Appendix A

Topographical drawing and utilities information

No.59
Camden Trade
Union Office

Brill Place

Brill Place

Brill Place

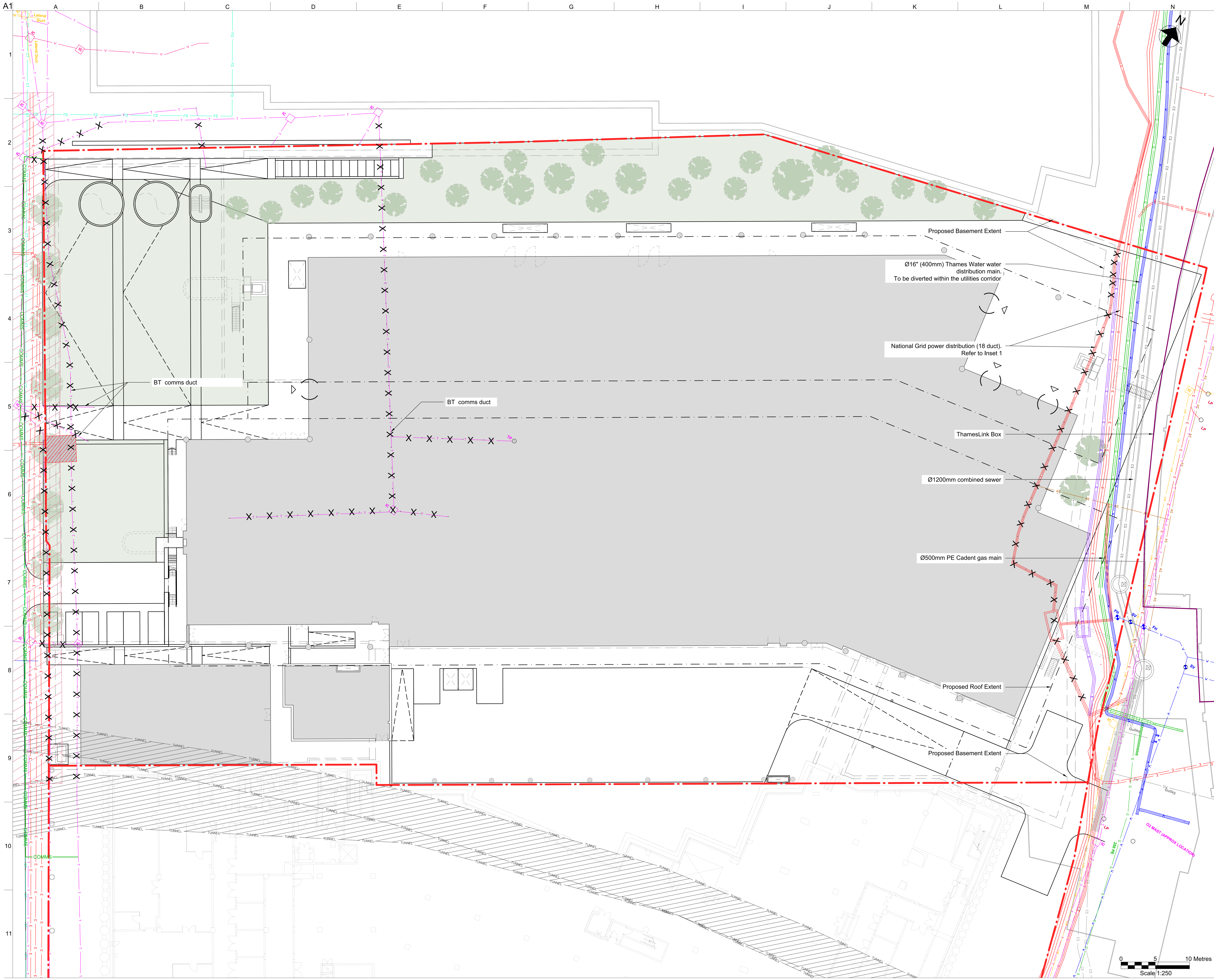
Oakshott Street

Oakshott Street

Midland Road

BUS STOP

BUS LANE



Do not scale

NOTES

1. Existing Utility Survey Information is based on "2007s010 ref 6946.dwg" provided by Groundwise Searches August 2020.

LEGEND

Site Boundary	
Existing Utiliities	
Electricity Cable	E
Extra High Voltage	EHV
High Voltage	HV
Low Voltage	LV
Street Lighting	SL
Water Main	W
Gas Main	G
Foul Water	FW
Surface Water	SW
Combined Sewer	CS
Abandoned Sewer	AS
Culvert	CUL
BT	T
Virgin Media	VM
Fibre Optics	FO
Duct	D
Traffic Signaling	TS
CCTV	CC
Vodafone	V
Colt	CT
Instalcom	IC
Telent	TEL
Verizon	VER
Zayo	ZAY
Existing Tunnel	TUNNEL
Thames Link Tunnel	

