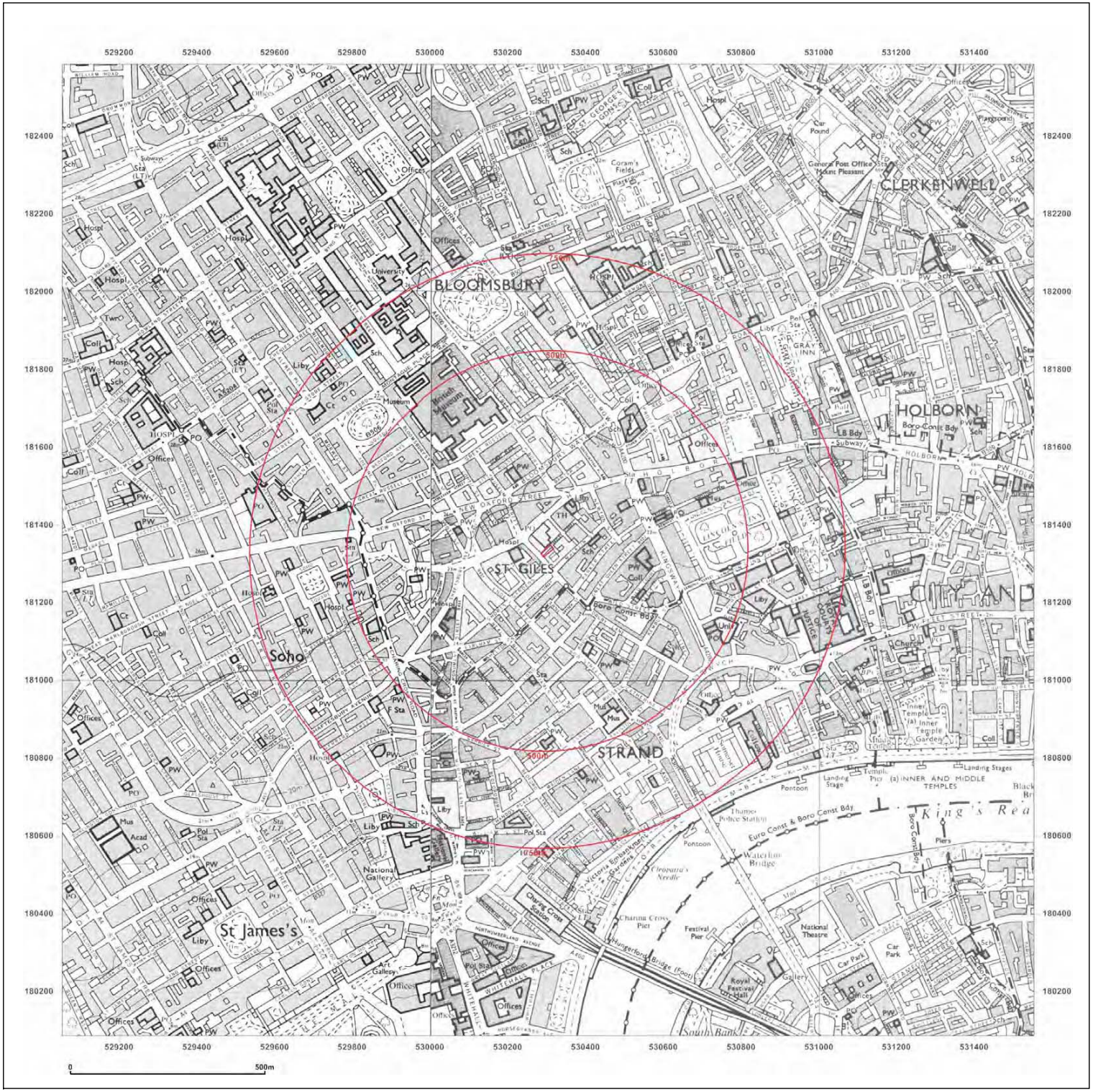

Groundsure INSIGHTS

Site Details:

10A, STUKELEY STREET,
LONDON, WC2B 5LQ

Client Ref: Stukeley_Street
Report Ref: HMD-2443183
Grid Ref: 530303, 181335

Map Name: National Grid
Map date: **1989-1994**
Scale: 1:10,000
Printed at: 1:10,000

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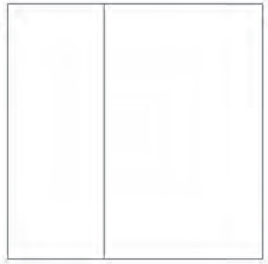
Surveyed 1987
Revised 1989
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1984
Revised 1994
Edition N/A
Copyright N/A
Levelled N/A



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E: info@groundsure.com
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Production date: 14 September 2015

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Groundsure INSIGHTS

Site Details:

10A, STUKELEY STREET,
LONDON, WC2B 5LQ

Client Ref: Stukeley_Street
Report Ref: HMD-2443183
Grid Ref: 530303, 181335

Map Name: 1:10,000 Raster
Map date: 2002
Scale: 1:10,000
Printed at: 1:10,000

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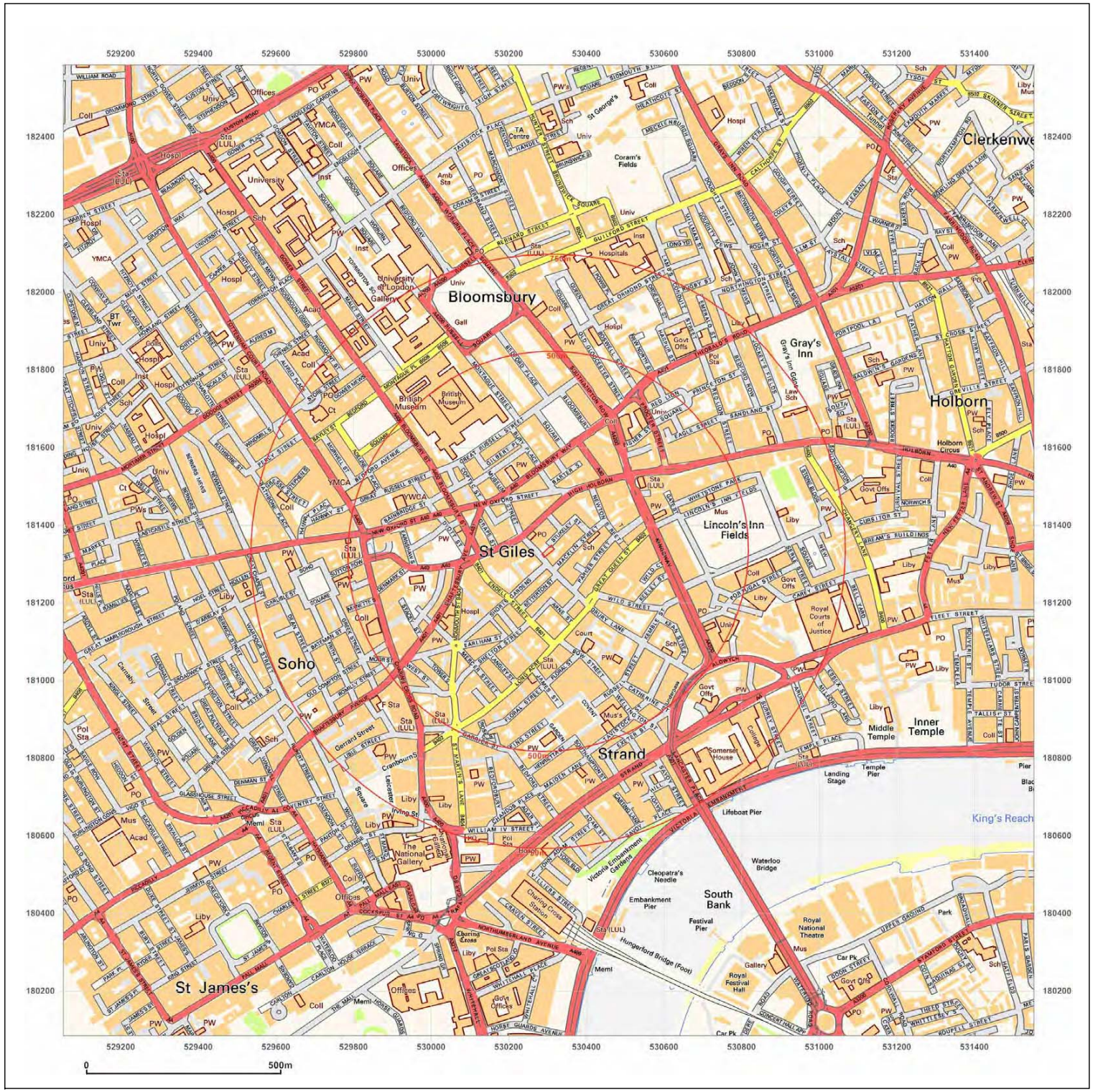

Groundsure INSIGHTS

Site Details:

10A, STUKELEY STREET,
LONDON, WC2B 5LQ

Client Ref: Stukeley_Street
Report Ref: HMD-2443183
Grid Ref: 530303, 181335

Map Name: National Grid
Map date: **2010**
Scale: 1:10,000
Printed at: 1:10,000

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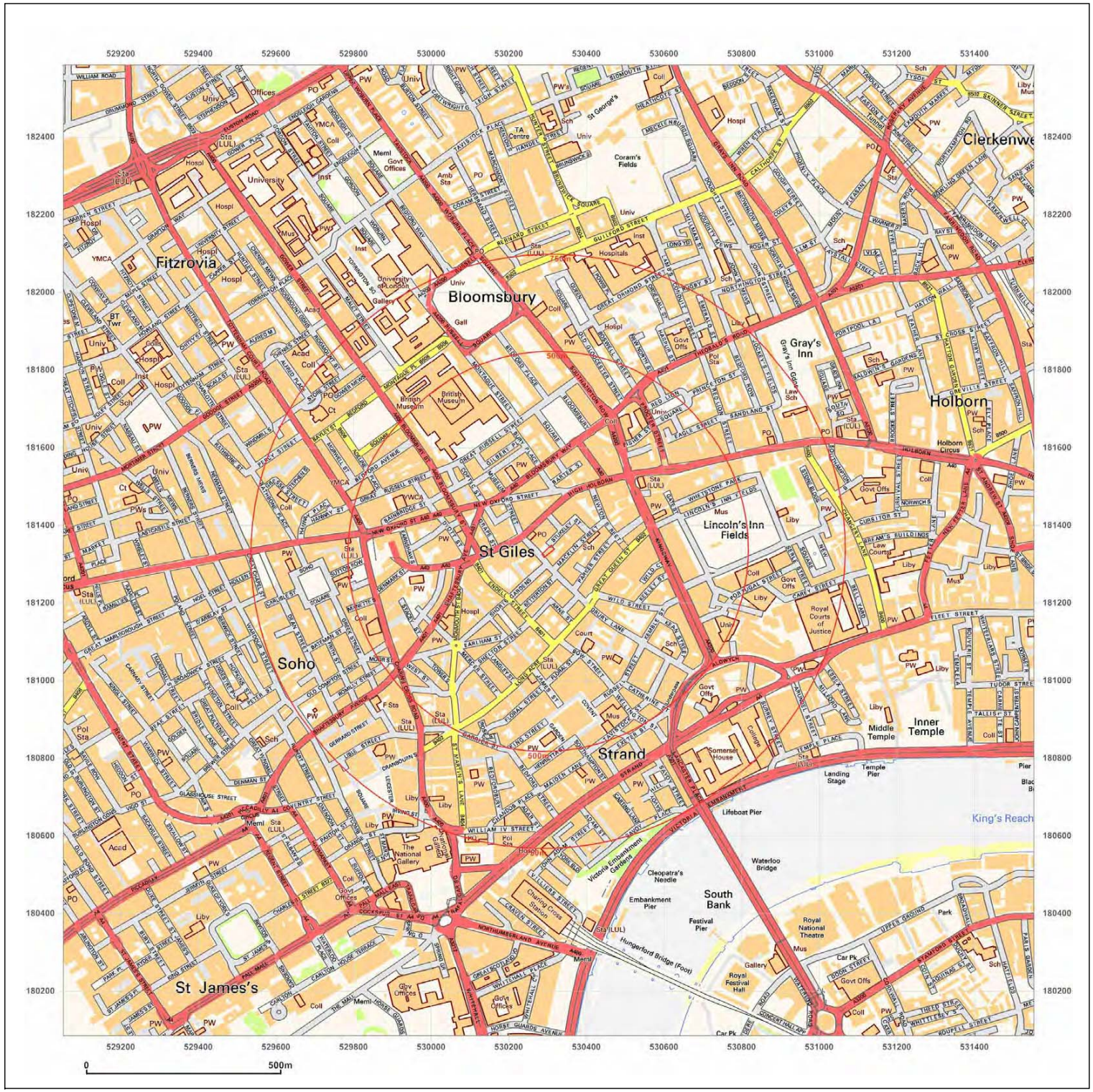

Groundsure INSIGHTS

Site Details:

10A, STUKELEY STREET,
LONDON, WC2B 5LQ

Client Ref: Stukeley_Street
Report Ref: HMD-2443183
Grid Ref: 530303, 181335

Map Name: National Grid
Map date: 2014
Scale: 1:10,000
Printed at: 1:10,000

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Appendix E Pdisp Heave Analysis

8 to 10 Stukeley Street
Basement Heave Determination
Gravel to 17 m AOD on stiff to very stiff London Clay

RESULTS FOR GRIDS

Analysis: Boussinesq
Global Poisson's ratio: 0.30
Horizontal rigid boundary level: 0.00 [m OD]

The maximum displacement difference between
Boussinesq method (-5.4715mm) and Mindlin method (0.0mm)
occurs at point X=27.750m Y=13.800m Level 20.300mOD and is 5.4715mm

