine to coarse grained SANDSTONE.	10.7	85	85	0.49	D/PL	85.00	7225	0.067	1.270	0.085
	17.97					85	81	0.86	A/PD	93.63	8766	0.098	1.326	0.130
	(17.80-17.97)					85	80	0.60	A/PD	93.05	8658	0.069	1.323	0.091
BH8A02A	19.36-	C	N77824	Very weak reddish brown fine to coarse grained SANDSTONE.	8.3	85	85	0.55	D/PL	85.00	7225	0.076	1.270	0.096
	19.50					85	59	1.14	A/PD	79.91	6385	0.178	1.235	0.220
	(19.36-19.50)					85	51	0.63	A/PD	74.29	5519	0.114	1.195	0.136
BH8A02A	21.20-	C	N77825	Very weak reddish brown fine to coarse grained SANDSTONE.	11.0	85	85	0.56	D/PL	85.00	7225	0.078	1.270	0.098
	21.33					85	66	0.73	A/PD	84.52	7143	0.102	1.266	0.129
	(21.20-21.33)					85	54	0.63	A/PD	76.45	5844	0.107	1.211	0.130
BH8A02A	23.60-	C	N77826	Very weak reddish brown fine to coarse grained SANDSTONE.	8.9	85	51	0.58	A/PD	74.29	5519	0.104	1.195	0.125
	23.72					85	81	1.03	A/PD	93.63	8766	0.117	1.326	0.156
	(23.60-23.72)													
BH8A03	13.38-	C	N77827	Extremely weak to very weak reddish brown fine to coarse grained SANDSTONE.	9.0	86	85	0.13	D/PL	85.00	7225	0.018	1.270	0.023
	13.50					85	88	1.63	A/PD	97.59	9524	0.172	1.351	0.232
	(13.38-13.50)													
BH8A03	16.30-	C	N77828	Extremely weak reddish brown MUDSTONE.	12.3	85	85	0.19	D/PL	85.00	7225	0.027	1.270	0.034
	16.48					85	82	0.26	A/PD	94.20	8874	0.030	1.330	0.039
	(16.30-16.48)					85	51	0.14	A/PD	74.29	5519	0.026	1.195	0.031
BH8A03	19.10-	C	N77829	Weak reddish brown fine to coarse grained SANDSTONE.	7.5	85	85	1.37	D/PL	85.00	7225	0.189	1.270	0.240
	19.23					85	65	1.90	A/PD	83.87	7035	0.270	1.262	0.341
	(19.10-19.23)					85	66	1.94	A/PD	84.52	7143	0.271	1.266	0.344
BH8A03	22.95-	C	N77830	Weak reddish brown fine to coarse grained SANDSTONE.	7.8	86	86	2.36	D/PL	86.00	7396	0.320	1.276	0.408
	23.13					86	66	1.19	A/PD	85.01	7227	0.164	1.270	0.209
	(22.95-23.13)					86	64	2.35	A/PD	83.71	7008	0.335	1.261	0.423
						86	64	3.10	A/PD	83.71	7008	0.442	1.261	0.558
BH8A08	12.68-	C	N77612	Extremely weak to very weak reddish brown fine to coarse grained SANDSTONE.	10.0	85	85	0.11	D/PL	85.00	7225	0.015	1.270	0.019
	12.78					85	53	0.33	A/PD	75.74	5736	0.058	1.206	0.069
	(12.68-12.78)					85	51	0.40	A/PD	74.29	5519	0.072	1.195	0.086
BH8A08	13.50-	C	N77613	Extremely weak to very weak reddish brown fine to coarse grained SANDSTONE.	10.2	85	85	0.37	D/PL	85.00	7225	0.051	1.270	0.065
	13.65					85	79	0.58	A/PD	92.47	8550	0.068	1.319	0.089
	(13.50-13.65)					85	61	0.62	A/PD	81.25	6602	0.095	1.244	0.118

Remarks  Test Type D - Diametral, A - Axial, I - Lump or Irregular Test
 Direction PL - parallel to planes of weakness, R - Random or unknown orientation, PD - perpendicular to planes of weakness
 Fail Load UF - unacceptable failure
 For Standards followed see Laboratory Test Certificate


GEOTECHNICS
 geotechnical and geoenvironmental specialists

LABORATORY RESULTS - Point Load Strength Determination

Project OMEGA DEVELOPMENT GI

Project No: PN194027

Sample					w	W	D	Fail Load	Test Type/ Direction	De	De ²	Is	F	Is ₅₀
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	%	mm	mm	kN		mm	mm ²	MN/m ²		MN/m ²
BH8A08	16.65-16.85 (16.65-16.85)	C	N77614	Very weak to weak reddish brown fine to coarse grained SANDSTONE.	7.4	85	85	0.91	D/PL	85.00	7225	0.126	1.270	0.160
						85	85	1.11	D/PL	85.00	7225	0.154	1.270	0.196
						85	88	1.77	A/PD	97.59	9524	0.186	1.351	0.251
						85	61	1.07	A/PD	81.25	6602	0.162	1.244	0.202
						85	60	1.59	A/PD	80.58	6494	0.245	1.240	0.303
BH8A08	17.27-17.54 (17.27-17.54)	C	N77615	Very weak to weak reddish brown fine to coarse grained SANDSTONE.	8.6	85	85	0.74	D/PL	85.00	7225	0.102	1.270	0.130
						85	85	0.82	D/PL	85.00	7225	0.113	1.270	0.144
						85	77	1.81	A/PD	91.29	8333	0.217	1.311	0.284
						85	77	1.57	A/PD	91.29	8333	0.188	1.311	0.247
						85	75	2.21	A/PD	90.09	8117	0.272	1.303	0.354
BH8A08	18.56-18.76 (18.56-18.76)	C	N77616	Very weak to weak reddish brown fine to coarse grained SANDSTONE.	10.1	85	85	0.60	D/PL	85.00	7225	0.083	1.270	0.105
						85	79	1.88	A/PD	92.47	8550	0.220	1.319	0.290
						85	72	1.28	A/PD	88.27	7792	0.164	1.292	0.212
BH8A08	19.17-19.37 (19.17-19.37)	C	N77617	Very weak to weak reddish brown fine to coarse grained SANDSTONE.	9.8	85	85	0.50	D/PL	85.00	7225	0.069	1.270	0.088
						85	90	0.78	A/PD	98.69	9740	0.080	1.358	0.108
						85	64	0.70	A/PD	83.23	6926	0.101	1.258	0.127
BH8A08	20.50-20.64 (20.50-20.64)	C	N77618	Very weak to weak reddish brown fine to coarse grained SANDSTONE.	9.0	85	85	0.20	D/PL	85.00	7225	0.028	1.270	0.036
						85	71	0.49	A/PD	87.66	7684	0.063	1.287	0.081
						85	67	0.63	A/PD	85.15	7251	0.086	1.271	0.110
BH8A08	21.95-22.12 (21.95-22.12)	C	N77619	Very weak to weak reddish brown fine to coarse grained SANDSTONE.	10.5	85	85	0.51	D/PL	85.00	7225	0.071	1.270	0.090
						85	75	0.64	A/PD	90.09	8117	0.078	1.303	0.102
						85	74	0.52	A/PD	89.49	8009	0.065	1.300	0.085
BH8A08	23.37-23.51 (23.37-23.51)	C	N77620	Very weak to weak reddish brown fine to coarse grained SANDSTONE.	10.5	85	75	1.61	A/PD	90.09	8117	0.198	1.303	0.258
						85	61	1.56	A/PD	81.25	6602	0.236	1.244	0.294
BH8B03	10.95-11.07 (10.95-11.07)	C	N77621	Very weak reddish brown fine to coarse grained SANDSTONE.	9.0	85	85	0.56	D/PL	85.00	7225	0.077	1.270	0.098
						85	49	0.78	A/PD	72.82	5303	0.147	1.184	0.175
						85	49	0.57	A/PD	72.82	5303	0.107	1.184	0.127
BH8B03	11.40-11.59 (11.40-11.59)	C	N77622	Very weak reddish brown fine to coarse grained SANDSTONE.	9.9	85	85	0.61	D/PL	85.00	7225	0.084	1.270	0.107
						85	86	1.80	A/PD	96.47	9307	0.193	1.344	0.259
						85	91	1.47	A/PD	99.24	9849	0.149	1.361	0.203
BH8B03	14.53-14.66 (14.53-14.66)	C	N77623	Very weak reddish brown fine to coarse grained SANDSTONE.	8.8	85	85	0.67	D/PL	85.00	7225	0.093	1.270	0.118
						85	65	1.45	A/PD	83.87	7035	0.206	1.262	0.261
						85	59	0.84	A/PD	79.91	6385	0.132	1.235	0.163
BH8B03	16.13-16.36 (16.13-16.36)	C	N77624	Very weak to weak reddish brown fine to coarse grained SANDSTONE.	8.3	85	85	1.64	D/PL	85.00	7225	0.228	1.270	0.289
						85	85	1.35	D/PL	85.00	7225	0.187	1.270	0.237
						85	81	2.72	A/PD	93.63	8766	0.310	1.326	0.411
						85	78	2.66	A/PD	91.88	8442	0.315	1.315	0.414
						85	78	2.38	A/PD	91.88	8442	0.282	1.315	0.371

Remarks  Test Type D - Diametral, A - Axial, I - Lump or Irregular Test
 Direction PL - parallel to planes of weakness, R - Random or unknown orientation,
 PD - perpendicular to planes of weakness
 Fail Load UF - unacceptable failure
 For Standards followed see Laboratory Test Certificate

GEOTECHNICS
 geotechnical and geoenvironmental specialists

LABORATORY RESULTS - Point Load Strength Determination

Project OMEGA DEVELOPMENT GI

Project No: PN194027

Sample					w	W	D	Fail Load	Test Type/ Direction	De	De ²	Is	F	Is ₅₀
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	%	mm	mm	kN		mm	mm ²	MN/m ²		MN/m ²
BH8B03	18.42-18.62 (18.42-18.62)	C	N77625	Weak reddish brown fine to coarse grained SANDSTONE.	8.1	85	85	1.48	D/PL	85.00	7225	0.205	1.270	0.260
						85	85	1.27	D/PL	85.00	7225	0.175	1.270	0.222
						85	70	2.60	A/PD	87.04	7576	0.344	1.283	0.441
						85	65	2.50	A/PD	83.87	7035	0.355	1.262	0.448
						85	64	1.84	A/PD	83.23	6926	0.266	1.258	0.334
BH8B03	19.40-19.61 (19.40-19.61)	C	N77626	Weak reddish brown fine to coarse grained SANDSTONE.	9.2	85	85	1.68	D/PL	85.00	7225	0.233	1.270	0.295
						85	82	1.67	A/PD	94.20	8874	0.188	1.330	0.250
						85	80	2.50	A/PD	93.05	8658	0.289	1.323	0.382