Rev	Date	By	Chkd	Appd
P04	19/03/21	TC	RO	TMcD
For Information				
P03	07/12/20	RO	RO	TMcD
For Information				
P02	27/10/20	RO	RO	AC
For Information				

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44(0)20 7636 1531 Fax +44(0)20 7580 3924
www.arup.com

Client
Stanhope
Mitsui

Project Title
British Library

Key Plan

Drawing Title
Proposed Utilities
Proposed Site
Plan

Scale at A1 1:250

Role Civil

Suitability **For Information**

Arup Job No **249622-00**

Rev **P04**

Name **BL-ARUP-ZZ-BG-DR-CU-001200**

\\Global.arup.com\london\BEL\Jobs\200000\249600\249622-00 British Library\4 Internal Data\03 Drawings\03 Civil\CU-Utilities\DW-Drawings\BL-ARUP-ZZ-BG-DR-CU-001200-temp.dwg 19 Mar 2021 17:22:01 id: 360ACC40-C3D4-43E7-B0E9-E7CC1E88055B Raluca.Olariu

Appendix B

Site investigation information

Soil Mechanics

The UK's leading geotechnical specialists

Report No D4050

BRITISH LIBRARY CENTRE FOR CONSERVATION, LONDON, NW1

FACTUAL REPORT ON GROUND INVESTIGATION

Carried out for : Sir Robert McAlpine Ltd

Engineer : Ove Arup & Partners Ltd

Date : August 2004

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ENCLOSURE A
EXPLORATORY HOLE RECORDS

Key to Exploratory Hole Records	Key
Borehole Logs	BH1 and BH2
Trial Pit Logs	TP1 to TP3

Key to Exploratory Hole Records

Soil Mechanics

SAMPLES

Undisturbed

U	Driven tube sample
TW	Pushed thin wall tube sample } nominally 100 mm diameter and full recovery unless otherwise stated
P	Pushed piston sample
L	Liner sample (from Windowless or similar sampler), full recovery unless otherwise stated
CBR	CBR mould sample
BLK	Block sample
CS	Core sample (from rotary core) taken for laboratory testing

Disturbed

D	Small sample
B	Bulk sample

Other

W	Water sample
G	Gas sample

Environmental chemistry samples (in more than one container where appropriate)

ES	Soil sample
EW	Water sample

Comments Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that attempt was made to take a tube sample, however, there was no recovery.

Monitoring samples taken after completion of hole construction are not shown on the exploratory hole logs.

TESTS

SPT S or SPT C — Standard Penetration Test, open shoe (S) or solid cone (C)

The Standard Penetration Test is defined in BS 1377 : Part 9 (1990). The incremental blow counts are given in the Field Records column; each increment is 75 mm unless stated otherwise and any penetration under self weight in mm (SW) is noted. Where the full 300 mm test drive is achieved the total number of blows for the test drive is presented as N = ** in the Test column. Where the test drive blows reach 50 (either in total or for a single increment) the total blow count beyond the seating drive is given (without the N = prefix).

IV	In situ vane test, peak (p) and remoulded (r)
HV	Hand vane test, peak (p) and remoulded (r)
PP	Pocket penetrometer test, strength value
KFH, KRH, KPI	Variable head permeability tests (KFH = falling head test, KRH = rising head test, KPI = packer test), permeability value

Test results provided in Field Records column

DRILLING RECORDS

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930 (1999)

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm. Minimum, typical and maximum spacings are presented. The term non-intact (NI) is used where the core is fragmented.

Flush returns, estimated percentage with colour where relevant, are given in the Records column

CRF	Core recovered (length in m) in the following run
AZCL	Assessed zone of core loss
N/A	Not applicable

GROUNDWATER

▼	Groundwater strike
▽	Groundwater level after standing period

Notes:

Project: British Library Centre for Conservation

Project No.: D4050

Carried out for: Sir Robert McAlpine Ltd

Key

Key to Exploratory Hole Records

Soil Mechanics

INSTALLATION

Standpipe/ piezometer

Details of standpipe/piezometer installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill.