Name	Location				Stresses			
	X	Y	Z[Level]	Z	Calc Level	Vert Stress	Sum Princ	Vert Strain
	[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[-]
soil unload	22.75000	14.00000	12.30000	-5.3804	12.226	-28.000	-71.500	-583.58E-6
Grid 1	5.00000	5.00000	20.30000	-0.026278	20.300	0.0	0.0	0.0
	6.75000	5.00000	20.30000	-0.067906	20.300	0.0	0.0	0.0
	8.50000	5.00000	20.30000	-0.12531	20.300	0.0	0.0	0.0
	10.25000	5.00000	20.30000	-0.19296	20.300	0.0	0.0	0.0
	12.00000	5.00000	20.30000	-0.25902	20.300	0.0	0.0	0.0
	13.75000	5.00000	20.30000	-0.31291	20.300	0.0	0.0	0.0
	15.50000	5.00000	20.30000	-0.35116	20.300	0.0	0.0	0.0
	17.25000	5.00000	20.30000	-0.37571	20.300	0.0	0.0	0.0
	19.00000	5.00000	20.30000	-0.38999	20.300	0.0	0.0	0.0
	20.75000	5.00000	20.30000	-0.39678	20.300	0.0	0.0	0.0
	22.50000	5.00000	20.30000	-0.39735	20.300	0.0	0.0	0.0
	24.25000	5.00000	20.30000	-0.39123	20.300	0.0	0.0	0.0
	26.00000	5.00000	20.30000	-0.37617	20.300	0.0	0.0	0.0
	27.75000	5.00000	20.30000	-0.34855	20.300	0.0	0.0	0.0
	29.50000	5.00000	20.30000	-0.30475	20.300	0.0	0.0	0.0
	31.25000	5.00000	20.30000	-0.24441	20.300	0.0	0.0	0.0
	33.00000	5.00000	20.30000	-0.17429	20.300	0.0	0.0	0.0
	34.75000	5.00000	20.30000	-0.10712	20.300	0.0	0.0	0.0
	36.50000	5.00000	20.30000	-0.053191	20.300	0.0	0.0	0.0
	38.25000	5.00000	20.30000	-0.015412	20.300	0.0	0.0	0.0
	40.00000	5.00000	20.30000	0.0084371	20.300	0.0	0.0	0.0
	5.00000	6.10000	20.30000	-0.048860	20.300	0.0	0.0	0.0
	6.75000	6.10000	20.30000	-0.11037	20.300	0.0	0.0	0.0
	8.50000	6.10000	20.30000	-0.19955	20.300	0.0	0.0	0.0
	10.25000	6.10000	20.30000	-0.30845	20.300	0.0	0.0	0.0
	12.00000	6.10000	20.30000	-0.41392	20.300	0.0	0.0	0.0
	13.75000	6.10000	20.30000	-0.49613	20.300	0.0	0.0	0.0
	15.50000	6.10000	20.30000	-0.55150	20.300	0.0	0.0	0.0
	17.25000	6.10000	20.30000	-0.58558	20.300	0.0	0.0	0.0
	19.00000	6.10000	20.30000	-0.60495	20.300	0.0	0.0	0.0
	20.75000	6.10000	20.30000	-0.61427	20.300	0.0	0.0	0.0
	22.50000	6.10000	20.30000	-0.61558	20.300	0.0	0.0	0.0
	24.25000	6.10000	20.30000	-0.60819	20.300	0.0	0.0	0.0
	26.00000	6.10000	20.30000	-0.58855	20.300	0.0	0.0	0.0
	27.75000	6.10000	20.30000	-0.55032	20.300	0.0	0.0	0.0
	29.50000	6.10000	20.30000	-0.48596	20.300	0.0	0.0	0.0
	31.25000	6.10000	20.30000	-0.39204	20.300	0.0	0.0	0.0
	33.00000	6.10000	20.30000	-0.27920	20.300	0.0	0.0	0.0
	34.75000	6.10000	20.30000	-0.17238	20.300	0.0	0.0	0.0
	36.50000	6.10000	20.30000	-0.090305	20.300	0.0	0.0	0.0
	38.25000	6.10000	20.30000	-0.035374	20.300	0.0	0.0	0.0
	40.00000	6.10000	20.30000	-0.0018107	20.300	0.0	0.0	0.0
	5.00000	7.20000	20.30000	-0.076004	20.300	0.0	0.0	0.0
	6.75000	7.20000	20.30000	-0.16484	20.300	0.0	0.0	0.0
	8.50000	7.20000	20.30000	-0.30338	20.300	0.0	0.0	0.0
	10.25000	7.20000	20.30000	-0.48328	20.300	0.0	0.0	0.0
	12.00000	7.20000	20.30000	-0.65520	20.300	0.0	0.0	0.0
	13.75000	7.20000	20.30000	-0.77978	20.300	0.0	0.0	0.0
	15.50000	7.20000	20.30000	-0.85801	20.300	0.0	0.0	0.0
	17.25000	7.20000	20.30000	-0.90386	20.300	0.0	0.0	0.0
	19.00000	7.20000	20.30000	-0.92930	20.300	0.0	0.0	0.0
	20.75000	7.20000	20.30000	-0.94173	20.300	0.0	0.0	0.0
	22.50000	7.20000	20.30000	-0.94429	20.300	0.0	0.0	0.0
	24.25000	7.20000	20.30000	-0.93603	20.300	0.0	0.0	0.0
	26.00000	7.20000	20.30000	-0.91158	20.300	0.0	0.0	0.0
	27.75000	7.20000	20.30000	-0.86043	20.300	0.0	0.0	0.0
	29.50000	7.20000	20.30000	-0.76760	20.300	0.0	0.0	0.0
	31.25000	7.20000	20.30000	-0.62059	20.300	0.0	0.0	0.0
	33.00000	7.20000	20.30000	-0.43375	20.300	0.0	0.0	0.0
	34.75000	7.20000	20.30000	-0.26103	20.300	0.0	0.0	0.0
	36.50000	7.20000	20.30000	-0.13740	20.300	0.0	0.0	0.0
	38.25000	7.20000	20.30000	-0.059598	20.300	0.0	0.0	0.0
	40.00000	7.20000	20.30000	-0.013935	20.300	0.0	0.0	0.0
	5.00000	8.30000	20.30000	-0.10656	20.300	0.0	0.0	0.0
	6.75000	8.30000	20.30000	-0.23093	20.300	0.0	0.0	0.0
	8.50000	8.30000	20.30000	-0.44585	20.300	0.0	0.0	0.0
	10.25000	8.30000	20.30000	-0.76043	20.300	0.0	0.0	0.0
	12.00000	8.30000	20.30000	-1.0527	20.300	0.0	0.0	0.0
	13.75000	8.30000	20.30000	-1.2391	20.300	0.0	0.0	0.0
	15.50000	8.30000	20.30000	-1.3460	20.300	0.0	0.0	0.0
	17.25000	8.30000	20.30000	-1.4055	20.300	0.0	0.0	0.0
	19.00000	8.30000	20.30000	-1.4377	20.300	0.0	0.0	0.0
	20.75000	8.30000	20.30000	-1.4539	20.300	0.0	0.0	0.0
	22.50000	8.30000	20.30000	-1.4584	20.300	0.0	0.0	0.0
	24.25000	8.30000	20.30000	-1.4503	20.300	0.0	0.0	0.0
	26.00000	8.30000	20.30000	-1.4218	20.300	0.0	0.0	0.0
	27.75000	8.30000	20.30000	-1.3564	20.300	0.0	0.0	0.0
	29.50000	8.30000	20.30000	-1.2264	20.300	0.0	0.0	0.0
	31.25000	8.30000	20.30000	-0.99454	20.300	0.0	0.0	0.0
	33.00000	8.30000	20.30000	-0.66566	20.300	0.0	0.0	0.0
	34.75000	8.30000	20.30000	-0.37728	20.300	0.0	0.0	0.0
	36.50000	8.30000	20.30000	-0.19418	20.300	0.0	0.0	0.0
	38.25000	8.30000	20.30000	-0.087474	20.300	0.0	0.0	0.0
	40.00000	8.30000	20.30000	-0.027543	20.300	0.0	0.0	0.0
	5.00000	9.40000	20.30000	-0.13800	20.300	0.0	0.0	0.0
	6.75000	9.40000	20.30000	-0.30423	20.300	0.0	0.0	0.0
	8.50000	9.40000	20.30000	-0.63088	20.300	0.0	0.0	0.0
	10.25000	9.40000	20.30000	-1.2657	20.300	0.0	0.0	0.0
	12.00000	9.40000	20.30000	-1.8060	20.300	0.0	0.0	0.0
	13.75000	9.40000	20.30000	-2.0755	20.300	0.0	0.0	0.0
	15.50000	9.40000	20.30000	-2.2152	20.300	0.0	0.0	0.0
	17.25000	9.40000	20.30000	-2.2891	20.300	0.0	0.0	0.0
	19.00000	9.40000	20.30000	-2.3284	20.300	0.0	0.0	0.0
	20.75000	9.40000	20.30000	-2.3488	20.300	0.0	0.0	0.0
	22.50000	9.40000	20.30000	-2.3564	20.300	0.0	0.0	0.0
	24.25000	9.40000	20.30000	-2.3503	20.300	0.0	0.0	0.0
	26.00000	9.40000	20.30000	-2.3201	20.300	0.0	0.0	0.0
	27.75000	9.40000	20.30000	-2.2419	20.300	0.0	0.0	0.0
	29.50000	9.40000	20.30000	-2.0684	20.300	0.0	0.0	0.0
	31.25000	9.40000	20.30000	-1.7058	20.300	0.0	0.0	0.0
	33.00000	9.40000	20.30000	-1.0266	20.300	0.0	0.0	0.0
	34.75000	9.40000	20.30000	-0.51957	20.300	0.0	0.0	0.0
	36.50000	9.40000	20.30000	-0.25792	20.300	0.0	0.0	0.0
	38.25000	9.40000	20.30000	-0.11757	20.300	0.0	0.0	0.0
	40.00000	9.40000	20.30000	-0.041944	20.300	0.0	0.0	0.0
	5.00000	10.50000	20.30000	-0.16643	20.300	0.0	0.0	0.0
	6.75000	10.50000	20.30000	-0.37445	20.300	0.0	0.0	0.0
	8.50000	10.50000	20.30000	-0.83151	20.300	0.0	0.0	0.0
	10.25000	10.50000	20.30000	-2.5112	20.300	0.0	0.0	0.0
	12.00000	10.50000	20.30000	-3.5340	20.300	0.0	0.0	0.0
	13.75000	10.50000	20.30000	-3.8947	20.300	0.0	0.0	0.0
	15.50000	10.50000	20.30000	-4.0663	20.300	0.0	0.0	0.0
	17.25000	10.50000	20.30000	-4.1536	20.300	0.0	0.0	0.0
	19.00000	10.50000	20.30000	-4.1997	20.300	0.0	0.0	0.0
	20.75000	10.50000	20.30000	-4.2247	20.300	0.0	0.0	0.0
	22.50000	10.50000	20.30000	-4.2369	20.300	0.0	0.0	0.0
	24.25000	10.50000	20.30000	-4.2358	20.300	0.0	0.0	0.0
	26.00000	10.50000	20.30000	-4.2090	20.300	0.0	0.0	0.0
	27.75000	10.50000	20.30000	-4.1240	20.300	0.0	0.0	0.0
	29.50000	10.50000	20.30000	-3.9099	20.300	0.0	0.0	0.0
	31.25000	10.50000	20.30000	-3.3874	20.300	0.0	0.0	0.0
	33.00000	10.50000	20.30000	-1.5274	20.300	0.0	0.0	0.0
	34.75000	10.50000	20.30000	-0.67214	20.300	0.0	0.0	0.0
	36.50000	10.50000	20.30000	-0.32307	20.300	0.0	0.0	0.0
	38.25000	10.50000	20.30000	-0.14771	20.300	0.0	0.0	0.0