Remarks Test Type D - Diametral, A - Axial, I - Lump or Irregular Test
 Direction PL - parallel to planes of weakness, R - Random or unknown orientation,
 PD - perpendicular to planes of weakness
 Fail Load UF - unacceptable failure
 For Standards followed see Laboratory Test Certificate

geotechnical and geoenvironmental specialists

LABORATORY RESULTS - Test Remarks

Project OMEGA DEVELOPMENT GI

Project No: PN194027

Sample				Laboratory Remark
Hole	Depth (Specimen Depth) m	Type	Sample Ref	
BH8B02	1.20- 1.65 (1.20- 1.65)	UT	N77583	Quick Undrained Triaxial Test - NST= Too short
BH8D03	6.50- 6.95 (6.50- 6.95)	UT	N77821	Quick Undrained Triaxial Test - NST= Insufficient sample.
WS8C04	1.00 (1.00)	D	N77791	Atterberg Limit Test - 1-point cone
Remarks 				
 geotechnical and geoenvironmental specialists				



LABORATORY REPORT



4043

Contract Number: PSL19/6242

Report Date: 30 October 2019
Client's Reference: PN194027
Client Name: Geotechnics Chester
The Geotechnical Centre
Unit 1 Borders Industrial Park
River Lane, Saltney
Chester
CH4 8RJ

For the attention of: Colin Dodd

Contract Title: Omega
Date Received: 16/10/2019
Date Commenced: 16/10/2019
Date Completed: 30/10/2019

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

L Knight
(Senior Technician)


(Senior Technician)

R Cowles
(Senior Technician)

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Page 1 of

DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

ISRM Suggested Methods, pp 111 –116, 1981.

[illegible]

Omega

Contract No:

PSL19/6242

Client Ref:

PN194027

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

[illegible]

***Note** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular



Omega

Contract No:

PSL19/6242

Client Ref:

PN194027

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

[illegible]

***Note** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random



Omega

Contract No:

PSL19/6242

Client Ref:

PN194027



LABORATORY REPORT



4043

Contract Number: PSL19/6870

Report Date: 28 November 2019

Client's Reference: PN194027

Client Name: Geotechnics Chester
The Geotechnical Centre
Unit 1 Borders Industrial Park
River Lane, Saltney
Chester
CH4 8RJ

For the attention of: Colin Dodd

Contract Title: Omega

Date Received: 11/11/2019

Date Commenced: 11/11/2019

Date Completed: 28/11/2019

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

L Knight
(Senior Technician)


(Senior Technician)

R Cowles
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Page 1 of

DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

ISRM Suggested Methods, pp 111 –116, 1981.

[illegible]

Omega

Contract No:

PSL19/6870

Client Ref:

PN194027



DETS

Certificate of Analysis

Certificate Number 19-21280-1

31-Oct-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-21280-1

Client Reference PN194027

Order No AUTH-OL23214

Contract Title Omega Development GI

Description 6 Soil samples.

Date Received 22-Oct-19

Date Started 22-Oct-19

Date Completed 31-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes This report supersedes 19-21280, amendments.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-21280-1

Client Ref PN194027

Contract Title Omega Development GI

Lab No	1585811	1585812	1585813	1585814
Sample ID	BH8B03	BH8A08	BH8B01	BH8B02
Depth	1.20-1.65	1.70	1.70	1.70
Other ID				
Sample Type	D	UT	D	D
Sampling Date	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Inorganics							
pH	DETSC 2008#		pH	7.1	8.2	7.3	7.2
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	29	23	26	22

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-21280-1

Client Ref PN194027

Contract Title Omega Development GI

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1585815	WS8B03 0.50	SOIL	NAD	none	D Wilkinson
1585816	WS8B03 1.20-1.65	SOIL	NAD	none	D Wilkinson

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-21280-1
 Client Ref PN194027
 Contract Omega Development GI

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1585811	BH8B03 1.20-1.65 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1585812	BH8A08 1.70 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1585813	BH8B01 1.70 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1585814	BH8B02 1.70 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1585815	WS8B03 0.50 SOIL		PT 1L		
1585816	WS8B03 1.20-1.65 SOIL		PT 1L		

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-21996

05-Nov-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-21996

Client Reference PN194027

Order No AUTH-OL23324

Contract Title Omega Development GI

Description 6 Soil samples.

Date Received 31-Oct-19

Date Started 31-Oct-19

Date Completed 05-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-21996

Client Ref PN194027

Contract Title Omega Development GI

Lab No	1590590	1590591	1590592	1590593	1590594	1590595
Sample ID	TP8D03	TP8D09	TP8D12	TP8D17	TP8D01	BH8A07
Depth	1.50	0.40	0.80	1.50	1.50	1.20-1.65
Other ID						
Sample Type	D	D	D	D	D	UT
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Inorganics									
pH	DETSC 2008#		pH	10.2	6.1	7.0	7.9	8.1	8.2
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	270	14	39	20	54	25

Information in Support of the Analytical Results

Our Ref 19-21996
 Client Ref PN194027
 Contract Omega Development GI

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1590590	TP8D03 1.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1590591	TP8D09 0.40 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1590592	TP8D12 0.80 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1590593	TP8D17 1.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1590594	TP8D01 1.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1590595	BH8A07 1.20-1.65 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-22271

14-Nov-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-22271

Client Reference PN194027

Order No AUTH-OL23420

Contract Title Omega Development GI

Description 3 Soil samples.

Date Received 04-Nov-19

Date Started 04-Nov-19

Date Completed 14-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-22271

Client Ref PN194027

Contract Title Omega Development GI

Lab No	1592157	1592158	1592159
Sample ID	BH8A01	BH8A02	BH8A04
Depth	1.70	1.80	2.00-2.45
Other ID			
Sample Type	D	D	D
Sampling Date	01/11/19	01/11/19	01/11/19
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Inorganics						
pH	DETSC 2008#		pH	8.1	8.2	8.2
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	19	27

Information in Support of the Analytical Results

Our Ref 19-22271
 Client Ref PN194027
 Contract Omega Development GI

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1592157	BH8A01 1.70 SOIL	01/11/19	PT 1L		
1592158	BH8A02 1.80 SOIL	01/11/19	PT 1L		
1592159	BH8A04 2.00-2.45 SOIL	01/11/19	PT 1L		

Key: P-Plastic T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-23149

21-Nov-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-23149

Client Reference PN194027

Order No AUTH-OL23582

Contract Title Omega Development GI

Description 17 Soil samples.

Date Received 14-Nov-19

Date Started 14-Nov-19

Date Completed 21-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis Soil Samples

Our Ref 19-23149

Client Ref PN194027

Contract Title Omega Development GI

Lab No	1597328	1597329	1597330	1597331	1597332	1597333	1597334	1597335	1597336	1597337	1597338
Sample ID	WS8B01	WS8B07	WS8A01	WS8A02	WS8A03	BH8A02A	BH8A03	WS8B04	BH8C01	BH8C01	BH8C03
Depth	1.20-1.65	1.20-1.65	1.00-2.00	1.20-1.65	1.20-1.65	1.70	1.80	1.20-1.65	1.70	3.50	1.70
Other ID											
Sample Type	D	D	D	D	D	D	D	D	D	D	D
Sampling Date	13/11/19	13/11/19	13/11/19	13/11/19	13/11/19	13/11/19	13/11/19	13/11/19	13/11/19	13/11/19	13/11/19
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units											
Inorganics														
pH	DETSC 2008#		pH	8.3	7.5	8.3	8.0	8.3	8.3	8.2	7.3	8.4	8.3	8.3
Organic matter	DETSC 2002#	0.1	%	0.9	0.8	0.6	0.8	0.8	0.7	0.7	0.7			
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	53	64	26	12	18	22	15	22	17	24	23
Sulphur as S, Total	DETSC 2320	0.01	%	0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.02	0.03	0.01	< 0.01	< 0.01	0.01	< 0.01	0.01			

Summary of Chemical Analysis Soil Samples

Our Ref 19-23149

Client Ref PN194027

Contract Title Omega Development GI

Lab No	1597339	1597340	1597341	1597342	1597343	1597344
Sample ID	BH8C03	BH8C02	BH8C02	BH8D01A	BH8D02	BH8D03
Depth	4.80	1.70	2.00-2.45	1.70	1.80	1.80
Other ID						
Sample Type	D	D	D	D	D	D
Sampling Date	13/11/19	13/11/19	13/11/19	13/11/19	13/11/19	13/11/19
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Inorganics									
pH	DETSC 2008#		pH	8.8	7.7	8.5	8.2	8.4	8.2
Organic matter	DETSC 2002#	0.1	%						
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	19	15	17	27	14
Sulphur as S, Total	DETSC 2320	0.01	%						
Sulphate as SO4, Total	DETSC 2321#	0.01	%						

Information in Support of the Analytical Results

Our Ref 19-23149
 Client Ref PN194027
 Contract Omega Development GI

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1597328	WS8B01 1.20-1.65 SOIL	13/11/19	PT 1L		
1597329	WS8B07 1.20-1.65 SOIL	13/11/19	PT 1L		
1597330	WS8A01 1.00-2.00 SOIL	13/11/19	PT 1L		
1597331	WS8A02 1.20-1.65 SOIL	13/11/19	PT 1L		
1597332	WS8A03 1.20-1.65 SOIL	13/11/19	PT 1L		
1597333	BH8A02A 1.70 SOIL	13/11/19	PT 1L		
1597334	BH8A03 1.80 SOIL	13/11/19	PT 1L		
1597335	WS8B04 1.20-1.65 SOIL	13/11/19	PT 1L		
1597336	BH8C01 1.70 SOIL	13/11/19	PT 1L		
1597337	BH8C01 3.50 SOIL	13/11/19	PT 1L		
1597338	BH8C03 1.70 SOIL	13/11/19	PT 1L		
1597339	BH8C03 4.80 SOIL	13/11/19	PT 1L		
1597340	BH8C02 1.70 SOIL	13/11/19	PT 1L		
1597341	BH8C02 2.00-2.45 SOIL	13/11/19	PT 1L		
1597342	BH8D01A 1.70 SOIL	13/11/19	PT 1L		
1597343	BH8D02 1.80 SOIL	13/11/19	PT 1L		
1597344	BH8D03 1.80 SOIL	13/11/19	PT 1L		

Key: P-Plastic T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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

APPENDIX II

Laboratory Test Results - Contamination



DETS

Certificate of Analysis

Certificate Number 19-19664

11-Oct-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-19664

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description One Soil sample.