The type of instrument installed is indicated by a code in the Legend column at the depth of the response zone:

SP	Standpipe
SPIE	Standpipe piezometer
PPIE	Pneumatic piezometer
EPIE	Electronic piezometer

Inclinometer or Slip Indicator

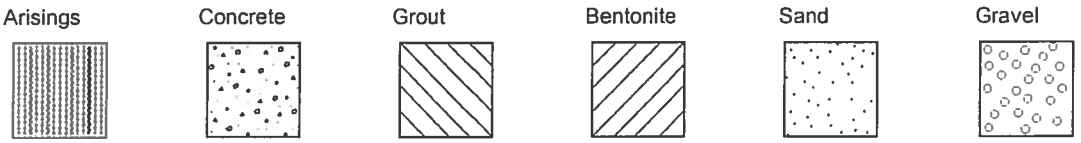
The installation of vertical profiling instruments is indicated on the Record. The base of tubing is shown in the Legend column.

The type of instrument installed is indicated by a code in the Legend column at the base of the tubing:

INCL	Inclinometer
SLIP	Slip indicator

INSTALLATION LEGENDS

A legend describing the installation is shown in the rightmost column. Legends additional to BS5930 are used to describe the backfill materials as indicated below.



NOTES

1. Strata legends are in accordance with BS 5930 (1999).

2. Water level observations of discernible entries during the advancing of the exploratory hole are given at the foot of the log and in the Legend column. The term "none observed" is used where no discrete entries are identified although this does not necessarily indicate that the hole has not been advanced below groundwater level. Under certain conditions groundwater cannot be observed, for instance, drilling with water flush or overwater, or boring at a rate much faster than water can make its way into the borehole (ref BS5930 : 1999, Clause 47.2.7). In addition, where appropriate, water levels in the hole at the time of recovering individual samples or carrying out in situ tests and at shift changes are given in the Records column.

3. Evidence of the occurrence of very coarse particles (cobbles and boulders) is presented on the logs, however, because of their size in relation to the exploratory hole these records may not be fully representative of their size and frequency in the ground mass.

4. The borehole logs present the results of Standard Penetration Tests recorded in the field without correction or interpretation. However, in certain ground conditions (eg high hydraulic head or where very coarse particles are present) some judgement may be necessary in considering whether the results are representative of in situ mass conditions.

5. The declination of bedding and joints is given with respect to the normal to the core axis. Thus in a vertical borehole this will be the dip.

6. The assessment of SCR, RQD and Fracture Spacing excludes artificial fractures

REFERENCES

BS 1377 : 1990 : British Standard Methods of test for soils for civil engineering purposes. British Standards Institution
BS 5930 : 1999 : Code of Practice for site investigations. British Standards Institution

Borehole Log

Soil Mechanics

Drilled by BJ Logged by AI Checked by AL	Start 08/06/2004 End 09/06/2004	Equipment, Methods and Remarks Dando 3000 Hand dug inspection pit from GL to 1.20m. Cable percussive boring from 1.20m to 44.00m.	Depth from / to 1.20m / 36.00m 36.00m / 44.00m	Diameter 200mm 150mm	Casing Depth 36.00m 37.00m	Ground Level Coordinates National Grid	+15.34 mOD - -

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.00-1.20	B 7		08/06/2004	0800
0.10	D 1			dry
0.15	D 2			
0.25	D 3			
0.25	ES 4			
0.50	ES 5			
			08/06/2004	1800
			1.20	dry
1.20	ES 6			
			09/06/2004	0800
			1.20	dry
1.50-1.95	SPT S	N=52 (3,8/9,12,14,17)	1.50	dry
1.50-1.95	D 8			
1.50-2.00	B 9			
2.00	D 10			
2.00	ES 11			
2.50-2.95	SPT S	N=37 (9,8/6,7,12,12)	2.50	dry
2.50	ES 12			
2.50-2.95	D 13			
2.50-3.00	B 14			
2.80	W 15			
3.00	D 16			
3.00	ES 17			
3.50-3.95	SPT S	N=31 (6,8/8,8,9,6)	3.00	2.60
3.50-3.95	D 18			
3.50-4.00	B 19			
4.00	D 20			
4.50-4.95	SPT S	N=26 (15,15/15,3,4,4)	4.50	3.20
4.50	U 21	150 blows No recovery	4.50	3.20
4.50-4.95	D 22			
4.50-5.00	B 23			
5.00	D 24			
6.00	D 25		6.00	
6.00-6.45	U 26	85 blows		dry
6.55-7.00	SPT S	N=34 (3,5/7,7,10,10)	6.00	dry
6.55	D 27			
6.55-7.00	D 28			
6.55-7.00	B 29			
7.00	D 30			
7.50-7.95	U 31	107 blows	6.00	dry
8.05-8.50	SPT S	N=29 (6,6/7,9,4,9)	6.00	dry
8.05	D 32			
8.05-8.50	D 33			
8.05-8.50	B 34			
9.00	D 35		6.00	
9.00-9.45	U 36	100 blows		dry
9.55-10.00	SPT S	N=38 (5,9/8,10,10,10)	6.00	dry
9.55	D 37			
9.55-10.00	D 38			
9.55-10.00	B 39			