Name	Location				Stresses			
	X [m]	Y [m]	Z[Level] [mOD]	Z [mm]	Calc Level [mOD]	Vert Stress [kN/m²]	Sum Princ [kN/m²]	Vert Strain [-]
	40.00000	10.50000	20.30000	-0.056210	20.300	0.0	0.0	0.0
	5.00000	11.60000	20.30000	-0.18742	20.300	0.0	0.0	0.0
	6.75000	11.60000	20.30000	-0.42782	20.300	0.0	0.0	0.0
	8.50000	11.60000	20.30000	-0.98355	20.300	0.0	0.0	0.0
	10.25000	11.60000	20.30000	-2.9976	20.300	0.0	0.0	0.0
	12.00000	11.60000	20.30000	-4.2679	20.300	0.0	0.0	0.0
	13.75000	11.60000	20.30000	-4.6990	20.300	0.0	0.0	0.0
	15.50000	11.60000	20.30000	-4.8954	20.300	0.0	0.0	0.0
	17.25000	11.60000	20.30000	-4.9931	20.300	0.0	0.0	0.0
	19.00000	11.60000	20.30000	-5.0449	20.300	0.0	0.0	0.0
	20.75000	11.60000	20.30000	-5.0749	20.300	0.0	0.0	0.0
	22.50000	11.60000	20.30000	-5.0936	20.300	0.0	0.0	0.0
	24.25000	11.60000	20.30000	-5.1019	20.300	0.0	0.0	0.0
	26.00000	11.60000	20.30000	-5.0871	20.300	0.0	0.0	0.0
	27.75000	11.60000	20.30000	-5.0089	20.300	0.0	0.0	0.0
	29.50000	11.60000	20.30000	-4.7719	20.300	0.0	0.0	0.0
	31.25000	11.60000	20.30000	-4.1304	20.300	0.0	0.0	0.0
	33.00000	11.60000	20.30000	-1.8895	20.300	0.0	0.0	0.0
	34.75000	11.60000	20.30000	-0.80811	20.300	0.0	0.0	0.0
	36.50000	11.60000	20.30000	-0.38258	20.300	0.0	0.0	0.0
	38.25000	11.60000	20.30000	-0.17536	20.300	0.0	0.0	0.0
	40.00000	11.60000	20.30000	-0.069299	20.300	0.0	0.0	0.0
	5.00000	12.70000	20.30000	-0.19730	20.300	0.0	0.0	0.0
	6.75000	12.70000	20.30000	-0.45315	20.300	0.0	0.0	0.0
	8.50000	12.70000	20.30000	-1.0519	20.300	0.0	0.0	0.0
	10.25000	12.70000	20.30000	-3.1595	20.300	0.0	0.0	0.0
	12.00000	12.70000	20.30000	-4.5100	20.300	0.0	0.0	0.0
	13.75000	12.70000	20.30000	-4.9736	20.300	0.0	0.0	0.0
	15.50000	12.70000	20.30000	-5.1821	20.300	0.0	0.0	0.0
	17.25000	12.70000	20.30000	-5.2854	20.300	0.0	0.0	0.0
	19.00000	12.70000	20.30000	-5.3413	20.300	0.0	0.0	0.0
	20.75000	12.70000	20.30000	-5.3764	20.300	0.0	0.0	0.0
	22.50000	12.70000	20.30000	-5.4037	20.300	0.0	0.0	0.0
	24.25000	12.70000	20.30000	-5.4274	20.300	0.0	0.0	0.0
	26.00000	12.70000	20.30000	-5.4380	20.300	0.0	0.0	0.0
	27.75000	12.70000	20.30000	-5.3912	20.300	0.0	0.0	0.0
	29.50000	12.70000	20.30000	-5.1654	20.300	0.0	0.0	0.0
	31.25000	12.70000	20.30000	-4.4719	20.300	0.0	0.0	0.0
	33.00000	12.70000	20.30000	-2.1009	20.300	0.0	0.0	0.0
	34.75000	12.70000	20.30000	-0.91002	20.300	0.0	0.0	0.0
	36.50000	12.70000	20.30000	-0.43053	20.300	0.0	0.0	0.0
	38.25000	12.70000	20.30000	-0.19820	20.300	0.0	0.0	0.0
	40.00000	12.70000	20.30000	-0.080234	20.300	0.0	0.0	0.0
	5.00000	13.80000	20.30000	-0.19424	20.300	0.0	0.0	0.0
	6.75000	13.80000	20.30000	-0.44548	20.300	0.0	0.0	0.0
	8.50000	13.80000	20.30000	-1.0317	20.300	0.0	0.0	0.0
	10.25000	13.80000	20.30000	-3.1139	20.300	0.0	0.0	0.0
	12.00000	13.80000	20.30000	-4.4423	20.300	0.0	0.0	0.0
	13.75000	13.80000	20.30000	-4.8967	20.300	0.0	0.0	0.0
	15.50000	13.80000	20.30000	-5.1023	20.300	0.0	0.0	0.0
	17.25000	13.80000	20.30000	-5.2055	20.300	0.0	0.0	0.0
	19.00000	13.80000	20.30000	-5.2633	20.300	0.0	0.0	0.0
	20.75000	13.80000	20.30000	-5.3034	20.300	0.0	0.0	0.0
	22.50000	13.80000	20.30000	-5.3414	20.300	0.0	0.0	0.0
	24.25000	13.80000	20.30000	-5.3873	20.300	0.0	0.0	0.0
	26.00000	13.80000	20.30000	-5.4426	20.300	0.0	0.0	0.0
	27.75000	13.80000	20.30000	-5.4715	20.300	0.0	0.0	0.0
	29.50000	13.80000	20.30000	-5.3147	20.300	0.0	0.0	0.0
	31.25000	13.80000	20.30000	-4.6299	20.300	0.0	0.0	0.0
	33.00000	13.80000	20.30000	-2.2157	20.300	0.0	0.0	0.0
	34.75000	13.80000	20.30000	-0.97496	20.300	0.0	0.0	0.0
	36.50000	13.80000	20.30000	-0.46370	20.300	0.0	0.0	0.0
	38.25000	13.80000	20.30000	-0.21461	20.300	0.0	0.0	0.0
	40.00000	13.80000	20.30000	-0.088237	20.300	0.0	0.0	0.0
	5.00000	14.90000	20.30000	-0.17881	20.300	0.0	0.0	0.0
	6.75000	14.90000	20.30000	-0.40624	20.300	0.0	0.0	0.0
	8.50000	14.90000	20.30000	-0.92366	20.300	0.0	0.0	0.0
	10.25000	14.90000	20.30000	-2.8352	20.300	0.0	0.0	0.0
	12.00000	14.90000	20.30000	-4.0229	20.300	0.0	0.0	0.0
	13.75000	14.90000	20.30000	-4.4270	20.300	0.0	0.0	0.0
	15.50000	14.90000	20.30000	-4.6154	20.300	0.0	0.0	0.0
	17.25000	14.90000	20.30000	-4.7129	20.300	0.0	0.0	0.0
	19.00000	14.90000	20.30000	-4.7705	20.300	0.0	0.0	0.0
	20.75000	14.90000	20.30000	-4.8151	20.300	0.0	0.0	0.0
	22.50000	14.90000	20.30000	-4.8652	20.300	0.0	0.0	0.0
	24.25000	14.90000	20.30000	-4.9396	20.300	0.0	0.0	0.0
	26.00000	14.90000	20.30000	-5.0639	20.300	0.0	0.0	0.0
	27.75000	14.90000	20.30000	-5.2582	20.300	0.0	0.0	0.0
	29.50000	14.90000	20.30000	-5.2907	20.300	0.0	0.0	0.0
	31.25000	14.90000	20.30000	-4.6731	20.300	0.0	0.0	0.0
	33.00000	14.90000	20.30000	-2.2623	20.300	0.0	0.0	0.0
	34.75000	14.90000	20.30000	-1.0062	20.300	0.0	0.0	0.0
	36.50000	14.90000	20.30000	-0.48119	20.300	0.0	0.0	0.0
	38.25000	14.90000	20.30000	-0.22369	20.300	0.0	0.0	0.0
	40.00000	14.90000	20.30000	-0.092804	20.300	0.0	0.0	0.0
	5.00000	16.00000	20.30000	-0.15375	20.300	0.0	0.0	0.0
	6.75000	16.00000	20.30000	-0.34337	20.300	0.0	0.0	0.0
	8.50000	16.00000	20.30000	-0.74202	20.300	0.0	0.0	0.0
	10.25000	16.00000	20.30000	-1.9273	20.300	0.0	0.0	0.0
	12.00000	16.00000	20.30000	-2.7280	20.300	0.0	0.0	0.0
	13.75000	16.00000	20.30000	-3.0494	20.300	0.0	0.0	0.0
	15.50000	16.00000	20.30000	-3.2099	20.300	0.0	0.0	0.0
	17.25000	16.00000	20.30000	-3.2974	20.300	0.0	0.0	0.0
	19.00000	16.00000	20.30000	-3.3529	20.300	0.0	0.0	0.0
	20.75000	16.00000	20.30000	-3.4011	20.300	0.0	0.0	0.0
	22.50000	16.00000	20.30000	-3.4633	20.300	0.0	0.0	0.0
	24.25000	16.00000	20.30000	-3.5693	20.300	0.0	0.0	0.0
	26.00000	16.00000	20.30000	-3.7822	20.300	0.0	0.0	0.0
	27.75000	16.00000	20.30000	-4.3706	20.300	0.0	0.0	0.0
	29.50000	16.00000	20.30000	-5.1346	20.300	0.0	0.0	0.0
	31.25000	16.00000	20.30000	-4.6353	20.300	0.0	0.0	0.0
	33.00000	16.00000	20.30000	-2.2565	20.300	0.0	0.0	0.0
	34.75000	16.00000	20.30000	-1.0078	20.300	0.0	0.0	0.0
	36.50000	16.00000	20.30000	-0.48332	20.300	0.0	0.0	0.0
	38.25000	16.00000	20.30000	-0.22516	20.300	0.0	0.0	0.0
	40.00000	16.00000	20.30000	-0.093700	20.300	0.0	0.0	0.0
	5.00000	17.10000	20.30000	-0.12326	20.300	0.0	0.0	0.0
	6.75000	17.10000	20.30000	-0.26997	20.300	0.0	0.0	0.0
	8.50000	17.10000	20.30000	-0.54158	20.300	0.0	0.0	0.0
	10.25000	17.10000	20.30000	-0.98982	20.300	0.0	0.0	0.0
	12.00000	17.10000	20.30000	-1.3933	20.300	0.0	0.0	0.0
	13.75000	17.10000	20.30000	-1.6246	20.300	0.0	0.0	0.0
	15.50000	17.10000	20.30000	-1.7529	20.300	0.0	0.0	0.0
	17.25000	17.10000	20.30000	-1.8279	20.300	0.0	0.0	0.0
	19.00000	17.10000	20.30000	-1.8796	20.300	0.0	0.0	0.0
	20.75000	17.10000	20.30000	-1.9301	20.300	0.0	0.0	0.0
	22.50000	17.10000	20.30000	-2.0026	20.300	0.0	0.0	0.0
	24.25000	17.10000	20.30000	-2.1372	20.300	0.0	0.0	0.0
	26.00000	17.10000	20.30000	-2.4344	20.300	0.0	0.0	0.0
	27.75000	17.10000	20.30000	-3.4128	20.300	0.0	0.0	0.0
	29.50000	17.10000	20.30000	-4.9086	20.300	0.0	0.0	0.0
	31.25000	17.10000	20.30000	-4.5368	20.300	0.0	0.0	0.0
	33.00000	17.10000	20.30000	-2.2067	20.300	0.0	0.0	0.0
	34.75000	17.10000	20.30000	-0.98232	20.300	0.0	0.0	0.0
	36.50000	17.10000	20.30000	-0.47071	20.300	0.0	0.0	0.0
	38.25000	17.10000	20.30000	-0.21913	20.300	0.0	0.0	0.0
	40.00000	17.10000	20.30000	-0.090926	20.300	0.0	0.0	0.0
	5.00000	18.20000	20.30000	-0.091661	20.300	0.0	0.0	0.0
	6.75000	18.20000	20.30000	-0.19889	20.300	0.0	0.0	0.0
	8.50000	18.20000	20.30000	-0.37517	20.300	0.0	0.0	0.0
	10.25000	18.20000	20.30000	-0.61711	20.300	0.0	0.0	0.0
	12.00000	18.20000	20.30000	-0.84605	20.300	0.0	0.0	0.0
	13.75000	18.20000	20.30000	-1.0037	20.300	0.0	0.0	0.0
	15.50000	18.20000	20.30000	-1.1013	20.300	0.0	0.0	0.0
	17.25000	18.20000	20.30000	-1.1632	20.300	0.0	0.0	0.0
	19.00000	18.20000	20.30000	-1.2102	20.300	0.0	0.0	0.0
	20.75000	18.20000	20.30000	-1.2611	20.300	0.0	0.0	0.0
	22.50000	18.20000	20.30000	-1.3403	20.300	0.0	0.0	0.0
	24.25000	18.20000	20.30000	-1.4943	20.300	0.0	0.0	0.0
	26.00000	18.20000	20.30000	-1.8464	20.300	0.0	0.0	0.0
	27.75000	18.20000	20.30000	-2.9746	20.300	0.0	0.0	0.0