Date Received 02-Oct-19

Date Started 02-Oct-19

Date Completed 11-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-19664

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1574379
Sample ID	WS8B01
Depth	0.25
Other ID	
Sample Type	SOIL
Sampling Date	26/09/19
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	13
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.4
Chromium	DETSC 2301#	0.15	mg/kg	30
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	52
Lead	DETSC 2301#	0.3	mg/kg	51
Mercury	DETSC 2325#	0.05	mg/kg	0.10
Nickel	DETSC 2301#	1	mg/kg	19
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Zinc	DETSC 2301#	1	mg/kg	75
Inorganics				
pH	DETSC 2008#		pH	6.6
Organic matter	DETSC 2002#	0.1	%	4.9
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-19664

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1574379
Sample ID	WS8B01
Depth	0.25
Other ID	
Sample Type	SOIL
Sampling Date	26/09/19
Sampling Time	n/s

Test	Method	LOD	Units	
Pyrene	DETSC 3301	0.1	mg/kg	0.2
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6
OCPs				
alpha-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg	< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg	< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg	< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg	< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg	< 0.1
OPPs				
Dichlorvos	DETSC 3443*	0.1	mg/kg	< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg	< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg	< 0.1
Naled	DETSC 3443*	0.1	mg/kg	< 0.1
Phorate	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg	< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg	< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg	< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-19664

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1574379
Sample ID	WS8B01
Depth	0.25
Other ID	
Sample Type	SOIL
Sampling Date	26/09/19
Sampling Time	n/s

Test	Method	LOD	Units	
Ronnel	DETSC 3443*	0.1	mg/kg	< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg	< 0.1
Chlopyrifos	DETSC 3443*	0.1	mg/kg	< 0.1
Trichlorinate	DETSC 3443*	0.1	mg/kg	< 0.1
Merphos	DETSC 3443*	0.1	mg/kg	< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg	< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg	< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg	< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg	< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg	< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg	< 0.1
Triazines				
Atraton	DETSC 3445*	0.1	mg/kg	< 0.1
Prometon	DETSC 3445*	0.1	mg/kg	< 0.1
Simazine	DETSC 3445*	0.1	mg/kg	< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg	< 0.1
Propazine	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg	< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg	< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg	< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg	< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg	< 0.1

Summary of Asbestos Analysis Soil Samples

Our Ref 19-19664

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1574379	WS8B01 0.25	SOIL	NAD	none	Jordan Eadington

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-19664
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1574379	WS8B01 0.25 SOIL	26/09/19	GJ 250ml, GJ 60ml, PT 1L		
Key: G-Glass P-Plastic J-Jar T-Tub DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.					

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.
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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



Certificate of Analysis

Certificate Number 19-19802-1

15-Nov-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-19802-1

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description 5 Soil samples.

Date Received 03-Oct-19

Date Started 03-Oct-19

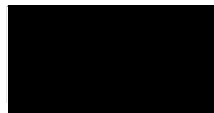
Date Completed 15-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes This test supersedes 19-19802, additional testing.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-19802-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1575300	1575301	1575302	1575303	1575304
Sample ID	TP8B05	BH8B01	BH8B02	BH8A08	BH8B03
Depth	0.20	1.00	0.25	0.25	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	24/09/19	24/09/19	23/09/19	19/09/19	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	10	6.3	11	11	5.7
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.3	0.2	0.4	0.4	0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	< 0.1	0.4	0.3	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	23	25	22	21	23
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	31	16	44	39	11
Lead	DETSC 2301#	0.3	mg/kg	35	8.4	40	38	7.3
Mercury	DETSC 2325#	0.05	mg/kg	0.06	< 0.05	0.07	0.06	< 0.05
Nickel	DETSC 2301#	1	mg/kg	16	21	13	15	17
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5	0.6
Zinc	DETSC 2301#	1	mg/kg	56	28	59	48	20
Inorganics								
pH	DETSC 2008#		pH	8.2	7.2	6.3	6.7	6.6
Organic matter	DETSC 2002#	0.1	%	3.9	0.6	4.5	3.4	1.7
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l					66
Petroleum Hydrocarbons								
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10
PAHs								
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.1	< 0.1	0.2	0.2	< 0.1

Summary of Chemical Analysis Soil Samples

Our Ref 19-19802-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1575300	1575301	1575302	1575303	1575304
Sample ID	TP8B05	BH8B01	BH8B02	BH8A08	BH8B03
Depth	0.20	1.00	0.25	0.25	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	24/09/19	24/09/19	23/09/19	19/09/19	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Pyrene	DETSC 3301	0.1	mg/kg	0.3	< 0.1	0.3	0.3	0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

Summary of Asbestos Analysis Soil Samples

Our Ref 19-19802-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1575300	TP8B05 0.20	SOIL	NAD	none	Keith Wilson
1575302	BH8B02 0.25	SOIL	NAD	none	Keith Wilson
1575304	BH8B03 0.50	SOIL	NAD	none	Keith Wilson

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-19802-1
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1575300	TP8B05 0.20 SOIL	24/09/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1575301	BH8B01 1.00 SOIL	24/09/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1575302	BH8B02 0.25 SOIL	23/09/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1575303	BH8A08 0.25 SOIL	19/09/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1575304	BH8B03 0.50 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), ICP WS Boron (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-20181

17-Oct-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-20181

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description One Soil sample.

Date Received 08-Oct-19

Date Started 08-Oct-19

Date Completed 17-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-20181

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1577792
Sample ID	WS8B06
Depth	0.50
Other ID	
Sample Type	SOIL
Sampling Date	27/09/19
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	8.2
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	26
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	14
Lead	DETSC 2301#	0.3	mg/kg	9.3
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Nickel	DETSC 2301#	1	mg/kg	18
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Zinc	DETSC 2301#	1	mg/kg	31
Inorganics				
pH	DETSC 2008#		pH	6.6
Organic matter	DETSC 2002#	0.1	%	1.6
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.3
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.4
Pyrene	DETSC 3301	0.1	mg/kg	0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 19-20181

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1577792
Sample ID	WS8B06
Depth	0.50
Other ID	
Sample Type	SOIL
Sampling Date	27/09/19
Sampling Time	n/s

Test	Method	LOD	Units	
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.2
Chrysene	DETSC 3301	0.1	mg/kg	0.2
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.2
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.2
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.3
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	2.2
OCPs				
alpha-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg	< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg	< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg	< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg	< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg	< 0.1
OPPs				
Dichlorvos	DETSC 3443*	0.1	mg/kg	< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg	< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg	< 0.1
Naled	DETSC 3443*	0.1	mg/kg	< 0.1
Phorate	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg	< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg	< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg	< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg	< 0.1
Ronnel	DETSC 3443*	0.1	mg/kg	< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg	< 0.1
Chlpyrifos	DETSC 3443*	0.1	mg/kg	< 0.1

Summary of Chemical Analysis Soil Samples

Our Ref 19-20181

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1577792
Sample ID	WS8B06
Depth	0.50
Other ID	
Sample Type	SOIL
Sampling Date	27/09/19
Sampling Time	n/s

Test	Method	LOD	Units	
Trichlorinate	DETSC 3443*	0.1	mg/kg	< 0.1
Merphos	DETSC 3443*	0.1	mg/kg	< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg	< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg	< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg	< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg	< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg	< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg	< 0.1
Triazines				
Atraton	DETSC 3445*	0.1	mg/kg	< 0.1
Prometon	DETSC 3445*	0.1	mg/kg	< 0.1
Simazine	DETSC 3445*	0.1	mg/kg	< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg	< 0.1
Propazine	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg	< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg	< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg	< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg	< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg	< 0.1

Information in Support of the Analytical Results

Our Ref 19-20181
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date		Containers Received	Holding time exceeded for tests	Inappropriate container for tests
		Sampled				
1577792	WS8B06 0.50 SOIL	27/09/19		GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-20182-1

12-Nov-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-20182-1

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description 2 Soil samples.

Date Received 08-Oct-19

Date Started 08-Oct-19

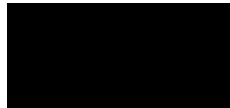
Date Completed 12-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes This test supersedes 19-20182, additional testing.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-20182-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1577793	1577794
Sample ID	WS8B03	WS8B05
Depth	0.50	0.50
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	01/10/19	30/09/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	9.4	5.7
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.2	0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.1	0.1
Chromium	DETSC 2301#	0.15	mg/kg	28	22
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	19	20
Lead	DETSC 2301#	0.3	mg/kg	17	41
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	21	16
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	50	43
Inorganics					
pH	DETSC 2008#		pH	7.2	7.2
Organic matter	DETSC 2002#	0.1	%	0.7	1.7
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	16	
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-20182-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1577793	1577794
Sample ID	WS8B03	WS8B05
Depth	0.50	0.50
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	01/10/19	30/09/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6
OCPs					
alpha-BHC	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endrin	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
OPPs					
Dichlorvos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Naled	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Phorate	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Ronnel	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-20182-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1577793	1577794
Sample ID	WS8B03	WS8B05
Depth	0.50	0.50
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	01/10/19	30/09/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Chlpyrifos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Trichlorinate	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Merphos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Triazines					
Atraton	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Prometon	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Simazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Propazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1

Summary of Asbestos Analysis Soil Samples

Our Ref 19-20182-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1577793	WS8B03 0.50	SOIL	NAD	none	Jordan Eadington
1577794	WS8B05 0.50	SOIL	NAD	none	Jordan Eadington

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-20182-1
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date		Containers Received	Holding time exceeded for tests	Inappropriate container for tests
		Sampled				
1577793	WS8B03 0.50 SOIL	01/10/19		GJ 250ml, GJ 60ml, PT 1L		
1577794	WS8B05 0.50 SOIL	30/09/19		GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



DETS

Certificate of Analysis

Certificate Number 19-20231

16-Oct-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-20231

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description 6 Soil samples.

Date Received 07-Oct-19

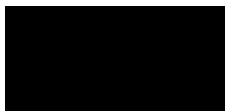
Date Started 09-Oct-19

Date Completed 16-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-20231

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1578082	1578083	1578084	1578085	1578086	1578087
Sample ID	TP8D31	TP8D03	TP8D34	TP8D17	TP8D12	TP8D09
Depth	0.20	1.00	0.20	0.50	0.50	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	02/10/19	03/10/19	02/10/19	03/10/19	03/10/19	03/10/19
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	9.6	6.9	11	6.5	5.6	9.2
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.4	< 0.2	0.2	< 0.2	0.2	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.1	0.4	< 0.1	< 0.1	0.3
Chromium	DETSC 2301#	0.15	mg/kg	20	20	22	27	17	13
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	35	18	40	18	13	35
Lead	DETSC 2301#	0.3	mg/kg	32	8.7	43	7.3	9.7	37
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.06	< 0.05	< 0.05	0.05
Nickel	DETSC 2301#	1	mg/kg	14	22	16	28	12	11
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	45	32	61	27	20	42
Inorganics									
pH	DETSC 2008#		pH	7.1	8.5	7.5	7.8	6.5	6.3
Organic matter	DETSC 2002#	0.1	%	2.5	0.7	3.8	0.2	1.3	3.0
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.2	0.2	0.1	0.1	< 0.1	0.2

Summary of Chemical Analysis

Soil Samples

Our Ref 19-20231

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1578082	1578083	1578084	1578085	1578086	1578087
Sample ID	TP8D31	TP8D03	TP8D34	TP8D17	TP8D12	TP8D09
Depth	0.20	1.00	0.20	0.50	0.50	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	02/10/19	03/10/19	02/10/19	03/10/19	03/10/19	03/10/19
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Pyrene	DETSC 3301	0.1	mg/kg	0.2	0.2	0.3	0.1	< 0.1	0.4
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
OCPs									
alpha-BHC	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Endrin	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
OPPs									
Dichlorvos	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Naled	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Phorate	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-20231

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1578082	1578083	1578084	1578085	1578086	1578087
Sample ID	TP8D31	TP8D03	TP8D34	TP8D17	TP8D12	TP8D09
Depth	0.20	1.00	0.20	0.50	0.50	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	02/10/19	03/10/19	02/10/19	03/10/19	03/10/19	03/10/19
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Ronnel	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Chlopyrifos	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Trichlorinate	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Merphos	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Triazines									
Atraton	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Prometon	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Simazine	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Propazine	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg		< 0.1	< 0.1			< 0.1

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-20231

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1578083	TP8D03 1.00	SOIL	NAD	none	Luke Donaghy
1578084	TP8D34 0.20	SOIL	NAD	none	Luke Donaghy
1578086	TP8D12 0.50	SOIL	NAD	none	Luke Donaghy
1578087	TP8D09 0.20	SOIL	NAD	none	Luke Donaghy

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-20231
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1578082	TP8D31 0.20 SOIL	02/10/19	GJ 250ml, GJ 60ml, PT 1L		
1578083	TP8D03 1.00 SOIL	03/10/19	GJ 250ml, GJ 60ml, PT 1L		
1578084	TP8D34 0.20 SOIL	02/10/19	GJ 250ml, GJ 60ml, PT 1L		
1578085	TP8D17 0.50 SOIL	03/10/19	GJ 250ml, GJ 60ml, PT 1L		
1578086	TP8D12 0.50 SOIL	03/10/19	GJ 250ml, GJ 60ml, PT 1L		
1578087	TP8D09 0.20 SOIL	03/10/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-20266

21-Oct-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-20266

Client Reference PN194027

Order No (not supplied)

Contract Title Omega Development GI

Description 2 Soil samples.

Date Received 09-Oct-19

Date Started 09-Oct-19

Date Completed 21-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-20266

Client Ref PN194027

Contract Title Omega Development GI

Lab No	1578228	1578229
Sample ID	TP8D05	TP8D05
Depth	0.20	0.50
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	07/10/19	07/10/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	9.1	9.4
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	16	22
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	37	11
Lead	DETSC 2301#	0.3	mg/kg	43	9.4
Mercury	DETSC 2325#	0.05	mg/kg	0.07	< 0.05
Nickel	DETSC 2301#	1	mg/kg	12	12
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	57	25
Inorganics					
pH	DETSC 2008#		pH	6.2	6.9
Organic matter	DETSC 2002#	0.1	%	0.9	1.1
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.2	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.2	< 0.1

Summary of Chemical Analysis Soil Samples

Our Ref 19-20266

Client Ref PN194027

Contract Title Omega Development GI

Lab No	1578228	1578229
Sample ID	TP8D05	TP8D05
Depth	0.20	0.50
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	07/10/19	07/10/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Chrysene	DETSC 3301	0.1	mg/kg	0.3	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6

Summary of Asbestos Analysis Soil Samples

Our Ref 19-20266

Client Ref PN194027

Contract Title Omega Development GI

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1578228	TP8D05 0.20	SOIL	NAD	none	A Christodoulou
1578229	TP8D05 0.50	SOIL	NAD	none	A Christodoulou

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-20266
 Client Ref PN194027
 Contract Omega Development GI

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1578228	TP8D05 0.20 SOIL	07/10/19	GJ 250ml, GJ 60ml, PT 1L		
1578229	TP8D05 0.50 SOIL	07/10/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-20684

25-Oct-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-20684

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description 4 Soil samples.

Date Received 14-Oct-19

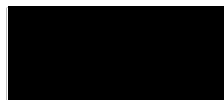
Date Started 15-Oct-19

Date Completed 25-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-20684

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1581806	1581807	1581808	1581809
Sample ID	TP8D18	BH8A01	WS8C05	WS8C06
Depth	0.20	1.00	0.20	0.50
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	13			
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.3			
Cadmium	DETSC 2301#	0.1	mg/kg	0.4			
Chromium	DETSC 2301#	0.15	mg/kg	28			
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	46			
Lead	DETSC 2301#	0.3	mg/kg	50			
Mercury	DETSC 2325#	0.05	mg/kg	0.11			
Nickel	DETSC 2301#	1	mg/kg	20			
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5			
Zinc	DETSC 2301#	1	mg/kg	61			
Inorganics							
pH	DETSC 2008#		pH	6.7	7.5	6.6	7.3
Organic matter	DETSC 2002#	0.1	%	3.6	0.6	3.6	0.5
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10

Summary of Chemical Analysis

Soil Samples

Our Ref 19-20684

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1581806	1581807	1581808	1581809
Sample ID	TP8D18	BH8A01	WS8C05	WS8C06
Depth	0.20	1.00	0.20	0.50
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
PAHs							
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6
OCPs							
alpha-BHC	DETSC 3441*	0.1	mg/kg			< 0.1	
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg			< 0.1	
beta-BHC	DETSC 3441*	0.1	mg/kg			< 0.1	
delta-BHC	DETSC 3441*	0.1	mg/kg			< 0.1	
Heptachlor	DETSC 3441*	0.1	mg/kg			< 0.1	
Aldrin	DETSC 3441*	0.1	mg/kg			< 0.1	
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg			< 0.1	
gamma-Chlordane	DETSC 3441*	0.1	mg/kg			< 0.1	
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg			< 0.1	
4,4-DDE	DETSC 3441*	0.1	mg/kg			< 0.1	
Dieldrin	DETSC 3441*	0.1	mg/kg			< 0.1	
Endrin	DETSC 3441*	0.1	mg/kg			< 0.1	
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg			< 0.1	
Endrin aldehyde	DETSC 3441*	0.1	mg/kg			< 0.1	
4,4-DDT	DETSC 3441*	0.1	mg/kg			< 0.1	
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg			< 0.1	
Methoxychlor	DETSC 3441*	0.1	mg/kg			< 0.1	
Endrin ketone	DETSC 3441*	0.1	mg/kg			< 0.1	

Summary of Chemical Analysis Soil Samples

Our Ref 19-20684

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1581806	1581807	1581808	1581809
Sample ID	TP8D18	BH8A01	WS8C05	WS8C06
Depth	0.20	1.00	0.20	0.50
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
OPPs							
Dichlorvos	DETSC 3443*	0.1	mg/kg			< 0.1	
Mevinphos	DETSC 3443*	0.1	mg/kg			< 0.1	
Demeton-O	DETSC 3443*	0.1	mg/kg			< 0.1	
Ethoprop	DETSC 3443*	0.1	mg/kg			< 0.1	
Naled	DETSC 3443*	0.1	mg/kg			< 0.1	
Phorate	DETSC 3443*	0.1	mg/kg			< 0.1	
Demeton-S	DETSC 3443*	0.1	mg/kg			< 0.1	
Diazinon	DETSC 3443*	0.1	mg/kg			< 0.1	
Disulfoton	DETSC 3443*	0.1	mg/kg			< 0.1	
Methylparathion	DETSC 3443*	0.1	mg/kg			< 0.1	
Ronnel	DETSC 3443*	0.1	mg/kg			< 0.1	
Fenthion	DETSC 3443*	0.1	mg/kg			< 0.1	
Chlpyrifos	DETSC 3443*	0.1	mg/kg			< 0.1	
Trichlorinate	DETSC 3443*	0.1	mg/kg			< 0.1	
Merphos	DETSC 3443*	0.1	mg/kg			< 0.1	
Stirofos	DETSC 3443*	0.1	mg/kg			< 0.1	
Tokuthion	DETSC 3443*	0.1	mg/kg			< 0.1	
Fensulfothion	DETSC 3443*	0.1	mg/kg			< 0.1	
Bolstar	DETSC 3443*	0.1	mg/kg			< 0.1	
Azinphos methyl	DETSC 3443*	0.1	mg/kg			< 0.1	
Coumaphos	DETSC 3443*	0.1	mg/kg			< 0.1	
Triazines							
Atraton	DETSC 3445*	0.1	mg/kg			< 0.1	
Prometon	DETSC 3445*	0.1	mg/kg			< 0.1	
Simazine	DETSC 3445*	0.1	mg/kg			< 0.1	
Atrazine	DETSC 3445*	0.1	mg/kg			< 0.1	
Propazine	DETSC 3445*	0.1	mg/kg			< 0.1	
Terbuthylazine	DETSC 3445*	0.1	mg/kg			< 0.1	
Secbumeton	DETSC 3445*	0.1	mg/kg			< 0.1	
Symetryn	DETSC 3445*	0.1	mg/kg			< 0.1	
Ametryn	DETSC 3445*	0.1	mg/kg			< 0.1	
Prometryne	DETSC 3445*	0.1	mg/kg			< 0.1	
Terbutryn	DETSC 3445*	0.1	mg/kg			< 0.1	

Summary of Asbestos Analysis Soil Samples

Our Ref 19-20684

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1581806	TP8D18 0.20	SOIL	NAD	none	Colin Patrick
1581808	WS8C05 0.20	SOIL	NAD	none	Colin Patrick

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-20684
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1581806	TP8D18 0.20 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), ICP WS Boron (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	
1581807	BH8A01 1.00 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), BTEX (14 days), Chromium, Hexavalent (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	
1581808	WS8C05 0.20 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), BTEX (14 days), Chromium, Hexavalent (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), OC Pesticides (14 days), Organic Matter (Manual) (28 days), OP Pesticides (14 days), PAH FID (14 days), pH + Conductivity (7 days), Triazines (14 days)	
1581809	WS8C06 0.50 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), BTEX (14 days), Chromium, Hexavalent (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-20920

28-Oct-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-20920

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description One Soil sample.