Name	Location				Stresses			
	X [m]	Y [m]	Z[Level] [mOD]	Z [mm]	Calc Level [mOD]	Vert Stress [kN/m²]	Sum Princ [kN/m²]	Vert Strain [-]
	29.50000	18.20000	20.30000	-4.6582	20.300	0.0	0.0	0.0
	31.25000	18.20000	20.30000	-4.3833	20.300	0.0	0.0	0.0
	33.00000	18.20000	20.30000	-2.1131	20.300	0.0	0.0	0.0
	34.75000	18.20000	20.30000	-0.93030	20.300	0.0	0.0	0.0
	36.50000	18.20000	20.30000	-0.44396	20.300	0.0	0.0	0.0
	38.25000	18.20000	20.30000	-0.20599	20.300	0.0	0.0	0.0
	40.00000	18.20000	20.30000	-0.084686	20.300	0.0	0.0	0.0
	5.00000	19.30000	20.30000	-0.062287	20.300	0.0	0.0	0.0
	6.75000	19.30000	20.30000	-0.13768	20.300	0.0	0.0	0.0
	8.50000	19.30000	20.30000	-0.25120	20.300	0.0	0.0	0.0
	10.25000	19.30000	20.30000	-0.39416	20.300	0.0	0.0	0.0
	12.00000	19.30000	20.30000	-0.53238	20.300	0.0	0.0	0.0
	13.75000	19.30000	20.30000	-0.63795	20.300	0.0	0.0	0.0
	15.50000	19.30000	20.30000	-0.70959	20.300	0.0	0.0	0.0
	17.25000	19.30000	20.30000	-0.75925	20.300	0.0	0.0	0.0
	19.00000	19.30000	20.30000	-0.80082	20.300	0.0	0.0	0.0
	20.75000	19.30000	20.30000	-0.85020	20.300	0.0	0.0	0.0
	22.50000	19.30000	20.30000	-0.93113	20.300	0.0	0.0	0.0
	24.25000	19.30000	20.30000	-1.0916	20.300	0.0	0.0	0.0
	26.00000	19.30000	20.30000	-1.4603	20.300	0.0	0.0	0.0
	27.75000	19.30000	20.30000	-2.6258	20.300	0.0	0.0	0.0
	29.50000	19.30000	20.30000	-4.3647	20.300	0.0	0.0	0.0
	31.25000	19.30000	20.30000	-4.1565	20.300	0.0	0.0	0.0
	33.00000	19.30000	20.30000	-1.9659	20.300	0.0	0.0	0.0
	34.75000	19.30000	20.30000	-0.85013	20.300	0.0	0.0	0.0
	36.50000	19.30000	20.30000	-0.40373	20.300	0.0	0.0	0.0
	38.25000	19.30000	20.30000	-0.18643	20.300	0.0	0.0	0.0
	40.00000	19.30000	20.30000	-0.075389	20.300	0.0	0.0	0.0
	5.00000	20.40000	20.30000	-0.037009	20.300	0.0	0.0	0.0
	6.75000	20.40000	20.30000	-0.088623	20.300	0.0	0.0	0.0
	8.50000	20.40000	20.30000	-0.16176	20.300	0.0	0.0	0.0
	10.25000	20.40000	20.30000	-0.24971	20.300	0.0	0.0	0.0
	12.00000	20.40000	20.30000	-0.33588	20.300	0.0	0.0	0.0
	13.75000	20.40000	20.30000	-0.40607	20.300	0.0	0.0	0.0
	15.50000	20.40000	20.30000	-0.45773	20.300	0.0	0.0	0.0
	17.25000	20.40000	20.30000	-0.49670	20.300	0.0	0.0	0.0
	19.00000	20.40000	20.30000	-0.53258	20.300	0.0	0.0	0.0
	20.75000	20.40000	20.30000	-0.57851	20.300	0.0	0.0	0.0
	22.50000	20.40000	20.30000	-0.65594	20.300	0.0	0.0	0.0
	24.25000	20.40000	20.30000	-0.80897	20.300	0.0	0.0	0.0
	26.00000	20.40000	20.30000	-1.1551	20.300	0.0	0.0	0.0
	27.75000	20.40000	20.30000	-2.2610	20.300	0.0	0.0	0.0
	29.50000	20.40000	20.30000	-3.9501	20.300	0.0	0.0	0.0
	31.25000	20.40000	20.30000	-3.7912	20.300	0.0	0.0	0.0
	33.00000	20.40000	20.30000	-1.7391	20.300	0.0	0.0	0.0
	34.75000	20.40000	20.30000	-0.73973	20.300	0.0	0.0	0.0
	36.50000	20.40000	20.30000	-0.35148	20.300	0.0	0.0	0.0
	38.25000	20.40000	20.30000	-0.16159	20.300	0.0	0.0	0.0
	40.00000	20.40000	20.30000	-0.063651	20.300	0.0	0.0	0.0
	5.00000	21.50000	20.30000	-0.016463	20.300	0.0	0.0	0.0
	6.75000	21.50000	20.30000	-0.051044	20.300	0.0	0.0	0.0
	8.50000	21.50000	20.30000	-0.098081	20.300	0.0	0.0	0.0
	10.25000	21.50000	20.30000	-0.15320	20.300	0.0	0.0	0.0
	12.00000	21.50000	20.30000	-0.20780	20.300	0.0	0.0	0.0
	13.75000	21.50000	20.30000	-0.25440	20.300	0.0	0.0	0.0
	15.50000	21.50000	20.30000	-0.29110	20.300	0.0	0.0	0.0
	17.25000	21.50000	20.30000	-0.32117	20.300	0.0	0.0	0.0
	19.00000	21.50000	20.30000	-0.35139	20.300	0.0	0.0	0.0
	20.75000	21.50000	20.30000	-0.39230	20.300	0.0	0.0	0.0
	22.50000	21.50000	20.30000	-0.46177	20.300	0.0	0.0	0.0
	24.25000	21.50000	20.30000	-0.59555	20.300	0.0	0.0	0.0
	26.00000	21.50000	20.30000	-0.88274	20.300	0.0	0.0	0.0
	27.75000	21.50000	20.30000	-1.7661	20.300	0.0	0.0	0.0
	29.50000	21.50000	20.30000	-3.1765	20.300	0.0	0.0	0.0
	31.25000	21.50000	20.30000	-3.0640	20.300	0.0	0.0	0.0
	33.00000	21.50000	20.30000	-1.3774	20.300	0.0	0.0	0.0
	34.75000	21.50000	20.30000	-0.60188	20.300	0.0	0.0	0.0
	36.50000	21.50000	20.30000	-0.29051	20.300	0.0	0.0	0.0
	38.25000	21.50000	20.30000	-0.13317	20.300	0.0	0.0	0.0
	40.00000	21.50000	20.30000	-0.050291	20.300	0.0	0.0	0.0
	5.00000	22.60000	20.30000	-494.78E-6	20.300	0.0	0.0	0.0
	6.75000	22.60000	20.30000	-0.023157	20.300	0.0	0.0	0.0
	8.50000	22.60000	20.30000	-0.053207	20.300	0.0	0.0	0.0
	10.25000	22.60000	20.30000	-0.087936	20.300	0.0	0.0	0.0
	12.00000	22.60000	20.30000	-0.12272	20.300	0.0	0.0	0.0
	13.75000	22.60000	20.30000	-0.15357	20.300	0.0	0.0	0.0
	15.50000	22.60000	20.30000	-0.17936	20.300	0.0	0.0	0.0
	17.25000	22.60000	20.30000	-0.20222	20.300	0.0	0.0	0.0
	19.00000	22.60000	20.30000	-0.22703	20.300	0.0	0.0	0.0
	20.75000	22.60000	20.30000	-0.26192	20.300	0.0	0.0	0.0
	22.50000	22.60000	20.30000	-0.32059	20.300	0.0	0.0	0.0
	24.25000	22.60000	20.30000	-0.42830	20.300	0.0	0.0	0.0
	26.00000	22.60000	20.30000	-0.63685	20.300	0.0	0.0	0.0
	27.75000	22.60000	20.30000	-1.0641	20.300	0.0	0.0	0.0
	29.50000	22.60000	20.30000	-1.4907	20.300	0.0	0.0	0.0
	31.25000	22.60000	20.30000	-1.4247	20.300	0.0	0.0	0.0
	33.00000	22.60000	20.30000	-0.88906	20.300	0.0	0.0	0.0
	34.75000	22.60000	20.30000	-0.45292	20.300	0.0	0.0	0.0
	36.50000	22.60000	20.30000	-0.22638	20.300	0.0	0.0	0.0
	38.25000	22.60000	20.30000	-0.10339	20.300	0.0	0.0	0.0
	40.00000	22.60000	20.30000	-0.036260	20.300	0.0	0.0	0.0
	5.00000	23.70000	20.30000	0.011448	20.300	0.0	0.0	0.0
	6.75000	23.70000	20.30000	-0.0029952	20.300	0.0	0.0	0.0
	8.50000	23.70000	20.30000	-0.021919	20.300	0.0	0.0	0.0
	10.25000	23.70000	20.30000	-0.043690	20.300	0.0	0.0	0.0
	12.00000	23.70000	20.30000	-0.065779	20.300	0.0	0.0	0.0
	13.75000	23.70000	20.30000	-0.086058	20.300	0.0	0.0	0.0
	15.50000	23.70000	20.30000	-0.10400	20.300	0.0	0.0	0.0
	17.25000	23.70000	20.30000	-0.12111	20.300	0.0	0.0	0.0
	19.00000	23.70000	20.30000	-0.14094	20.300	0.0	0.0	0.0
	20.75000	23.70000	20.30000	-0.16948	20.300	0.0	0.0	0.0
	22.50000	23.70000	20.30000	-0.21640	20.300	0.0	0.0	0.0
	24.25000	23.70000	20.30000	-0.29728	20.300	0.0	0.0	0.0
	26.00000	23.70000	20.30000	-0.43489	20.300	0.0	0.0	0.0
	27.75000	23.70000	20.30000	-0.63969	20.300	0.0	0.0	0.0
	29.50000	23.70000	20.30000	-0.80242	20.300	0.0	0.0	0.0
	31.25000	23.70000	20.30000	-0.76660	20.300	0.0	0.0	0.0
	33.00000	23.70000	20.30000	-0.54765	20.300	0.0	0.0	0.0
	34.75000	23.70000	20.30000	-0.31800	20.300	0.0	0.0	0.0
	36.50000	23.70000	20.30000	-0.16555	20.300	0.0	0.0	0.0
	38.25000	23.70000	20.30000	-0.074559	20.300	0.0	0.0	0.0
	40.00000	23.70000	20.30000	-0.022517	20.300	0.0	0.0	0.0
	5.00000	24.80000	20.30000	0.020052	20.300	0.0	0.0	0.0
	6.75000	24.80000	20.30000	0.011215	20.300	0.0	0.0	0.0
	8.50000	24.80000	20.30000	-394.46E-6	20.300	0.0	0.0	0.0
	10.25000	24.80000	20.30000	-0.013815	20.300	0.0	0.0	0.0
	12.00000	24.80000	20.30000	-0.027662	20.300	0.0	0.0	0.0
	13.75000	24.80000	20.30000	-0.040822	20.300	0.0	0.0	0.0
	15.50000	24.80000	20.30000	-0.053130	20.300	0.0	0.0	0.0
	17.25000	24.80000	20.30000	-0.065714	20.300	0.0	0.0	0.0
	19.00000	24.80000	20.30000	-0.081125	20.300	0.0	0.0	0.0
	20.75000	24.80000	20.30000	-0.10358	20.300	0.0	0.0	0.0
	22.50000	24.80000	20.30000	-0.13940	20.300	0.0	0.0	0.0
	24.25000	24.80000	20.30000	-0.19707	20.300	0.0	0.0	0.0
	26.00000	24.80000	20.30000	-0.28404	20.300	0.0	0.0	0.0
	27.75000	24.80000	20.30000	-0.39097	20.300	0.0	0.0	0.0
	29.50000	24.80000	20.30000	-0.46461	20.300	0.0	0.0	0.0
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	6.75000	25.90000	20.30000	0.020945	20.300	0.0	0.0	0.0
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	10.25000	25.90000	20.30000	0.0061485	20.300	0.0	0.0	0.0
	12.00000	25.90000	20.30000	-0.0023012	20.300	0.0	0.0	0.0
	13.75000	25.90000	20.30000	-0.010649	20.300	0.0	0.0	0.0
	15.50000	25.90000	20.30000	-0.018923	20.300	0.0	0.0	0.0
	17.25000	25.90000	20.30000	-0.027978	20.300	0.0	0.0	0.0

Name	Location X [m]	Location Y [m]	Z[Level] [mOD]	Z [mm]	Stresses Calc Level [mOD]	Stresses Vert Stress [kN/m²]	Stresses Sum Princ [kN/m²]	Stresses Vert Strain [-]
	19.00000	25.90000	20.30000	-0.039615	20.300	0.0	0.0	0.0
	20.75000	25.90000	20.30000	-0.056672	20.300	0.0	0.0	0.0
	22.50000	25.90000	20.30000	-0.083003	20.300	0.0	0.0	0.0
	24.25000	25.90000	20.30000	-0.12272	20.300	0.0	0.0	0.0
	26.00000	25.90000	20.30000	-0.17693	20.300	0.0	0.0	0.0
	27.75000	25.90000	20.30000	-0.23572	20.300	0.0	0.0	0.0
	29.50000	25.90000	20.30000	-0.27225	20.300	0.0	0.0	0.0
	31.25000	25.90000	20.30000	-0.26073	20.300	0.0	0.0	0.0
	33.00000	25.90000	20.30000	-0.20434	20.300	0.0	0.0	0.0
	34.75000	25.90000	20.30000	-0.13236	20.300	0.0	0.0	0.0
	36.50000	25.90000	20.30000	-0.070428	20.300	0.0	0.0	0.0
	38.25000	25.90000	20.30000	-0.026608	20.300	0.0	0.0	0.0
	40.00000	25.90000	20.30000	0.0010834	20.300	0.0	0.0	0.0
	5.00000	27.00000	20.30000	0.029868	20.300	0.0	0.0	0.0
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	26.00000	27.00000	20.30000	-0.10280	20.300	0.0	0.0	0.0
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Line 1	5.00000	13.00000	20.30000	-0.19777	20.300	0.0	0.0	0.0
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	8.20000	13.00000	20.30000	-0.90773	20.300	0.0	0.0	0.0
	9.80000	13.00000	20.30000	-2.2610	20.300	0.0	0.0	0.0
	11.40000	13.00000	20.30000	-4.2327	20.300	0.0	0.0	0.0
	13.00000	13.00000	20.30000	-4.8338	20.300	0.0	0.0	0.0
	14.60000	13.00000	20.30000	-5.1069	20.300	0.0	0.0	0.0
	16.20000	13.00000	20.30000	-5.2453	20.300	0.0	0.0	0.0
	17.80000	13.00000	20.30000	-5.3204	20.300	0.0	0.0	0.0
	19.40000	13.00000	20.30000	-5.3653	20.300	0.0	0.0	0.0
	21.00000	13.00000	20.30000	-5.3968	20.300	0.0	0.0	0.0
	22.60000	13.00000	20.30000	-5.4240	20.300	0.0	0.0	0.0
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	35.40000	13.00000	20.30000	-0.70436	20.300	0.0	0.0	0.0
	37.00000	13.00000	20.30000	-0.35572	20.300	0.0	0.0	0.0
Line 2	30.25000	5.00000	20.30000	-0.28071	20.300	0.0	0.0	0.0
	30.25000	6.10000	20.30000	-0.44914	20.300	0.0	0.0	0.0
	30.25000	7.20000	20.30000	-0.71142	20.300	0.0	0.0	0.0
	30.25000	8.30000	20.30000	-1.1415	20.300	0.0	0.0	0.0
	30.25000	9.40000	20.30000	-1.9445	20.300	0.0	0.0	0.0
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	30.25000	11.60000	20.30000	-4.5732	20.300	0.0	0.0	0.0
	30.25000	12.70000	20.30000	-4.9547	20.300	0.0	0.0	0.0
	30.25000	13.80000	20.30000	-5.1160	20.300	0.0	0.0	0.0
	30.25000	14.90000	20.30000	-5.1328	20.300	0.0	0.0	0.0
	30.25000	16.00000	20.30000	-5.0468	20.300	0.0	0.0	0.0
	30.25000	17.10000	20.30000	-4.8937	20.300	0.0	0.0	0.0
	30.25000	18.20000	20.30000	-4.6926	20.300	0.0	0.0	0.0
	30.25000	19.30000	20.30000	-4.4257	20.300	0.0	0.0	0.0
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Oasys