Date Received 17-Oct-19

Date Started 17-Oct-19

Date Completed 28-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-20920

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1583285
Sample ID	TP8C06
Depth	0.20
Other ID	
Sample Type	SOIL
Sampling Date	10/10/19
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	11
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.5
Cadmium	DETSC 2301#	0.1	mg/kg	0.3
Chromium	DETSC 2301#	0.15	mg/kg	21
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	31
Lead	DETSC 2301#	0.3	mg/kg	35
Mercury	DETSC 2325#	0.05	mg/kg	0.07
Nickel	DETSC 2301#	1	mg/kg	16
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Zinc	DETSC 2301#	1	mg/kg	87
Inorganics				
pH	DETSC 2008#		pH	7.8
Organic matter	DETSC 2002#	0.1	%	2.1
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-20920

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1583285
Sample ID	TP8C06
Depth	0.20
Other ID	
Sample Type	SOIL
Sampling Date	10/10/19
Sampling Time	n/s

Test	Method	LOD	Units	
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6
OCPs				
alpha-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg	< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg	< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg	< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg	< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg	< 0.1
OPPs				
Dichlorvos	DETSC 3443*	0.1	mg/kg	< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg	< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg	< 0.1
Naled	DETSC 3443*	0.1	mg/kg	< 0.1
Phorate	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg	< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg	< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg	< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg	< 0.1
Ronnel	DETSC 3443*	0.1	mg/kg	< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg	< 0.1
Chlopyrifos	DETSC 3443*	0.1	mg/kg	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-20920

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1583285
Sample ID	TP8C06
Depth	0.20
Other ID	
Sample Type	SOIL
Sampling Date	10/10/19
Sampling Time	n/s

Test	Method	LOD	Units	
Trichlorinate	DETSC 3443*	0.1	mg/kg	< 0.1
Merphos	DETSC 3443*	0.1	mg/kg	< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg	< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg	< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg	< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg	< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg	< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg	< 0.1
Triazines				
Atraton	DETSC 3445*	0.1	mg/kg	< 0.1
Prometon	DETSC 3445*	0.1	mg/kg	< 0.1
Simazine	DETSC 3445*	0.1	mg/kg	< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg	< 0.1
Propazine	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg	< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg	< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg	< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg	< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg	< 0.1

Summary of Asbestos Analysis Soil Samples

Our Ref 19-20920

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1583285	TP8C06 0.20	SOIL	NAD	none	Colin Patrick

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-20920
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1583285	TP8C06 0.20 SOIL	10/10/19	GJ 250ml, GJ 60ml, PT 1L		
Key: G-Glass P-Plastic J-Jar T-Tub DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.					

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.
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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



Certificate of Analysis

Certificate Number 19-21038

29-Oct-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-21038

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description 2 Soil samples.

Date Received 18-Oct-19

Date Started 18-Oct-19

Date Completed 29-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-21038

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1584249	1584250
Sample ID	BH8A05	BH8A06
Depth	0.25	0.50
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	01/10/19	02/10/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	11	8.4
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.5	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	2.3	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	28	33
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	42	22
Lead	DETSC 2301#	0.3	mg/kg	42	8.3
Mercury	DETSC 2325#	0.05	mg/kg	0.07	< 0.05
Nickel	DETSC 2301#	1	mg/kg	19	30
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	160	41
Inorganics					
pH	DETSC 2008#		pH	6.6	6.8
Organic matter	DETSC 2002#	0.1	%	3.1	0.6
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.3	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.4	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.4	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-21038

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1584249	1584250
Sample ID	BH8A05	BH8A06
Depth	0.25	0.50
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	01/10/19	02/10/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.7	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	0.3	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.2	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.3	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.2	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	0.2	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	3.6	< 1.6
OCPs					
alpha-BHC	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endrin	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1
OPPs					
Dichlorvos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Naled	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Phorate	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Ronnel	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Chlpyrifos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1

Summary of Chemical Analysis Soil Samples

Our Ref 19-21038

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1584249	1584250
Sample ID	BH8A05	BH8A06
Depth	0.25	0.50
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	01/10/19	02/10/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Trichlorinate	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Merphos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1
Triazines					
Atraton	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Prometon	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Simazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Propazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1

Summary of Asbestos Analysis Soil Samples

Our Ref 19-21038

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1584249	BH8A05 0.25	SOIL	NAD	none	Colin Patrick

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-21038
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1584249	BH8A05 0.25 SOIL	01/10/19	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), OC Pesticides (14 days), OP Pesticides (14 days), PAH FID (14 days), pH + Conductivity (7 days), Triazines (14 days)	
1584250	BH8A06 0.50 SOIL	02/10/19	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), OC Pesticides (14 days), OP Pesticides (14 days), PAH FID (14 days), pH + Conductivity (7 days), Triazines (14 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-21277

29-Oct-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-21277

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description 2 Soil samples.

Date Received 18-Oct-19

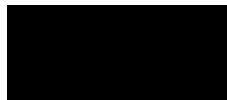
Date Started 22-Oct-19

Date Completed 29-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-21277

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1585802	1585803
Sample ID	TP8A08	TP8D21
Depth	0.50	0.20
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	n/s	n/s
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	< 0.2	4.5
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	0.5
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	0.1
Chromium	DETSC 2301#	0.15	mg/kg	< 0.15	8.1
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	2.0	7.7
Lead	DETSC 2301#	0.3	mg/kg	< 0.3	31
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.10
Nickel	DETSC 2301#	1	mg/kg	< 1.0	7.0
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	2.0	35
Inorganics					
pH	DETSC 2008#		pH	7.7	6.1
Organic matter	DETSC 2002#	0.1	%	0.7	5.5
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.2

Summary of Chemical Analysis Soil Samples

Our Ref 19-21277

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1585802	1585803
Sample ID	TP8A08	TP8D21
Depth	0.50	0.20
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	n/s	n/s
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6

Summary of Asbestos Analysis Soil Samples

Our Ref 19-21277

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1585802	TP8A08 0.50	SOIL	NAD	none	Colin Patrick
1585803	TP8D21 0.20	SOIL	NAD	none	Colin Patrick

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-21277
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1585802	TP8A08 0.50 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), ICP WS Boron (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	
1585803	TP8D21 0.20 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), ICP WS Boron (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



DETS

Certificate of Analysis

Certificate Number 19-21473

04-Nov-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-21473

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description 6 Soil samples.

Date Received 23-Oct-19

Date Started 24-Oct-19

Date Completed 04-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager





Summary of Chemical Analysis

Soil Samples

Our Ref 19-21473

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1587073	1587074	1587075	1587076	1587077	1587078
Sample ID	WS8C01	WS8C02	WS8C04A	WS8D01	WS8D03	WS8D07
Depth	0.20	1.00	1.00	0.50	0.50	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	10/10/19	10/10/19	n/s	n/s	n/s	11/10/19
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	2.4	5.7	7.5	4.4	7.3	12
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.2	0.4	0.3	0.3	0.3	0.5
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	< 0.1	0.5
Chromium	DETSC 2301#	0.15	mg/kg	21	48	28	28	26	25
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	10	26	17	12	14	44
Lead	DETSC 2301#	0.3	mg/kg	14	16	19	7.1	11	52
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08
Nickel	DETSC 2301#	1	mg/kg	17	44	19	18	15	19
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	39	36	44	24	28	78
Inorganics									
pH	DETSC 2008#		pH	7.1	7.0	7.5	7.2	6.6	6.2
Organic matter	DETSC 2002#	0.1	%	1.1	1.1	1.8	0.5	0.7	4.4
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-21473

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1587073	1587074	1587075	1587076	1587077	1587078
Sample ID	WS8C01	WS8C02	WS8C04A	WS8D01	WS8D03	WS8D07
Depth	0.20	1.00	1.00	0.50	0.50	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	10/10/19	10/10/19	n/s	n/s	n/s	11/10/19
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
OCPs									
alpha-BHC	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Endrin	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg	< 0.1					< 0.1
OPPs									
Dichlorvos	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Naled	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Phorate	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-21473

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1587073	1587074	1587075	1587076	1587077	1587078
Sample ID	WS8C01	WS8C02	WS8C04A	WS8D01	WS8D03	WS8D07
Depth	0.20	1.00	1.00	0.50	0.50	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	10/10/19	10/10/19	n/s	n/s	n/s	11/10/19
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Ronnel	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Chlopyrifos	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Trichlorinate	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Merphos	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg	< 0.1					< 0.1
Triazines									
Atraton	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Prometon	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Simazine	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Propazine	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg	< 0.1					< 0.1

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-21473

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1587073	WS8C01 0.20	SOIL	NAD	none	Rebecca Burgess
1587078	WS8D07 0.20	SOIL	NAD	none	Rebecca Burgess

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-21473
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1587073	WS8C01 0.20 SOIL	10/10/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1587074	WS8C02 1.00 SOIL	10/10/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1587075	WS8C04A 1.00 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), ICP WS Boron (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	
1587076	WS8D01 0.50 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), ICP WS Boron (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	
1587077	WS8D03 0.50 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), ICP WS Boron (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	
1587078	WS8D07 0.20 SOIL	11/10/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



DETS

Certificate of Analysis

Certificate Number 19-21477

01-Nov-19

Client Geotechnics LTD
Unit 1
Bypass Park Est
Sherburn-in-Elmet
LS25 6EP

Our Reference 19-21477

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description One Soil sample.

Date Received 23-Oct-19

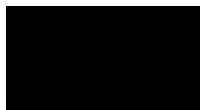
Date Started 24-Oct-19

Date Completed 01-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-21477

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1587095
Sample ID	TP8D28
Depth	1.00
Other ID	
Sample Type	SOIL
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	6.2
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.1
Chromium	DETSC 2301#	0.15	mg/kg	24
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	22
Lead	DETSC 2301#	0.3	mg/kg	12
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Nickel	DETSC 2301#	1	mg/kg	26
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Zinc	DETSC 2301#	1	mg/kg	44
Inorganics				
pH	DETSC 2008#		pH	7.8
Organic matter	DETSC 2002#	0.1	%	0.8
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-21477

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1587095
Sample ID	TP8D28
Depth	1.00
Other ID	
Sample Type	SOIL
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6

Information in Support of the Analytical Results

Our Ref 19-21477
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1587095	TP8D28 1.00 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), ICP WS Boron (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



DETS

Certificate of Analysis

Certificate Number 19-21478

04-Nov-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-21478

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description One Soil sample.

Date Received 24-Oct-19

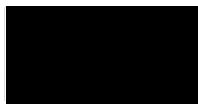
Date Started 24-Oct-19

Date Completed 04-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-21478

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1587096
Sample ID	BH8A04
Depth	0.25
Other ID	
Sample Type	SOIL
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	13
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.5
Cadmium	DETSC 2301#	0.1	mg/kg	0.4
Chromium	DETSC 2301#	0.15	mg/kg	19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	51
Lead	DETSC 2301#	0.3	mg/kg	47
Mercury	DETSC 2325#	0.05	mg/kg	0.07
Nickel	DETSC 2301#	1	mg/kg	15
Selenium	DETSC 2301#	0.5	mg/kg	0.7
Zinc	DETSC 2301#	1	mg/kg	58
Inorganics				
pH	DETSC 2008#		pH	6.8
Organic matter	DETSC 2002#	0.1	%	3.2
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-21478

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1587096
Sample ID	BH8A04
Depth	0.25
Other ID	
Sample Type	SOIL
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6
OCPs				
alpha-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg	< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg	< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg	< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg	< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg	< 0.1
OPPs				
Dichlorvos	DETSC 3443*	0.1	mg/kg	< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg	< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg	< 0.1
Naled	DETSC 3443*	0.1	mg/kg	< 0.1
Phorate	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg	< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg	< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg	< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-21478

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1587096
Sample ID	BH8A04
Depth	0.25
Other ID	
Sample Type	SOIL
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Ronnel	DETSC 3443*	0.1	mg/kg	< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg	< 0.1
Chlopyrifos	DETSC 3443*	0.1	mg/kg	< 0.1
Trichlorinate	DETSC 3443*	0.1	mg/kg	< 0.1
Merphos	DETSC 3443*	0.1	mg/kg	< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg	< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg	< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg	< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg	< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg	< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg	< 0.1
Triazines				
Atraton	DETSC 3445*	0.1	mg/kg	< 0.1
Prometon	DETSC 3445*	0.1	mg/kg	< 0.1
Simazine	DETSC 3445*	0.1	mg/kg	< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg	< 0.1
Propazine	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg	< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg	< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg	< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg	< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg	< 0.1

Summary of Asbestos Analysis Soil Samples

Our Ref 19-21478

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1587096	BH8A04 0.25	SOIL	NAD	none	D Wilkinson

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-21478
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1587096	BH8A04 0.25 SOIL		GJ 250ml, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), ICP WS Boron (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), OC Pesticides (14 days), Organic Matter (Manual) (28 days), OP Pesticides (14 days), PAH FID (14 days), pH + Conductivity (7 days), Triazines (14 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-21647

01-Nov-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-21647

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description One Soil sample.

Date Received 24-Oct-19

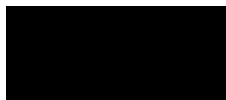
Date Started 25-Oct-19

Date Completed 01-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-21647

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1588224
Sample ID	WS8A01
Depth	0.20
Other ID	
Sample Type	SOIL
Sampling Date	07/10/19
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	11
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.3
Chromium	DETSC 2301#	0.15	mg/kg	19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	43
Lead	DETSC 2301#	0.3	mg/kg	61
Mercury	DETSC 2325#	0.05	mg/kg	0.06
Nickel	DETSC 2301#	1	mg/kg	13
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Zinc	DETSC 2301#	1	mg/kg	60
Inorganics				
pH	DETSC 2008#		pH	5.9
Organic matter	DETSC 2002#	0.1	%	4.7
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.3
Anthracene	DETSC 3301	0.1	mg/kg	0.2
Fluoranthene	DETSC 3301	0.1	mg/kg	0.3
Pyrene	DETSC 3301	0.1	mg/kg	0.2

Summary of Chemical Analysis

Soil Samples

Our Ref 19-21647

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1588224
Sample ID	WS8A01
Depth	0.20
Other ID	
Sample Type	SOIL
Sampling Date	07/10/19
Sampling Time	n/s

Test	Method	LOD	Units	
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.4
Chrysene	DETSC 3301	0.1	mg/kg	0.3
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.2
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.3
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	0.3
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.3
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	3.1
OCPs				
alpha-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg	< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg	< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg	< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg	< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg	< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg	< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg	< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg	< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg	< 0.1
OPPs				
Dichlorvos	DETSC 3443*	0.1	mg/kg	< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg	< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg	< 0.1
Naled	DETSC 3443*	0.1	mg/kg	< 0.1
Phorate	DETSC 3443*	0.1	mg/kg	< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg	< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg	< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg	< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg	< 0.1
Ronnel	DETSC 3443*	0.1	mg/kg	< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg	< 0.1
Chlopyrifos	DETSC 3443*	0.1	mg/kg	< 0.1

Summary of Chemical Analysis Soil Samples

Our Ref 19-21647

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1588224
Sample ID	WS8A01
Depth	0.20
Other ID	
Sample Type	SOIL
Sampling Date	07/10/19
Sampling Time	n/s

Test	Method	LOD	Units	
Trichlorinate	DETSC 3443*	0.1	mg/kg	< 0.1
Merphos	DETSC 3443*	0.1	mg/kg	< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg	< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg	< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg	< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg	< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg	< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg	< 0.1
Triazines				
Atraton	DETSC 3445*	0.1	mg/kg	< 0.1
Prometon	DETSC 3445*	0.1	mg/kg	< 0.1
Simazine	DETSC 3445*	0.1	mg/kg	< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg	< 0.1
Propazine	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg	< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg	< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg	< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg	< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg	< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg	< 0.1

Summary of Asbestos Analysis Soil Samples

Our Ref 19-21647

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1588224	WS8A01 0.20	SOIL	NAD	none	D Wilkinson

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-21647
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1588224	WS8A01 0.20 SOIL	07/10/19	GJ 250ml, GJ 60ml	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), OC Pesticides (14 days), OP Pesticides (14 days), PAH FID (14 days), pH + Conductivity (7 days), Triazines (14 days)	

Key: G-Glass J-Jar

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-21931-1

12-Nov-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-21931-1

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description One Soil sample.

Date Received 30-Oct-19

Date Started 30-Oct-19

Date Completed 12-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes **This report supersedes 19-21931, extra testing.**

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-21931-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1590122
Sample ID	BH8A03
Depth	0.50
Other ID	
Sample Type	SOIL
Sampling Date	14/10/19
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	5.3
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	29
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	19
Lead	DETSC 2301#	0.3	mg/kg	10
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Nickel	DETSC 2301#	1	mg/kg	26
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Zinc	DETSC 2301#	1	mg/kg	31
Inorganics				
pH	DETSC 2008#		pH	7.4
Organic matter	DETSC 2002#	0.1	%	0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	18
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1

Summary of Chemical Analysis Soil Samples

Our Ref 19-21931-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1590122
Sample ID	BH8A03
Depth	0.50
Other ID	
Sample Type	SOIL
Sampling Date	14/10/19
Sampling Time	n/s

Test	Method	LOD	Units	
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6

Summary of Asbestos Analysis Soil Samples

Our Ref 19-21931-1

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1590122	BH8A03 0.50	SOIL	NAD	none	Luke Donaghy
Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.					

Information in Support of the Analytical Results

Our Ref 19-21931-1
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1590122	BH8A03 0.50 SOIL	14/10/19	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-22386

12-Nov-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-22386

Client Reference PN194027

Order No ON22920

Contract Title Omega Development, Warrington

Description 4 Soil samples.

Date Received 05-Nov-19

Date Started 05-Nov-19

Date Completed 12-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-22386

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1592781	1592782	1592783	1592784
Sample ID	BH8C02	BH8C01	TP8E01	TP8E03
Depth	0.25	0.25	0.20	0.50
Other ID	2	2		
Sample Type	ES	ES	ES	ES
Sampling Date	24/01/19	23/10/19	23/10/19	23/10/19
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	4.2	9.5	16	13
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	0.2
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1	0.6	0.4
Chromium	DETSC 2301#	0.15	mg/kg	3.1	33	25	19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	12	21	55	45
Lead	DETSC 2301#	0.3	mg/kg	4.5	12	54	43
Mercury	DETSC 2325#	0.05	mg/kg	0.09	< 0.05	0.09	< 0.05
Nickel	DETSC 2301#	1	mg/kg	2.7	25	20	13
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	13	35	85	52
Inorganics							
pH	DETSC 2008#		pH	8.5	6.8	7.0	6.7
Organic matter	DETSC 2002#	0.1	%	0.5	0.9	3.6	2.6
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	1.0	< 0.9	< 0.9	69
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	1.1	< 0.5	< 0.5	11
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	2.7	< 0.6	< 0.6	35
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	5.7	< 1.4	< 1.4	120
Aromatic C5-C35	DETSC 3072*	10	mg/kg	10	< 10	< 10	240
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	10	< 10	< 10	240
PAHs							
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	< 0.1	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-22386

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1592781	1592782	1592783	1592784
Sample ID	BH8C02	BH8C01	TP8E01	TP8E03
Depth	0.25	0.25	0.20	0.50
Other ID	2	2		
Sample Type	ES	ES	ES	ES
Sampling Date	24/01/19	23/10/19	23/10/19	23/10/19
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	2.2	< 1.6	< 1.6
OCPs							
alpha-BHC	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
gamma-BHC (Lindane)	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
beta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
delta-BHC	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Heptachlor	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aldrin	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Heptachlor epoxide	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
gamma-Chlordane	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Endosulphan I & Alpha-chlorodane	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4-DDE	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dieldrin	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Endrin	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Endosulphan II & 4,4-DDD	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Endrin aldehyde	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4-DDT	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Endosulphan sulphate	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Methoxychlor	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Endrin ketone	DETSC 3441*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
OPPs							
Dichlorvos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Mevinphos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Demeton-O	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethoprop	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Naled	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phorate	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Demeton-S	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	0.3	< 0.1
Diazinon	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Disulfoton	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Methylparathion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ronnel	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fenthion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Chlpyrifos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1

Summary of Chemical Analysis Soil Samples

Our Ref 19-22386

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1592781	1592782	1592783	1592784
Sample ID	BH8C02	BH8C01	TP8E01	TP8E03
Depth	0.25	0.25	0.20	0.50
Other ID	2	2		
Sample Type	ES	ES	ES	ES
Sampling Date	24/01/19	23/10/19	23/10/19	23/10/19
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Trichlorinate	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Merphos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Stirofos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Tokuthion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fensulfothion	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bolstar	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Azinphos methyl	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Coumaphos	DETSC 3443*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Triazines							
Atraton	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Prometon	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Simazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Atrazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Propazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Terbutylazine	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Secbumeton	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Symetryn	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ametryn	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Prometryne	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Terbutryn	DETSC 3445*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1

Summary of Asbestos Analysis Soil Samples

Our Ref 19-22386

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1592781	BH8C02 2 0.25	SOIL	NAD	none	Lee Kerridge
1592782	BH8C01 2 0.25	SOIL	NAD	none	Lee Kerridge
1592783	TP8E01 0.20	SOIL	NAD	none	Lee Kerridge
1592784	TP8E03 0.50	SOIL	NAD	none	Lee Kerridge

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-22386
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1592781	BH8C02 0.25 SOIL	24/01/19	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), ICP WS Boron (182 days), Naphthalene (14 days), OC Pesticides (14 days), Organic Matter (Manual) (28 days), OP Pesticides (14 days), PAH FID (14 days), pH + Conductivity (7 days), Triazines (14 days)	
1592782	BH8C01 0.25 SOIL	23/10/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1592783	TP8E01 0.20 SOIL	23/10/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1592784	TP8E03 0.50 SOIL	23/10/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples 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 above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc 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.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm 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 28°C +/-2°C.