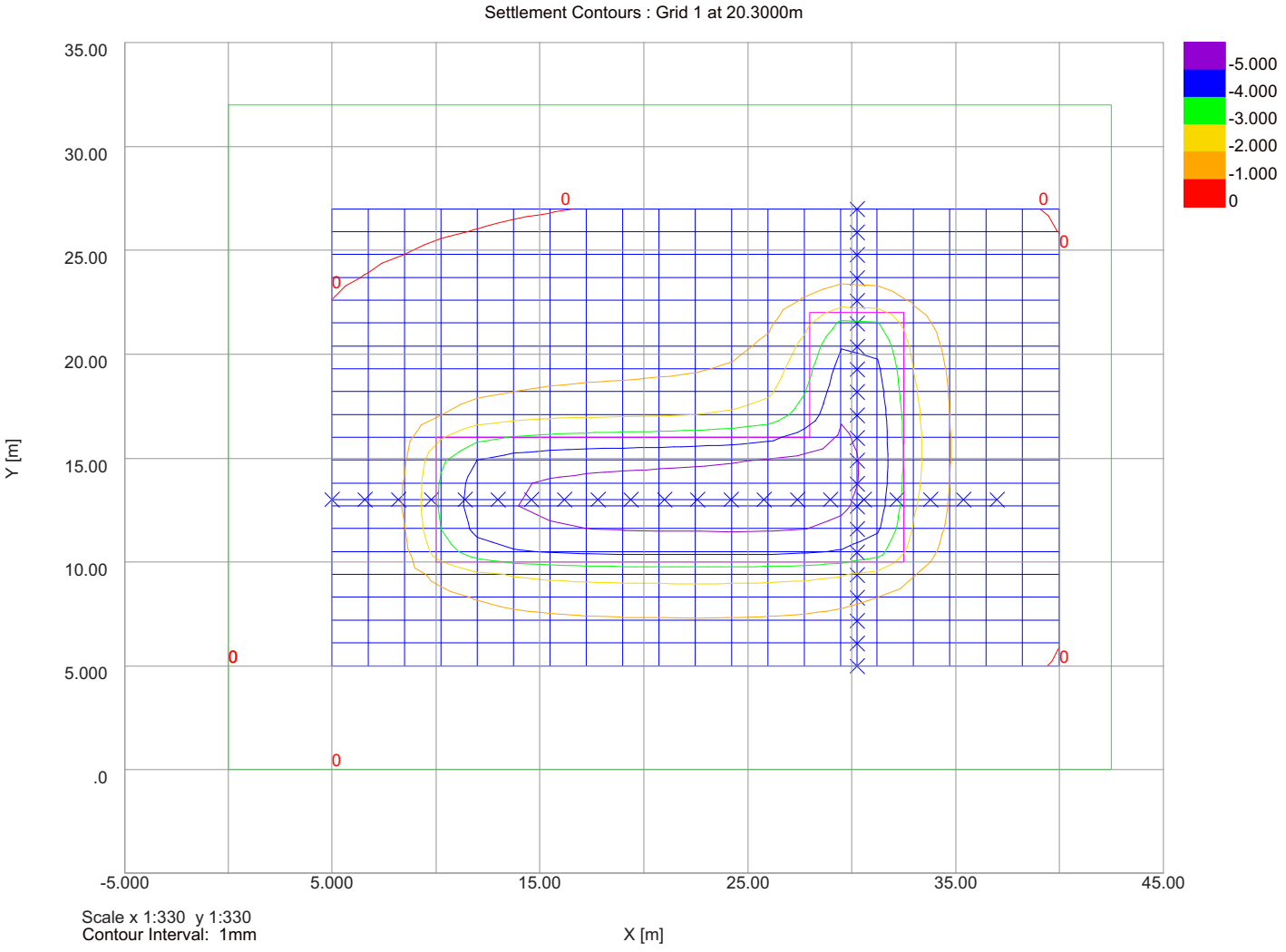
MAUND
GEO-CONSULTING LTD

Job No.	Sheet No.	Rev.
2015-12		

Drg. Ref.

Made by JGM | Date | Checked

8 to 10 Stukeley Street
Basement Heave Determination
Gravel to 17 m AOD on stiff to very stiff London Clay



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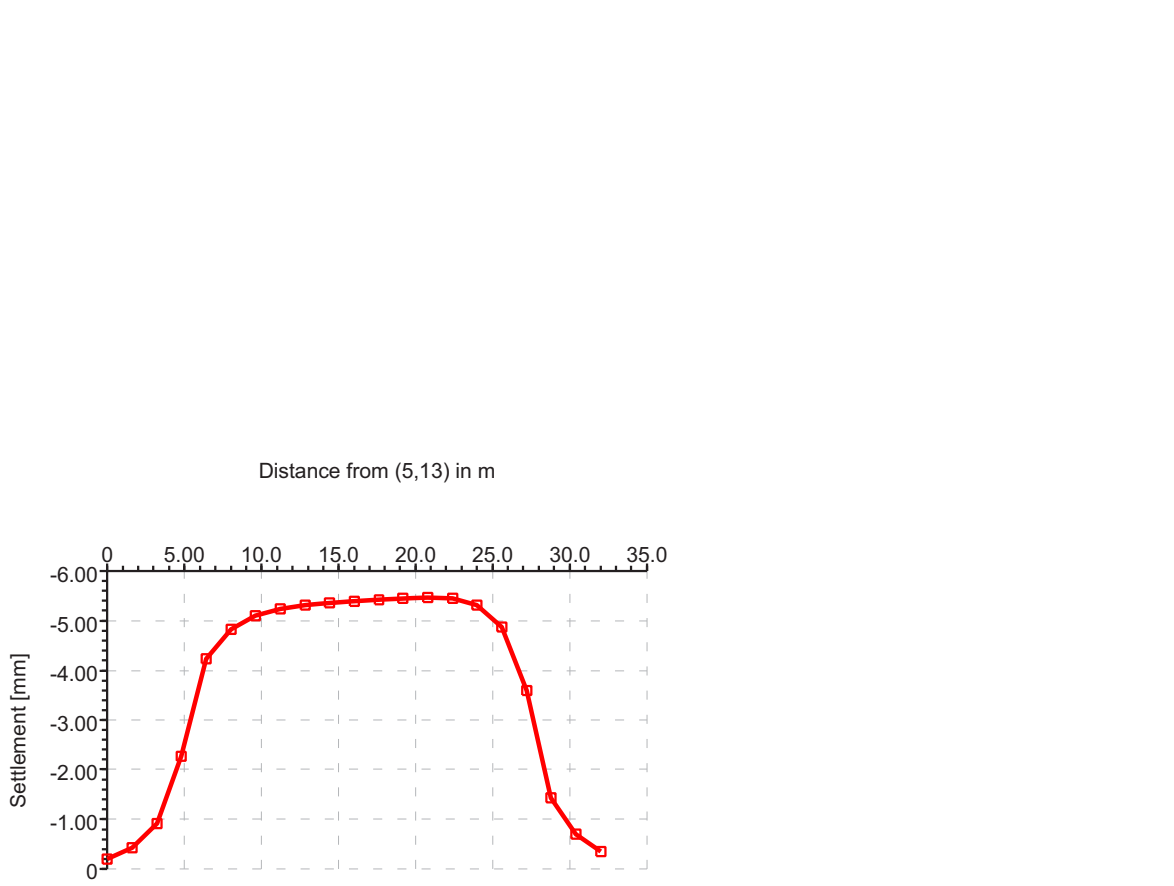

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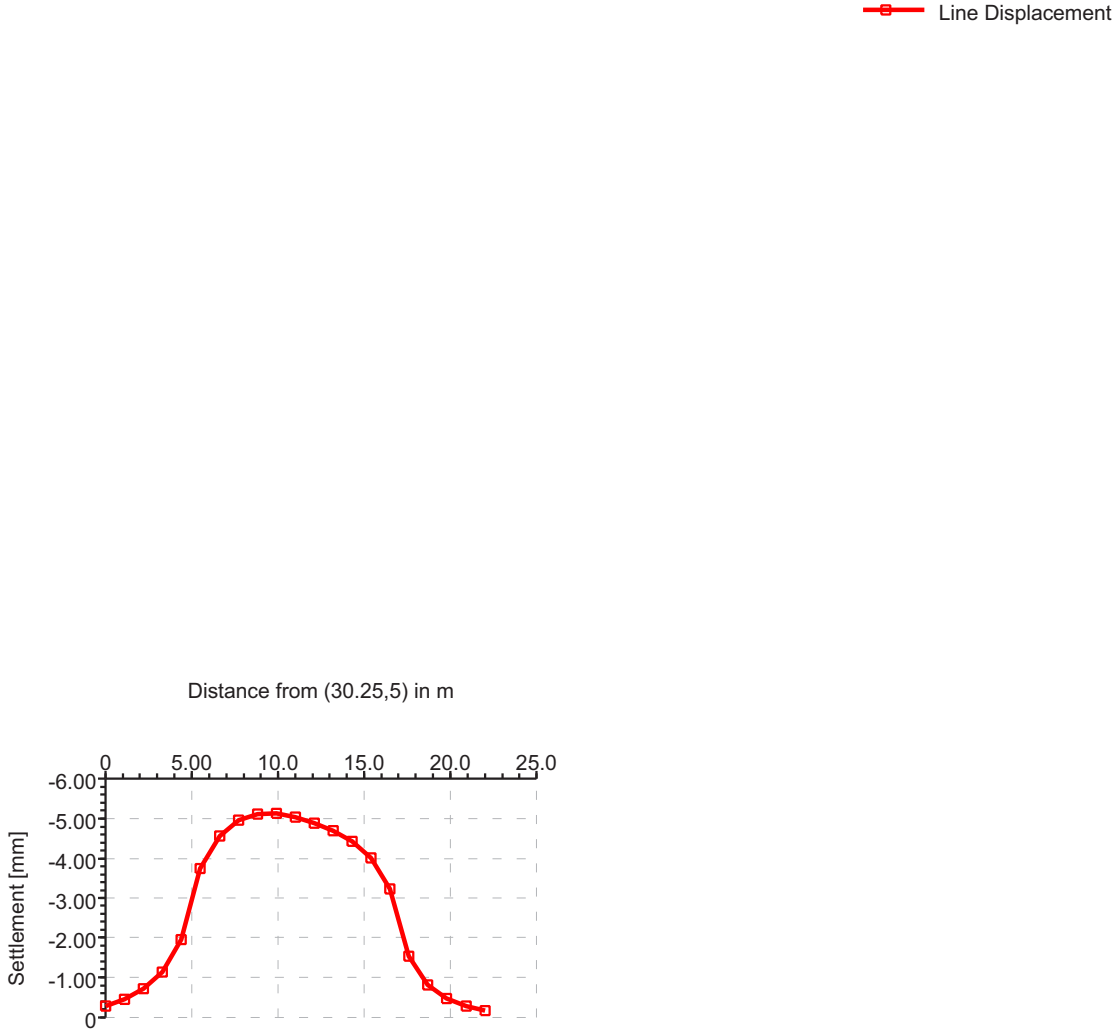


Appendix F Ground Investigation Factual Report (by Ground and Water Ltd November 2015)

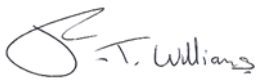
FACTUAL GROUND INVESTIGATION REPORT

for the site at

8 – 10 STUKELEY STREET, LONDON, WC2B 5LQ

on behalf of

BENPROP DRURY LTD

Report Reference: GWPR1405/GIR/November 2015		Status: FINAL
Issue:	Prepared By:	Verified By:
V1.01 November 2015		
	Philip Allvey BSc (Hons) M.Eng Geotechnical Engineer	Francis Williams M.Geol. (Hons) FGS CEnv AGS MSoBRA Director
File Reference: Ground and Water/Project Files/ GWPR1405 8 – 10 Stukeley Street, London		

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FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 General

Ground and Water Limited were instructed by Benprop Drury Limited on the 23rd September 2015 to undertake a Ground Investigation on 8 - 10 Stukeley Street, London WC2B 5LQ. The scope of the investigation was detailed within the Ground and Water Limited fee proposal ref.: GWQ2571, dated 21st August 2015.

1.2 Aims of the Investigation

The aim of the investigation was understood to be to supply the client and their architects with information regarding the ground conditions underlying the site to assist them in preparing an appropriate scheme for development.

The investigation was to be undertaken to provide parameters for the design of foundations by means of in-situ and laboratory geotechnical testing undertaken on soil samples recovered from trial holes.

The requirements of the London Borough of Camden, Camden Geological, Hydrogeological and Hydrological Study, Guidance for Subterranean Development (November 2010) was reviewed with respect to this report.

A Desk Study and full scale contamination assessment were not part of the remit of this report.

The techniques adopted for the investigation were chosen considering the anticipated ground conditions and development proposals on-site, and bearing in mind the nature of the site, limitations to site access and other logistical limitations.

1.3 Conditions and Limitations

This report has been prepared based on the terms, conditions and limitations outlined within Appendix A.

2.0 SITE SETTING

2.1 Site Location

The site comprised a 180m^2 (0.018ha) L-shaped plot of land, located to the south-west of Stukeley Street, at the south-western end of the cul-de-sac. The site was located opposite International House, ~40m south-west of Smart's Place. The site was located to the rear of No. 182 Drury Lane in the St Giles area of Holborn. The site was located in the London Borough of Camden.

The national grid reference for the centre of the site was approximately TQ 30307 81335. A site location plan is given within Figure 1. A plan showing the site area is given within Figure 2.

2.2 Site Description

The site comprised two, two storey brick built buildings, one with roof accommodation. The buildings were noted to directly abut the paved Stukeley Street. No. 8 comprised, at ground floor level, a store/workshop accessed via single width doorways. A single width doorway led to a print room associated with No. 10. Desks and work areas associated with an office were noted beyond the print room with a small open lightwell in the central north-east, adjacent to No. 6.

From the study of online maps, an underground section/tunnel of the Central Underground Line was noted ~100m north of the site. An underground tunnel of the Piccadilly Underground Line was noted ~200m south and ~150m east of the site.

An aerial view of the site is provided within Figure 3.

2.3 Proposed Development

At the time of reporting, November 2015, it is understood the proposed development will comprise the excavation of a basement beneath the footprint of the property. The basement will be formed at ~3.00 – 3.50m bgl.

2.4 Geology

The BGS Geological Map (Solid and Drift) for the North London area (Sheet No. 256), and Figure 3 and 4 of the Camden Geological, Hydrogeological and Hydrological Study, revealed that the site was located on the Lynch Hill Gravel Member, underlain by the London Clay formation.

Lynch Hill Gravel Member

The rivers of the south-east of England, including the River Thames and its tributaries, have been subject to at least three changes of level since Pleistocene times. One result has been the formation of a complex series of river terrace gravels. These terraces represent ancient floodplain deposits that became isolated as the river cut downwards to lower levels. Deposits generally consist of sand and gravel of flint or chert commonly in a matrix of silt and clay.

London Clay Formation

The London Clay Formation comprises stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystones) occur throughout the formation. Crystals of Gypsum (Selenite) are often found within the weathered part of the London Clay Formation, and precautions against sulphate attack to concrete are sometimes required. The lowest part of the formation is a sandy bed with black rounded gravel and occasional layers of sandstone and is known as the Basement Bed.

A BGS borehole ~100m south-east of the site revealed ~5.00 – 5.45m of gravels overlying the London Clay Formation. Groundwater was encountered at around 5.00m bgl.