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



Certificate of Analysis

Certificate Number 19-22646

18-Nov-19

Client Geotechnics LTD
The Geotechnical Centre
Unit 1B Borders Ind. Park
River Lane
Saltney
Chester
CH4 8RJ

Our Reference 19-22646

Client Reference PN194027

Order No (not supplied)

Contract Title Omega Development, Warrington

Description 9 Soil samples.

Date Received 08-Nov-19

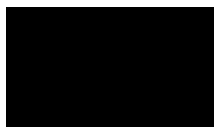
Date Started 08-Nov-19

Date Completed 18-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis Soil Samples

Our Ref 19-22646

Client Ref PN194027

Contract Title Omega Development, Warrington

Lab No	1594298	1594299	1594300	1594302	1594303	1594304	1594305	1594574	1597199
Sample ID	BH8A02	WS8A03	BH8B02	WS8C03	BH8C03	WS8D08	WS8D04	BH8D02	WS8A01
Depth	1.00	1.00	0.50	1.00	1.00	1.00	0.50	0.50	0.50
Other ID								3	
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	ES	SOIL
Sampling Date	09/10/19	07/10/19	23/09/19	10/10/19	22/10/19	17/10/19	11/10/19	25/10/19	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units									
Inorganics												
Total Organic Carbon	DETSC 2084#	0.5	%	0.7	< 0.5	< 0.5	1.6	< 0.5	0.6	0.7	< 0.5	2.5

Information in Support of the Analytical Results

Our Ref 19-22646
 Client Ref PN194027
 Contract Omega Development, Warrington

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1594298	BH8A02 1.00 SOIL	09/10/19	GJ 250ml, GJ 60ml, PT 1L	Organic Matter (Auto) (28 days)	
1594299	WS8A03 1.00 SOIL	07/10/19	PT 1L	Organic Matter (Auto) (28 days)	
1594300	BH8B02 0.50 SOIL	23/09/19	GJ 250ml, GJ 60ml, PT 1L	Organic Matter (Auto) (28 days)	
1594301	BH8D02 1.00 SOIL	25/10/19	GJ 250ml, GJ 60ml, PT 1L		
1594302	WS8C03 1.00 SOIL	10/10/19	GJ 250ml, GJ 60ml, PT 1L	Organic Matter (Auto) (28 days)	
1594303	BH8C03 1.00 SOIL	22/10/19	GJ 250ml, GJ 60ml, PT 1L		
1594304	WS8D08 1.00 SOIL	17/10/19	GJ 250ml, GJ 60ml, PT 1L		
1594305	WS8D04 0.50 SOIL	11/10/19	GJ 250ml, GJ 60ml, PT 1L		
1594574	BH8D02 0.50 SOIL	25/10/19	GJ 250ml, GJ 60ml, PT 1L		
1597199	WS8A01 0.50 SOIL		No containers logged	Sample date not supplied, Organic Matter (Auto) (28 days)	Cannot evaluate

Key: G-Glass P-Plastic J-Jar T-Tub

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The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

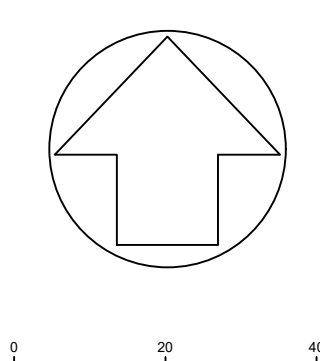
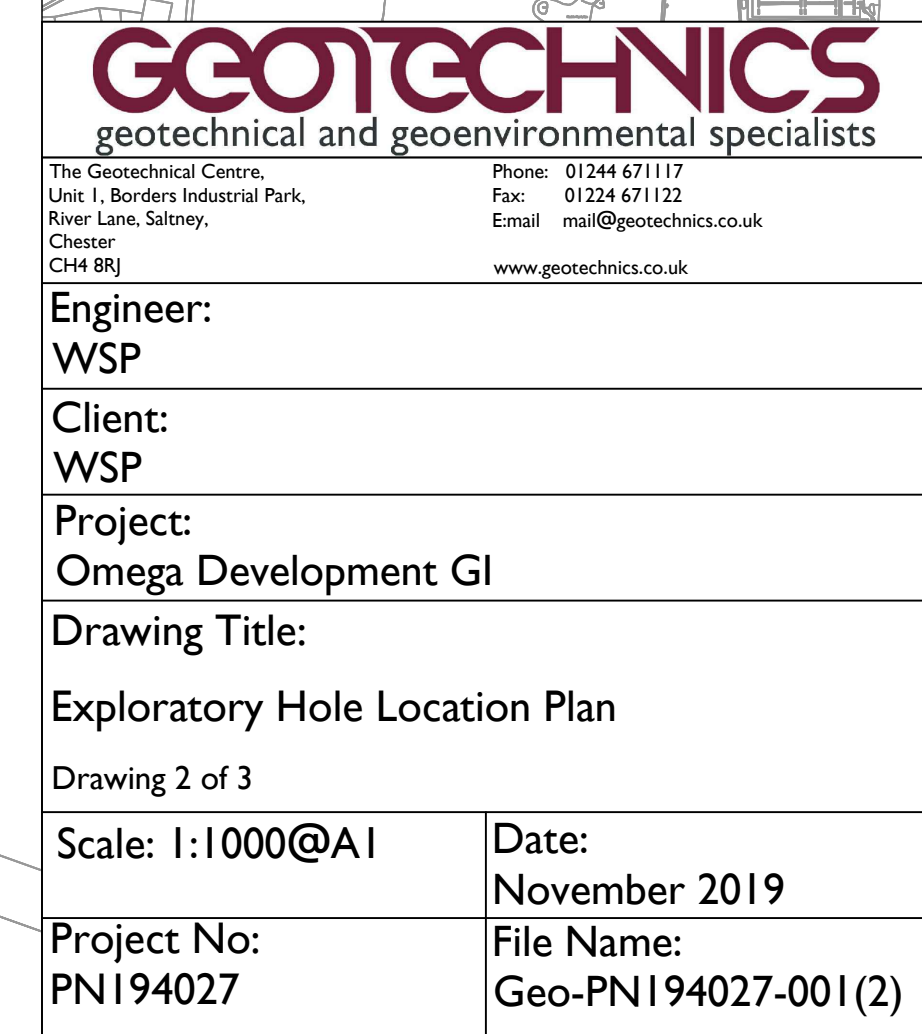
Disposal

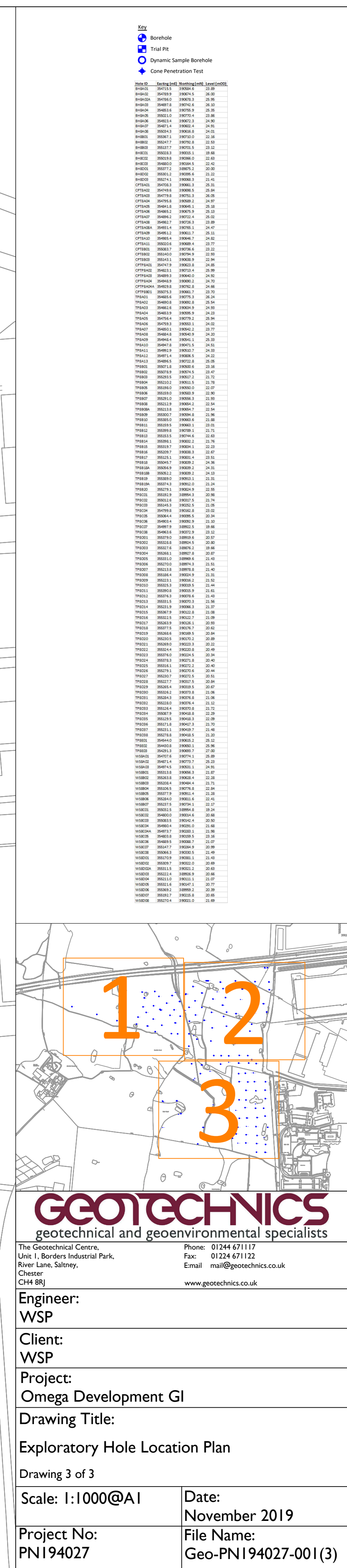
From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

APPENDIX 12

Exploratory Hole Location Plan

[illegible]



APPENDIX I3

Investigation Techniques and General Notes

INTRODUCTION

The following brief review of Ground Investigation techniques, generally used as part of most Site Investigations in the UK, summarises their methodology, advantages and limitations. Detailed descriptions of the techniques are available and can be provided on request. This review should be read in conjunction with the accompanying General Notes.

TRIAL PITS

The trial pit is amongst the simplest yet most effective means of identifying shallow ground conditions on a site. Its advantages include simplicity, speed, potential accuracy and cost-effectiveness. The trial pit is most commonly formed using a back-acting excavator which can typically determine ground conditions to some 4 metres below ground level. Hand excavation is often used to locate, expose and detail existing foundations, features or services. In general, it is difficult to extend pits significantly below the water table in predominantly granular soils, where flows can cause instability. Unless otherwise stated, the trial pits will not have been provided with temporary side support during their construction. Under such circumstances, entrance into the pit is not permitted and hence observations will have been made from the ground surface and samples taken from the excavator bucket.

Where access for personnel is required to allow close observation of the exposed strata, the taking of samples and the carrying out of in situ tests, the sides of the trial pits (Observation Pits in BS 5930:2015) will be made safe using temporary supports or the sides battered back to a stable angle. Some limited access to such Trial Pits (Observation Pits) at depths less than 1m may be allowed in stable conditions or where the sides are benched or battered back to a safe angle.

Trends in strata type, level and thickness can be determined, shear surfaces identified and the behaviour of plant, excavation sides and excavated materials can be related to the construction process. They are particularly valuable in land slip investigations. Some types of in situ test can be undertaken in such pits and large disturbed or block samples obtained.

CABLE PERCUSSION BORING

The light Cable Percussion technique of soft ground boring, typically at a diameter of 150mm, is a well-established simple and flexible method of boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A tubular cutter (for cohesive soils) or shell with a flap valve (for granular soils) is repeatedly lifted and dropped using a winch and rope operating from an "A" frame. Soil which enters these tools is regularly removed and either sampled for subsequent examination or test, or laid to one side for later removal off site and licensed disposal or, if permitted by the Client, use as backfill. Steel casing will have been used to prevent collapse of the borehole sides where necessary. A degree of disturbance of soil and mixing of layers is inevitable and the presence of very thin layers of different soils within a particular stratum may not be identified. Changes in strata type can only be detected on recognition of a change in soil samples at the surface, after the interface has been passed. For the foregoing reasons, depth measurements should not be considered to be more accurate than 0.10 metre. The technique can determine ground conditions to depths in excess of 30 metres under suitable circumstances and usually causes less surface disturbance than trial pitting.

In cohesive soils cylindrical samples are retrieved by driving or pushing in 100mm nominal diameter tubes. In soft soils, piston sampling or vane testing may be undertaken. In granular soils and often in cohesive materials, in situ Standard Penetration Tests (SPT's) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in denser strata. Small disturbed samples are obtained throughout.

ROTARY DRILLING

Rotary Drilling to produce cores by rotating an annular diamond-impregnated tube or barrel into the ground is the technique most appropriate to the forming of site investigation boreholes through rock or other hard strata. It has the advantage of being able to be used vertically or at an angle. Core diameters of less than 100mm are most common for site investigation purposes. Core is normally retrieved in plastic lining tubes. A flushing fluid such as air, water or foam is used to cool the bit and carry cuttings to the surface. Depths in excess of 60 metres can be achieved under suitable circumstances using rotary techniques, with minimal surface disturbance.

Examination of cores allows detailed rock description and generally enables angled discontinuity surfaces to be observed. However, vertical holes do not necessarily reveal the presence of vertical or near-vertical fissures or joint discontinuities. The core type and/or techniques used will depend on the ground conditions. Where open hole rotary drilling is employed, descriptions of strata result from examination at the surface of small particles ejected from the borehole in the flushing medium. In consequence, no indication of fissuring, bedding, consistency or degree of weathering can be obtained.

DYNAMIC SAMPLING

This technique involves the driving of an open-ended tube into the ground and retrieval of the soil which enters the tube. It was previously called window or windowless sampling. The term "window sample" arose from the original device which had a "window" or slot cut into the side of the tube through which samples were taken. This was superseded by the use of a thin-walled plastic liner to retrieve the soil sample from within a sampler (windowless sampling) which has a solid wall. Line diameters range from 36 to 86mm. Such samples can be used for qualitative logging, selection of samples for classification and chemical analysis and for obtaining a rudimentary assessment of strength.

Driving devices can be hand-held or machine mounted and the drive tubes are typically in 1m lengths. Depending on the type of rig used, the hole formed can be cased to prevent collapse of the borehole sides. Where the type of rig does not allow the insertion of casing, the success of this technique can be limited when soils and groundwater conditions are such that the sides of the hole collapse on withdrawal of the sampler. Obstructions within the ground, the density of the material or its strength can also limit the depth and rate of penetration of this light-weight investigation technique. Nevertheless, it is a valuable tool where access is constrained such as within buildings or on embankments. Depths of up to 10m can be achieved in suitable circumstances depending on the rig type but depths of 5m to 6m are more common.

EXPLORATORY HOLE RECORDS

The data obtained by these techniques are generally presented on Trial Pit, Borehole, Drillhole or Dynamic Sample Records. The descriptions of strata result from information gathered from a number of sources which may include published geological data, preliminary field observations and descriptions, in situ test results, laboratory test results and specimen descriptions. A key to the symbols and abbreviations used accompanies the records. The descriptions on the exploratory hole records accommodate but may not necessarily be identical to those on any preliminary records or the laboratory summaries.

The records show ground conditions at the exploratory hole locations. The degree to which they can be used to represent conditions between or beyond such holes, however, is a matter for geological interpretation rather than factual reporting and the associated uncertainties must be recognised.

DYNAMIC PROBING

This technique typically measures the number of blows of a standard weight falling over a standard height to advance a cone-ended rod over sequential standard distances (typically 100mm). Some devices measure the penetration of the probe per standard blow. It is essentially a profiling tool and is best used in conjunction with other investigation techniques where site-specific correlation can be used to delineate the distribution of soft or loose soils or the upper horizon of a dense or strong layer such as rock.

Both machine-driven and hand-driven equipment is available, the selection depending upon access restrictions and the depth of penetration required. It is particularly useful where access for larger equipment is not available, disturbance is to be minimised or where there are cost constraints. No samples are recovered and some techniques leave a sacrificial cone head in the ground. As with other lightweight techniques, progress is limited in strong or dense soils. The results are presented both numerically and graphically. Depths of up to 10m are commonly achieved in suitable circumstances.

The hand-driven DCP probing device has been calibrated by the Highways Agency to provide a profile of CBR values over a range of depths.

INSTRUMENTATION

The most common form of instrument used in site investigation is either the standpipe or else the standpipe piezometer which can be installed in investigation holes. They are used to facilitate monitoring of groundwater levels and water sampling over a period of time following site work. Normally a standpipe would be formed using rigid plastic tubing which has been perforated or slotted over much of its length whilst a standpipe piezometer would have a filter tip which would be placed at a selected level and the hole sealed above and sometimes below to isolate the zone of interest. Groundwater levels are determined using an electronic "dip meter" to measure the depth to the water surface from ground level. Piezometers can also be used to measure permeability. They are simple and inexpensive instruments for long term monitoring but response times can limit their use in tidal areas and access to the ground surface at each instrument is necessary. Remote reading requires more sophisticated hydraulic, electronic or pneumatic equipment.

Settlement can be monitored using surface or buried target plates whilst lateral movement over a range of depths is monitored using slip indicator or inclinometer equipment.

1. The report is prepared for the exclusive use of the Client named in the document and copyright subsists with Geotechnics Limited. Prior written permission must be obtained to reproduce all or part of the report. It is prepared on the understanding that its contents are only disclosed to parties directly involved in the current investigation, preparation and development of the site.
2. Further copies may be obtained with the Client's written permission, from Geotechnics Limited with whom the master copy of the document will be retained.
3. The report and/or opinion is prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to Geotechnics Limited at that time. Re-consideration will be necessary should those details change. The recommendations should not be used for other schemes on or adjacent to the site without further reference to Geotechnics Limited.
4. The assessment of the significance of the factual data, where called for, is provided to assist the Client and their Engineer and/or Advisers in the preparation of their designs.
5. The report is based on the ground conditions encountered in the exploratory holes together with the results of field and laboratory testing in the context of the proposed development. The data from any commissioned desk study and site reconnaissance are also drawn upon. There may be special conditions appertaining to the site, however, which are not revealed by the investigation and which may not be taken into account in the report.
6. Methods of construction and/or design other than those proposed by the designers or referred to in the report may require consideration during the evolution of the proposals and further assessment of the geotechnical and any geoenvironmental data would be required to provide discussion and evaluations appropriate to these methods.
7. The accuracy of results reported depends upon the technique of measurement, investigation and test used and these values should not be regarded necessarily as characteristics of the strata as a whole (see accompanying notes on Investigation Techniques). Where such measurements are critical, the technique of investigation will need to be reviewed and supplementary investigation undertaken in accordance with the advice of the Company where necessary.
8. The samples selected for laboratory test are prepared and tested in accordance with the relevant Clauses and Parts of BS EN ISO 17892 and BS 1377 Parts 1 to 8, where appropriate, in Geotechnics Limited's UKAS accredited Laboratory, where possible. A list of tests is given.
9. Tests requiring the use of another laboratory having UKAS accreditation where possible are identified.
10. Any unavoidable variations from specified procedures are identified in the report.
11. Specimens are cut vertically, where this is relevant and can be identified, unless otherwise stated
12. All the data required by the test procedures are recorded on individual test sheets but the results in the report are presented in summary form to aid understanding and assimilation for design purposes. Where all details are required, these can be made available.
13. Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes, or on the possible presence of features based on either visual, verbal, written, cartographical, photographic or published evidence, this is for guidance only and no liability can be accepted for its accuracy.
14. The Code of Practice for Ground Investigations – BS 5930:2015 calls for man-made soils to be described as Anthropogenic Ground with soils placed in an un-controlled manner classified as Made Ground and soils placed in a controlled manner as Fill. In view of the difficulty in always accurately determining the origin of man-made soils in exploratory holes, Geotechnics Limited classify such materials as Made Ground. Where soils can be clearly identified as being placed in a controlled manner then further classification of the soils as Fill has been added to the Exploratory Hole Records.
15. Classification of man-made soils is based on the inspection of retrieved samples or exposed excavations. Where it is obvious that foreign matter such as paper, plastic or metal is present, classification is clear. Frequently, however, for man-made soils that arise from the adjacent ground or from the backfilling of excavations, their visual characteristics can closely resemble those of undisturbed ground. Other evidence such as site history, exploratory hole location or other tests may need to be drawn upon to provide clarification. For these reasons, classification of soils on the exploratory hole records as either Made Ground or naturally occurring strata, the boundary between them and any interpretation that this gives rise to should be regarded as provisional and subject to re-evaluation in the light of further data.
16. The classification of materials as Topsoil is generally based on visual description and should not be interpreted to mean that the material so described complies with the criteria for Topsoil used in BS 3882:2015. Specific testing would be necessary where such a definition is a requirement.
17. Ground conditions should be monitored during the construction of the works and the report should be re-evaluated in the light of these data by the supervising geotechnical engineers.
18. Any comments on groundwater conditions are based on observations made at the time of the investigation, unless specifically stated otherwise. It should be noted, however, that the observations are subject to the method and speed of boring, drilling or excavation and that groundwater levels will vary due to seasonal or other effects.
19. Any bearing capacities for conventional spread foundations which are given in the report and interpreted from the investigation are for bases at a minimum depth of 1m below finished ground level in naturally occurring strata and at broadly similar levels throughout individual structures, unless otherwise stated. Typically they are based on serviceability criteria taking account of an assessment of the shear strength and/or density data obtained by the investigation. The foundations should be designed in accordance with the good practice embodied in BS 8004:2015 - Foundations, supplemented for housing by NHBC Standards. Foundation design is an iterative process and bearing pressures may need adjustment or other measures may need to be taken in the context of final layouts and levels prior to finalisation of proposals.
20. Unless specifically stated, the investigation does not take account of the possible effects of mineral extraction or of gases from fill or natural sources within, below or outside the site.
21. The costs or economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical or geoenvironmental considerations and hence their evaluation is outside the scope of the report.