No areas of Made Ground or Worked Ground were noted within a 250m radius of the site.

2.5 Slope Stability and Subterranean Developments

The site was not situated within an area where a natural or man-made slope of greater than 7^{o} was present (Figure 16 Camden Geological, Hydrogeological and Hydrological Study).

Figure 17 of the Camden Geological, Hydrogeological and Hydrological Study indicated that the site was not situated within an area prone to landslides.

Figure 18 of the Camden Geological, Hydrogeological and Hydrological Study indicated that an underground section/tunnel of the CrossRail Underground Line was situated running in a west to east direction within the proximity of the proposed development area. No other major subterranean infrastructure (including existing and proposed tunnels) were noted within close proximity to the site.

2.6 Hydrogeology and Hydrology

A study of the aquifer maps on the Environment Agency website, and Figure 8 of the Camden Geological, Hydrogeological and Hydrological Study, revealed the site to be located on a **Secondary A Aquifer** relating to the deposits of the Lynch Hill Gravel Member. These deposits were underlain by **Unproductive Strata** relating to the bedrock deposits of the London Clay Formation.

Superficial (Drift) deposits are permeable unconsolidated (loose) deposits, for example, sands and gravels.The bedrock is described as solid permeable formations e.g. sandstone, chalk and limestone. Unproductive strata are rock layers with low permeability that have negligible significance for water supply or river base flow. These were formerly classified as non-aquifers.

Secondary A Aquifers are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

Examination of the Environment Agency records, and Figure 8 of the Camden Geological, Hydrogeological and Hydrological Study, showed that the site did not fall within a Groundwater Source Protection Zone as classified in the Policy and Practice for the Protection of Groundwater.

No surface water features were noted within a 250m radius of the site.

From analysis of hydrogeological and topographical maps groundwater was anticipated to be encountered at moderate depth (>5m below existing ground level (bgl)) and it was considered that the groundwater was flowing in a southerly direction in alignment with the local topography, towards the River Thames.

Examination of the Environment Agency records showed that the site was **not** situated within flood zone or flood warning area.

2.7 Radon

BRE 211 (2007) Map 4 Hampshire, Berkshire and south Oxfordshire revealed the site **was not** located within an area where mandatory protection measures against the ingress of Radon were likely to be required. The site **was not** located within an area where a risk assessment was required.

3.0 FIELDWORK

3.1 Scope of Works

Fieldwork was undertaken on the 25th September 2015 and comprised the drilling of one Window Sampler Boreholes (WS2) to a depth of 4.30m bgl. A Heavy Dynamic Probe (HDP) (DP2) was undertaken adjacent to WS2 to a depth of 4.30m bgl.

Further fieldwork was undertaken on the 28th October 2015 to extend the depth of WS2 to 8.00m bgl, using a Hollow Stem Flight Auger.

A groundwater monitoring standpipe was installed in WS2 to a depth of 5.40m bgl to enable the measurement of standing groundwater levels.

The construction of the well installed can be seen tabulated below.

Combined Bio-gas and Groundwater Monitoring Well Construction				
Trial Hole	**Depth of Installation (m bgl)**	**Thickness of slotted piping with gravel filter pack (m)**	**Depth of plain piping with bentonite seal (m bgl)**	**Piping external diameter (mm)**
WS2	5.40	4.00	1.00	63

The approximate locations of the trial holes can be seen within Figure 4.

Prior to commencing the ground investigation, a walkover survey was carried out to identify the presence of underground services and drainage. Where underground services/drainage were suspected and/or positively identified, exploratory positions were relocated away from these areas.

Upon completion of the site works, the trial holes were backfilled and made good/reinstated in relation to the surrounding area.

3.2 Sampling Procedures

Small disturbed samples were recovered from the trial hole at the depths shown on the trial hole records. Soil samples were generally retrieved from each change of strata and/or at specific areas of concern. Samples were also taken at approximately 0.5m intervals during broad homogenous soil horizons.

A selection of samples were despatched for geotechnical testing purposes.

4.0 ENCOUNTERED GROUND CONDITIONS

4.1 Soil Conditions

All exploratory holes were logged by Philip Allvey of Ground and Water Limited in accordance with BS EN 14688 'Geotechnical Investigation and Testing – Identification and Classification of Soil'.

The ground conditions encountered within the trial hole constructed on the site generally conformed to that anticipated from examination of the geology map. Made Ground was noted to overlie the Lynch Hill Gravel Member, which was in turn underlain by the bedrock deposits of the London Clay Formation.

The ground conditions encountered during the investigation are described in this section. For more complete information about the Made Ground, Lynch Hill Gravel Member and the London Clay Formation at particular points, reference must be made to the individual trial hole logs within Appendix B.

The trial hole location plan can be viewed in Figure 4.

For the purposes of discussion the succession of conditions encountered in the trial holes in descending order can be summarised as follows:

Made Ground
Lynch Hill Gravel Member
London Clay Formation

Made Ground

Made Ground was encountered beneath a 0.20m capping of reinforced concrete to a depth of 3.70m bgl. These soils comprised a dark brown and dark grey clayey gravelly sand to gravelly sandy clay. The sand was fine to coarse grained and the gravel was abundant, fine to coarse, sub-angular to sub-rounded brick, cement and flint.

Lynch Hill Gravel Member

Soils described as representative of the Lynch Hill Gravel Member were encountered underlying the Made Ground to a depth of 7.00m bgl. These soils comprised an orange brown sand and gravel. The gravel was abundant, fine to medium, sub-angular to sub-rounded flint.

London Clay Formation

Soils described as the London Clay Formation were encountered underlying the soils of the Lynch Hill Gravel Member for the remaining depth of the borehole, a depth of 8.00m. These soils were described as a grey silty clay.

For details of the composition of the soils encountered at particular points, reference must be made to the individual trial hole logs within Appendix B.

4.2 Roots Encountered

No roots were encountered during construction of the trial hole.

It must be noted that the chance of determining actual depth of root penetration through a narrow diameter borehole is low.

4.3 Groundwater Conditions

A groundwater seepage was noted at a depth of 5.90m bgl. A standing water level of 5.03m bgl was recorded in the standpipe installed in WS2 on the 3rd November 2015.

Changes in groundwater level occur for a number of reasons including seasonal effects and variations in drainage. Exact groundwater levels may only be determined through long term measurements from monitoring wells installed on-site. The investigation was undertaken in September 2015, when groundwater levels are likely to be rising towards their annual maximum (i.e. highest level).

Isolated pockets of groundwater may be perched within any Made Ground found at other locations around the site.

4.4 Obstructions

No artificial or natural sub-surface obstructions were noted during construction of the trial holes.

5.0 INSITU AND LABORATORY GEOTECHNICAL TESTING

5.1 In-Situ Geotechnical Testing

A Heavy Dynamic Probe (HDP) (DP2) was undertaken adjacent to WS2 to a depth of 4.30m bgl. The test results are presented with the borehole logs within Appendix B.

Window Sampler Boreholes provide samples of the ground for assessment but they do not give any engineering data.

Heavy Dynamic Probing involves the driving of a metal cone into the ground via a series of steel rods. These rods are driven from the surface by a hammer system that lifts and drops a 50.0kg hammer onto the top of the rods through a set height (500mm), thus ensuring a consistent energy input. The numbers of hammer blows that are required to drive the cone down by each 100mm increment are recorded. These blow counts then provide a comparative assessment from which correlations have been published, based on dynamic energy, which permits engineering parameters to be generated. (The Dynamic Probe 'Heavy' (HDP) Tests were conducted in accordance with BS 1377; 1990; Part 9, Clause 3.2).

The granular soils of the Lynch Hill Gravel Member were classified based on the table below.

Correlation between normalised SPT blow counts $(N_1)_{60}$	
Classification	**SPT "N" Blow Counts**
Extremely Dense	>58
Very Dense	42 – 58
Dense	25 – 42
Medium	8 – 25
Loose	3 – 8
Very Loose	0 – 3

An interpretation of the in-situ geotechnical testing results is given in the table below.

Interpretation of In-situ Geotechnical Testing Results (DP1)					
Strata	**Equivalent 'SPT's derived from HDP results**	**Equivalent Undrained Shear Strength (kPa) Cohesive Soils**	**Soil Type**		**Trial Hole/s**
			Cohesive	**Granular**	
Made Ground	1 - 5	-	-	Very Loose to Loose	WS/DP2 (GL – 3.50m bgl)
Lynch Hill Gravel Member	34 - 262	-	-	Dense to Extremely Dense	WS/DP2 (3.50 – 4.30m bgl)

It must be noted that field measurements of undrained shear strength are dependent on a number of variables including disturbance of sample, method of investigation and also the size of specimen or test zone etc.

The test results are presented on the trial hole log within Appendix B.

5.2 Laboratory Geotechnical Testing

A programme of geotechnical laboratory testing, scheduled by Ground and Water Limited and carried out by K4 Soils Laboratory and QTS Environmental Limited, was undertaken on samples recovered from the Made Ground and Lynch Hill Gravel Member. The results of the tests are presented in Appendix C.

The test procedures used were generally in accordance with the methods described in BS1377:1990.

Details of the specific tests used in each case are given below:

Standard Methodology for Laboratory Geotechnical Testing		
Test	**Standard**	**Number of Tests**
Particle Size Distribution	BS1377:Part 2:1990: Clause 9	1
Water Soluble Sulphate & pH	BS1377:1990:Part 3:Clause 5	1
BRE Special Digest 1 (incl. Ph, Electrical Conductivity, Total Sulphate, W/S Sulphate, Total Chlorine, W/S Chlorine, Total Sulphur, Ammonium as NH4, W/S Nitrate, W/S Magnesium)	BRE Special Digest 1 "Concrete in Aggressive Ground (BRE, 2005).	2

5.2.1 Particle Size Distribution (PSD) Tests

The results of PSD testing undertaken on one sample of the Lynch Hill Gravel Member are tabulated below.

PSD Test Results Summary			
Trial Hole/Depth/Soil Description	**Volume Change Potential Range**		**Passing 63µm Sieve (%)**
	BRE	**NHBC**	
Lynch Hill Gravel Member WS2/4.00m bgl (Brown silty very sandy GRAVEL. Gravel is fine to medium and sub-angular to sub-rounded)	No	No	5

NB Volume Change Potential refers to BRE Digest 240 (based on Grading test results).

Volume Change Potential – BRE 240 states that a soil has a volume change potential when the clay fraction exceeds 15%. Only the silt and clay combined fraction are determined by sieving therefore the volume change potential is estimated from the percentage passing the 63µm sieve.

NHBC Standards Chapter 4.2 states that a soil is shrinkable if the percentage of silt and clay passing the 63µm sieve is greater than 35% and the Plasticity Index is greater than 10%.

5.2.2 Sulphate and pH Tests

A Sulphate and pH test was undertaken on one sample from the Lynch Hill Gravel Member (WS2/4.00m bgl). A sulphate concentration of 0.16g/l with a pH of 7.82 was determined.

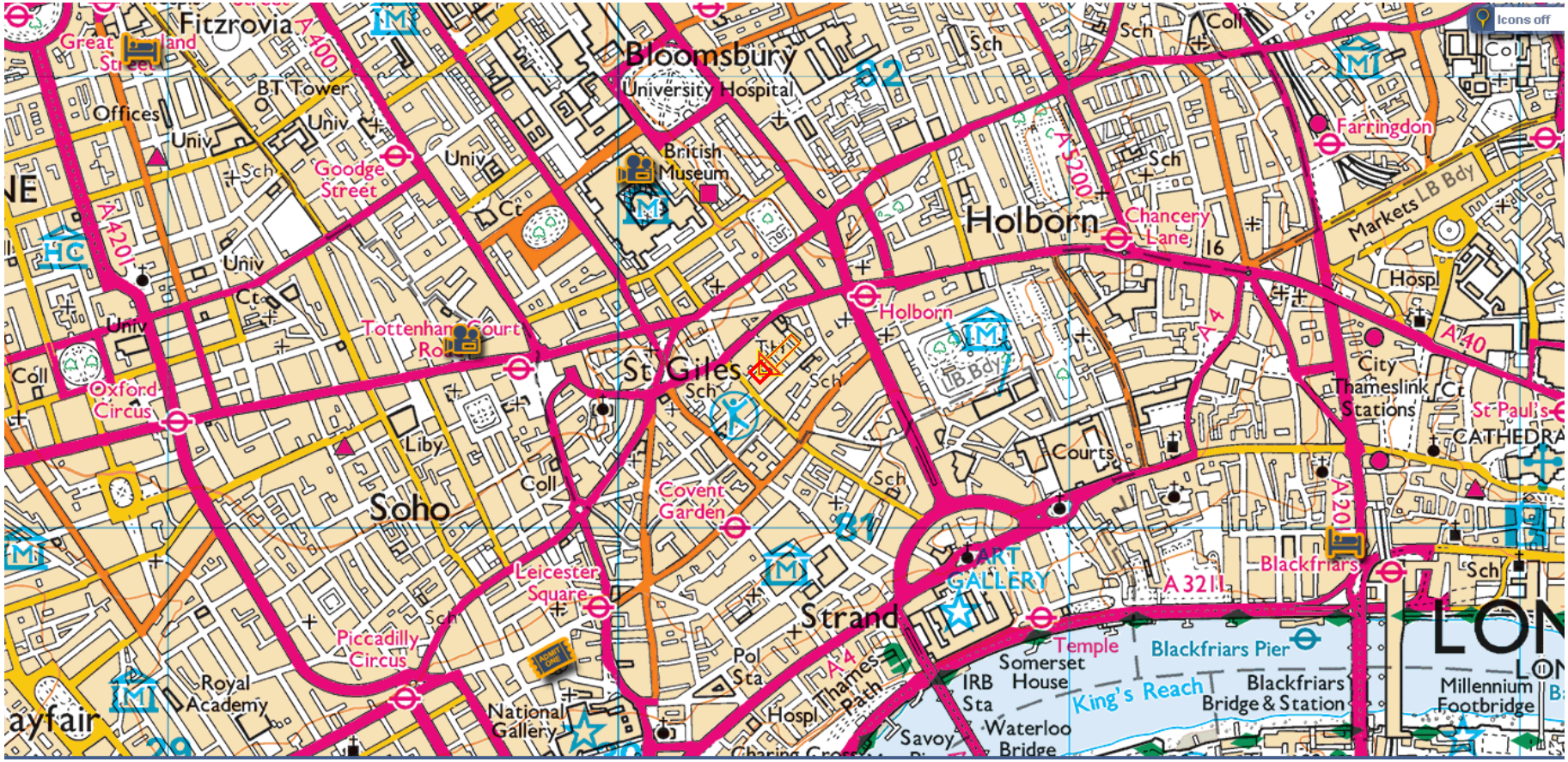
5.2.3 BRE Special Digest 1

In accordance with BRE Special Digest 1 'Concrete in Aggressive Ground' (BRE, 2005) two samples of Made Ground (WS2/1.00m and WS2/3.00m bgl) were scheduled for laboratory analysis to determine parameters for concrete specification.

The results are given within Appendix C and a summary is tabulated below.

Summary of Results of BRE Special Digest Testing			
Determinand	**Unit**	**Minimum**	**Maximum**
pH	-	7.7	9.1
Ammonium as NH_4	mg/kg	2.2	18.3
Sulphur	%	0.06	1.02
Chloride (water soluble)	mg/kg	35	80
Magnesium (water soluble)	mg/l	2	3.5
Nitrate (water soluble)	mg/kg	33	225
Sulphate (water soluble)	mg/l	576	1690
Sulphate (total)	%	0.14	2.47

N

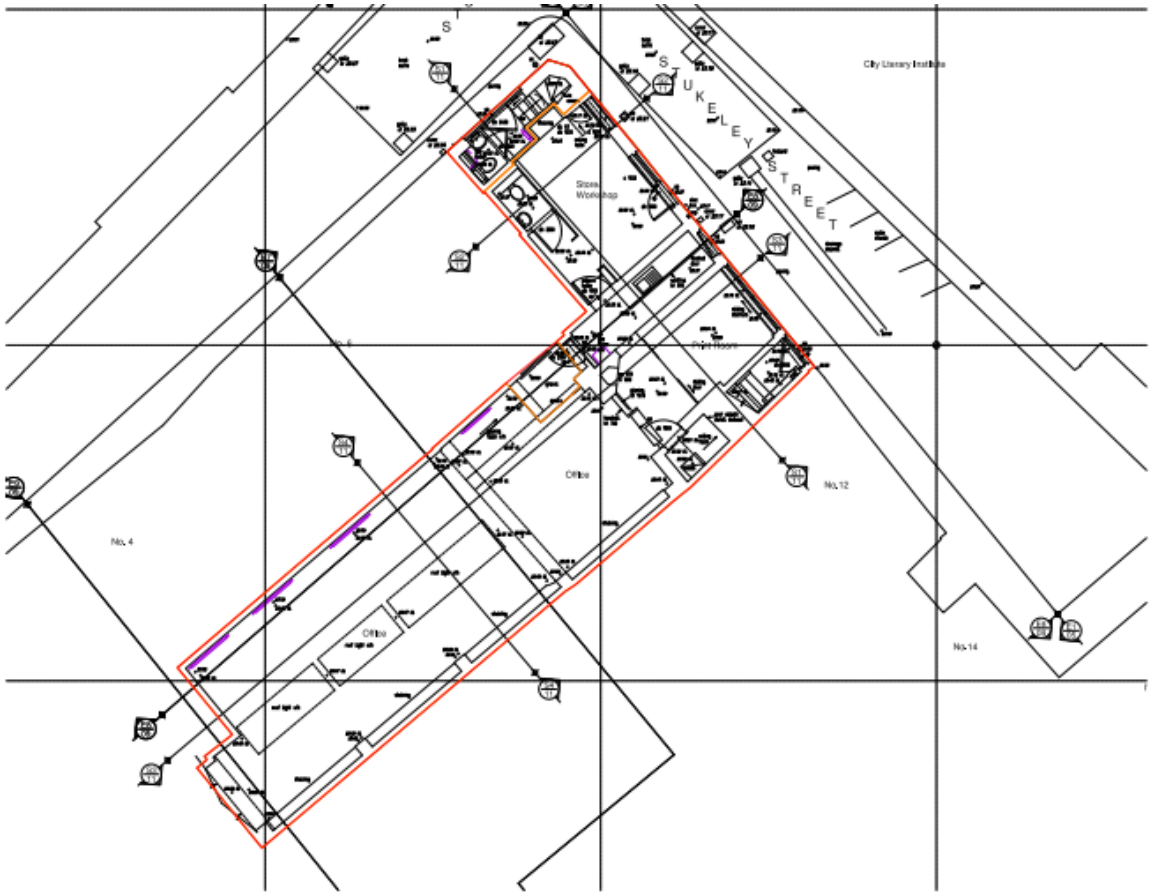


NOT TO SCALE

APPROXIMATE SITE BOUNDARY

Project: 8 – 10 Stukeley Street, London, WC2B 5LQ		Figure 1
Client: Native Land	Date: November 2015	ground&water
Site Location Plan	Ref: GWPR1405	

N



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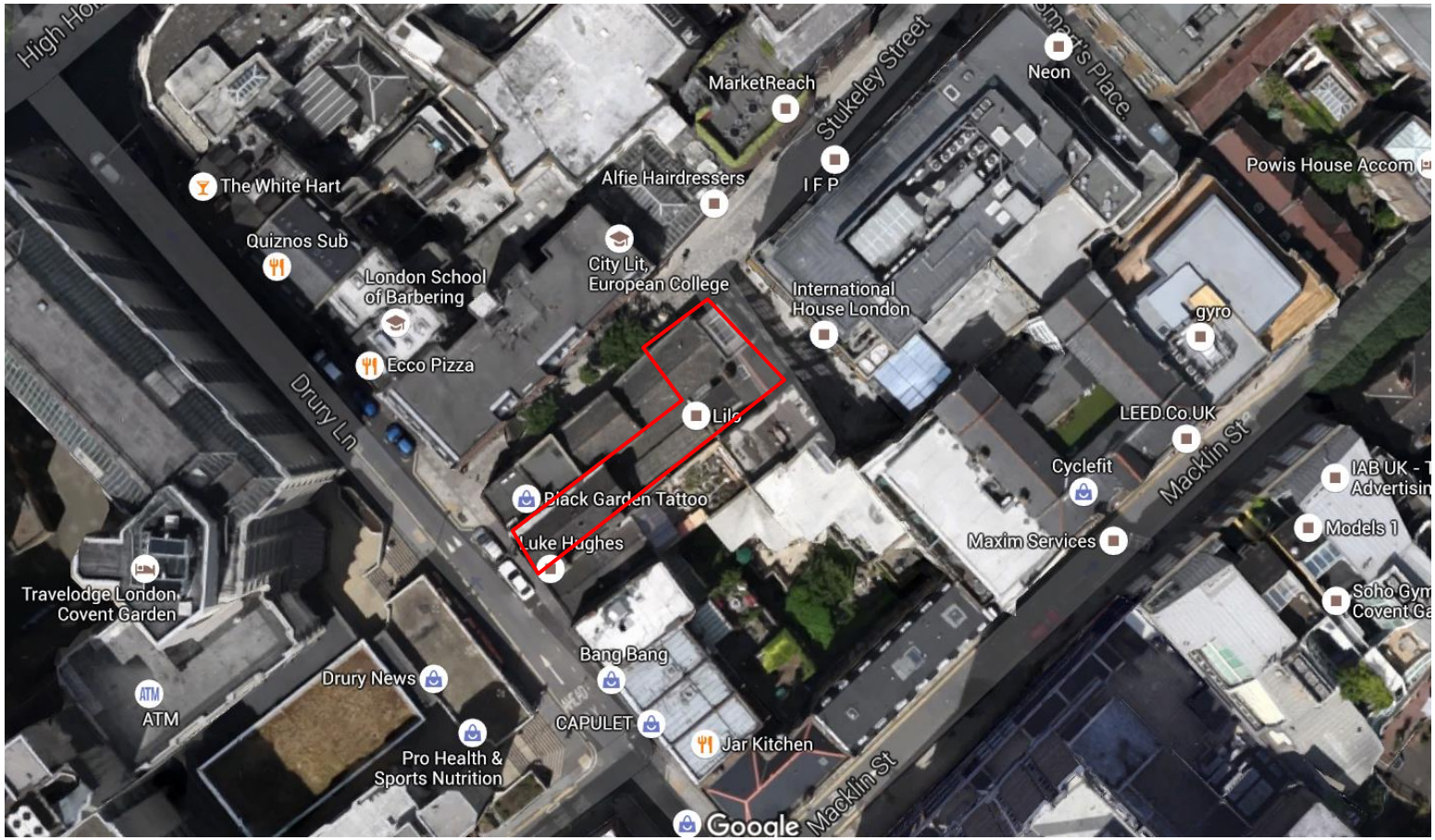
APPROXIMATE SITE BOUNDARY

Project: 8 – 10 Stukeley Street, London WC2B 5LQ		Figure 2
Client: Native Land	Date: November 2015	ground&water
Proposed Development Area	Ref: GWPR1405	

N



NOT TO SCALE

APPROXIMATE SITE BOUNDARY

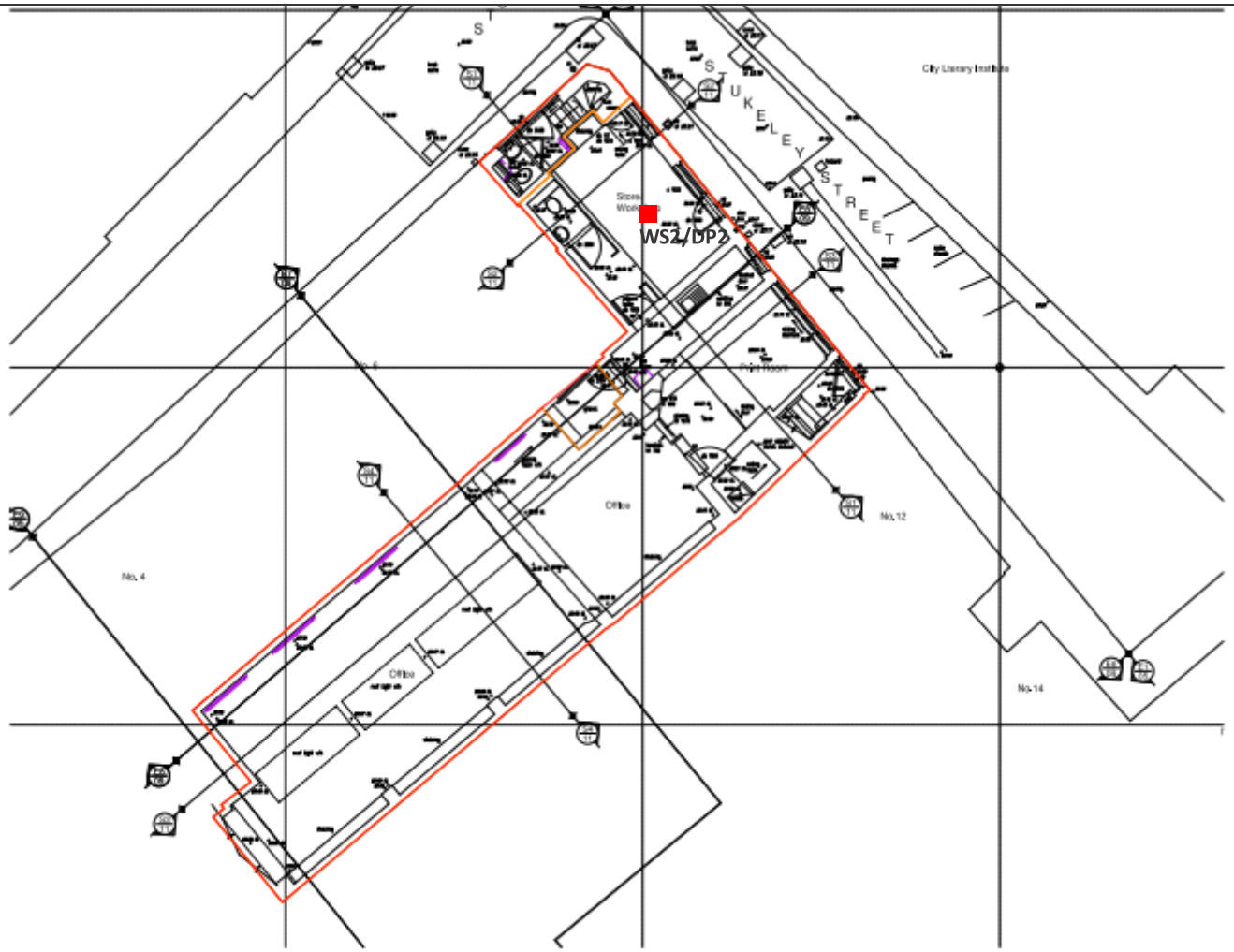
Project: 8 – 10 Stukeley Street, London, WC2B 5LQ		Figure 3
Client: Native Land	Date: November 2015	ground&water
Aerial View of the Site	Ref: GWPR1405	

Key:

Site Boundary

N

Borehole/Dynamic Probe Location



NOTE: NOT TO SCALE

Project: 8 – 10 Stukeley Street, London, WC2B 5LQ		**Figure 4**
Client: Native Land	**Date:** November 2015	ground&water
Trial Hole Location Plan	**Ref:** GWPR1405	

APPENDIX A
Conditions and Limitations

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the client in accordance with their brief; as such these do not necessarily address all aspects of ground behaviour at the site. No liability is accepted for any reliance placed on it by others unless specifically agreed in writing.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

This report is based on readily available geological records, the recorded physical investigation, the strata observed in the works, together with the results of completed site and laboratory tests. Whilst skill and care has been taken to interpret these conditions likely between or below investigation points, the possibility of other characteristics not revealed cannot be discounted, for which no liability can be accepted. The impact of our assessment on other aspects of the development required evaluation by other involved parties.

The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous in ground activities. The ground conditions have been samples or monitored in recorded locations and tests for some of the more common chemicals generally expected. Other concentrations of types of chemicals may exist. It was not part of the scope of this report to comment on environment/contaminated land considerations.

The conclusions and recommendations relate to 8 - 10 Stukeley Street, London WC2B 5LQ.

Trial hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sampler borehole implies the specific technique used to produce a trial hole.

The depth to roots and/or of desiccation may vary from that found during the investigation. The client is responsible for establishing the depth to roots and/or of desiccation on a plot-by-plot basis prior to the construction of foundations. Where trees are mentioned in the text this means existing trees, recently removed trees (approximately 15 years to full recovery on cohesive soils) and those planned as part of the site landscaping.

APPENDIX B
Fieldwork Logs

Ground and Water Ltd
Tel: 0333 600 1221
email: enquiries@groundandwater.co.uk
www.groundandwater.co.uk

Borehole No
WS2
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
8 - 10 Stukeley Street	GWPR1405		WS
Location: London WC2B 5LQ		Level: -	Scale 1:50
Client: Native Land		Dates: 12/10/2015-29/10/2015	Logged By PA

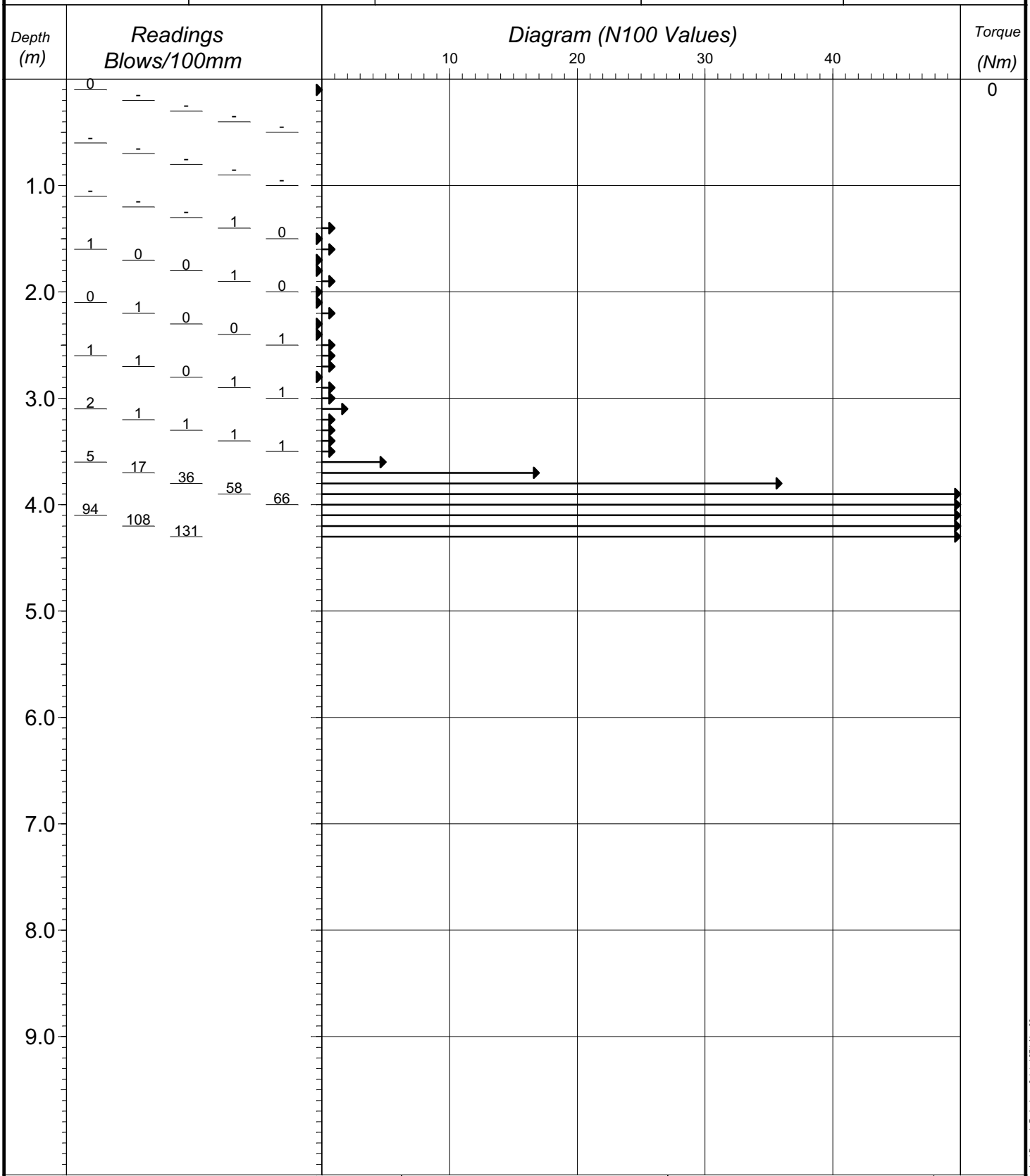
Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			MADE GROUND: Reinforced concrete.
		0.30	D					MADE GROUND: Dark brown clayey gravelly sand. Sand is fine to coarse grained. Gravel is abundant, fine to coarse, sub-angular to sub-rounded brick, cement, flint.
		0.50	D					
		0.80	D					
		1.00	D					
		1.50	D		1.70			MADE GROUND: Dark grey and dark brown gravelly sandy clay. Sand is fine to medium grained. Gravel is occasional, fine to medium, sub-angular to sub-rounded, flint, brick and cement.
		2.00	D					
		2.50	D					
		3.00	D					
		3.50	D		3.70			LYNCH HILL GRAVEL FORMATION: Orange brown SAND and GRAVEL. Sand is fine to coarse grained. Gravel is abundant, fine to medium, sub-angular to sub-rounded flint.
		4.00	D					
	▽				7.00			LONDON CLAY FORMATION: Dark grey silty CLAY.
					8.00			End of Borehole at 8.00 m
			Type	Results				

Remarks: No groundwater encountered.
No roots encountered.
Borehole extended by hollow stem auger to 8.00m bgl on the 29th October 2015 following initial window sampling visit on the 12th October 2015.

AGS

DYNAMIC PROBING

Probe No **DP2**			
Client **Native Land**			Sheet 1 of 1
Site **8 - 10 Stukeley Street**			Project No **GWPR1405**
E -	N -	Level -	Date **12/10/2015** Logged by **SJM**



ground &water
Ground and Water Ltd
Tel: 0333 600 1221
email: enquiries@groundandwater.co.uk
www.groundandwater.co.uk

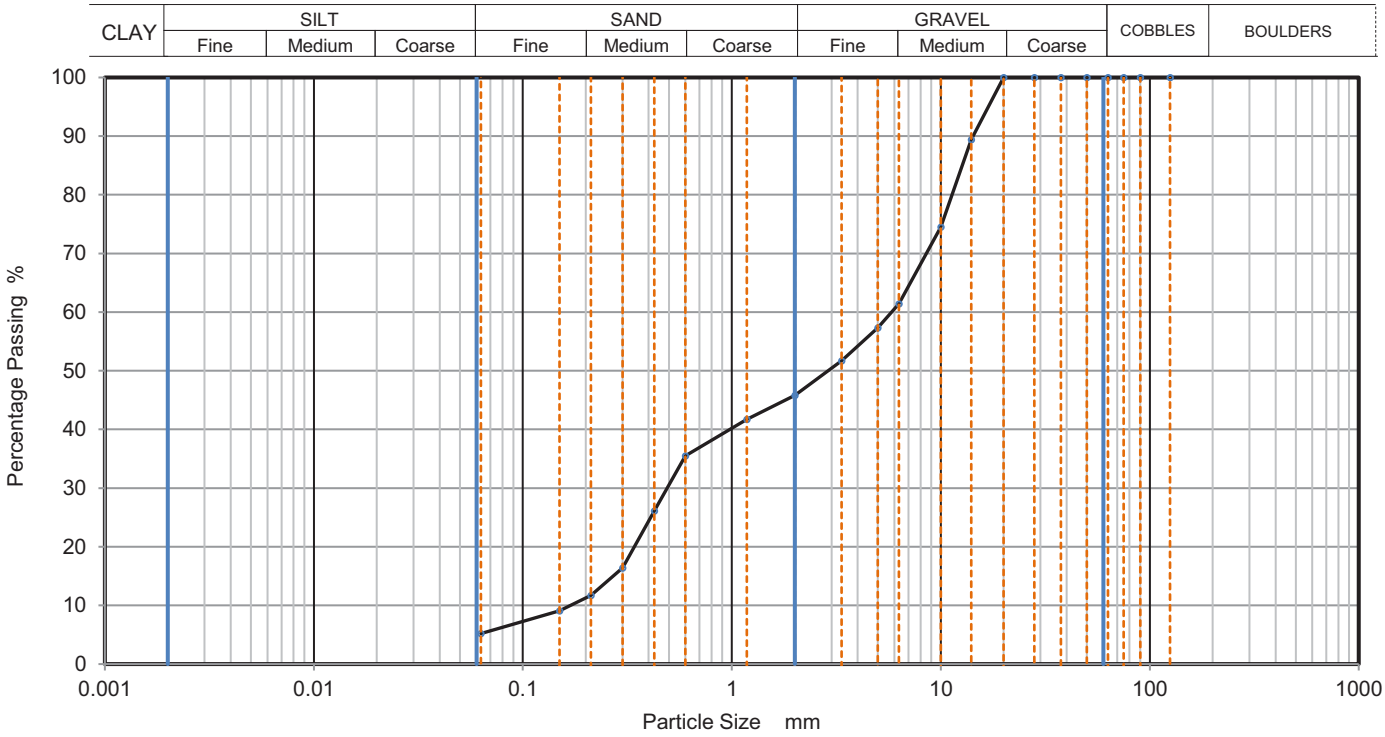
Fall Height	500	Cone Base Diameter	43
Hammer Wt	50.00	Final Depth	4.20
Probe Type	DPH	Log Scale	1:50

AGS

APPENDIX C
Geotechnical and Chemical Laboratory Test Results

PARTICLE SIZE DISTRIBUTION

				Job Ref	19654
				Borehole/Pit No.	BH2
Site Name	8 - 10 Stukeley Street London			Sample No.	
Project No.	1405	Client	Ground and Water Ltd	Depth	4.00 m
Soil Description	Brown silty very sandy GRAVEL (gravel is fm and sub-angular to rounded)			Sample Type	D
				Samples received	13/10/2015
				Schedules received	13/10/2015
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	14/10/2015
				Date tested	23/10/2015



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	89		
10	75		
6.3	61		
5	57		
3.35	52		
2	46		
1.18	42		
0.6	36		
0.425	26		
0.3	16		
0.212	12		
0.15	9		
0.063	5		

Dry Mass of sample, g	194

Sample Proportions	% dry mass
Very coarse	0
Gravel	54
Sand	41
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	5.82
D30	mm	0.49
D10	mm	0.169
Uniformity Coefficient		35
Curvature Coefficient		0.24

Remarks

Preparation and testing in accordance with BS1377 unless noted below

K4 Soils Laboratory
Unit 8, Olds Close, Watford, Herts, WD18 9RU
Email: james@k4soils.com
Tel: 01923 711288

Checked and Approved
Initials: J.P
Date: 26/10/2015

Sulphate Content (Gravimetric Method) for 2:1 Soil: Water Extract and pH Value - Summary of Results

Tested in accordance with BS1377 : Part 3 : 1990, clause 5.3 and clause 9

Job No.	Project Name	Programme	
19654	8 - 10 Stukeley Street London	Samples received	13/10/2015
		Schedule received	13/10/2015
Project No.	Client	Project started	14/10/2015
1405	Ground and Water Ltd	Testing Started	23/10/2015

Hole No.	Sample				Soil description	Dry Mass passing 2mm	SO3 Content	SO4 Content	pH	Remarks
	Ref	Top	Base	Type		%	g/l	g/l		
BH2		4.00		D	Brown silty very sandy GRAVEL (gravel is fm and sub-angular to rounded)	42	0.13	0.16	7.82	

Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU
Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials J.P

Date: 26/10/2015

Phil Allvey
Ground & Water Ltd
2 The Long Barn
Norton Farm
Selborne Road
Alton
Hampshire
GU34 3NB

QTS Environmental Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 15-36445

Site Reference:	8 - 10 Stukeley Street, London WC2B 5LQ
Project / Job Ref:	GWPR1405
Order No:	None Supplied
Sample Receipt Date:	13/10/2015
Sample Scheduled Date:	13/10/2015
Report Issue Number:	1
Reporting Date:	16/10/2015

Authorised by:

Russell Jarvis
Director
On behalf of QTS Environmental Ltd

Authorised by:

Kevin Old
Director
On behalf of QTS Environmental Ltd

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
QTS Environmental Report No: 15-36445	**Date Sampled**	25/09/15	25/09/15			
Ground & Water Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: 8 - 10 Stukeley Street, London WC2B 5LQ	**TP / BH No**	BH2	BH2			
Project / Job Ref: GWPR1405	**Additional Refs**	None Supplied	None Supplied			
Order No: None Supplied	**Depth (m)**	1.00	3.00			
Reporting Date: 16/10/2015	**QTSE Sample No**	172043	172044			

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	9.1	7.7			
Total Sulphate as SO_4	mg/kg	< 200	NONE	24670	1419			
Total Sulphate as SO_4	%	< 0.02	NONE	2.47	0.14			
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	1690	576			
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	1.69	0.58			
Total Sulphur	%	< 0.02	NONE	1.02	0.06			
Ammonium as NH_4	mg/kg	< 0.5	NONE	18.3	2.2			
Ammonium as NH_4	mg/l	< 0.05	NONE	1.83	0.22			
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	80	35			
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	40	17.7			
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	MCERTS	225	33			
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	MCERTS	112	16.4			
W/S Magnesium	mg/l	< 0.1	NONE	2	3.5			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Analysis carried out on the dried sample is corrected for the stone content
Subcontracted analysis $^{(S)}$

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 15-36445	
Ground & Water Ltd	
Site Reference: 8 - 10 Stukeley Street, London WC2B 5LQ	
Project / Job Ref: GWPR1405	
Order No: None Supplied	
Reporting Date: 16/10/2015	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 172043	BH2	None Supplied	1.00	15	Brown sandy clay with brick
$ 172044	BH2	None Supplied	3.00	20.2	Brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 15-36445

Ground & Water Ltd

Site Reference: 8 - 10 Stukeley Street, London WC2B 5LQ

Project / Job Ref: GWPR1405

Order No: None Supplied

Reporting Date: 16/10/2015

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10 C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received