Strata

Description		Depth, Level (Thickness)	Legend	Backfill/ Instruments
Tarmac (MADE GROUND)		0.10 +15.24 0.20 +15.14 0.30 +15.04 0.45 +14.89		
Tarmac and hardcore (MADE GROUND)				
Light brown fine to coarse gravelly SAND. Gravel is angular to rounded, fine to coarse sized flint, brick and concrete. (MADE GROUND)				
CONCRETE (MADE GROUND)		(2.25)		
Brown, fine to coarse SAND and angular to rounded, fine to coarse sized gravel of flint. Occasional brick and clinker. (MADE GROUND)				
Dense brown sandy GRAVEL. Gravel is subrounded, fine to coarse flint, with occasional concrete and brick. Sand is fine to coarse. Fragment of cast iron pipe, 100 x 100 x 10 mm. (MADE GROUND)		2.70 +12.64 (1.30)		
Firm dark grey CLAY, including a claystone layer. (Probable LONDON CLAY FORMATION)	4.50-4.75 m Very strong, dark green-claystone, recovered in gravel and cobble size fragments.	4.00 +11.34 (0.75)		
Firm to stiff grey brown CLAY, with pockets and partings of fine to medium, grey sand, and occasional sand sized crystals of selenite. (LONDON CLAY FORMATION)		4.75 +10.59 (2.75)		
Firm to stiff brown sandy CLAY, with frequent fine to medium sand in partings, and sand sized crystals of selenite. (LONDON CLAY FORMATION)	7.50-7.95 m Sand is grey fine to medium.	7.50 +7.84		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	2.80	Rose to 2.10 m after 20 minutes. Fast inflow	5.00

Depth Related Remarks *

From to (m)

Chiselling

Depths (m)	Time	Tools used
1.70 -2.00	60 mins	Chisel
2.10 -2.30	45 mins	Chisel
4.50 -4.75	60 mins	Chisel

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: British Library Centre for Conservation

Project No.: D4050

Carried out for: Sir Robert McAlpine Ltd

Borehole: **BH01**

Borehole Log

Soil Mechanics

Drilled by BJ Logged by AI Checked by AL	Start 08/06/2004 End 09/06/2004	Equipment, Methods and Remarks Dando 3000 Hand dug inspection pit from GL to 1.20m. Cable percussive boring from 1.20m to 44.00m.	Depth from / to 1.20m / 36.00m 36.00m / 44.00m	Diameter 200mm 150mm	Casing Depth 36.00m 37.00m	Ground Level +15.34 mOD Coordinates - National Grid -

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
10.00	D 40			
10.50-10.95	U 41	117 blows	6.00	dry
11.05-11.50	SPT S	N=41 (8,9/9,9,10,13)	6.00	dry
11.05	D 42			
11.05-11.50	D 43			
11.05-11.50	B 44			
12.00	D 45		6.00	
12.00-12.45	U 46	120 blows		dry
12.55-13.00	SPT S	N=39 (4,6/8,10,10,11)	6.00	dry
12.55	D 47			
12.55-13.00	D 48			
12.55-13.00	B 49			
13.00	D 50			
13.50-13.95	U 51	131 blows	6.00	dry
14.05-14.50	SPT S	N=45 (8,9/12,10,12,11)	6.00	dry
14.05	D 52			
14.05-14.50	D 53			
14.05-14.50	B 54			
			09/06/2004	1800
			6.00	damp
			7.50	
15.00	D 55			
15.00-15.45	U 56	107 blows	10/06/2004	dry
			15.00	0800
				dry
15.55-16.00	SPT S	N=33 (6,8/8,8,8,9)	7.50	dry
15.55	D 57			
15.55-16.00	D 58			
15.55-16.00	B 59			
16.00	D 60			
16.50-16.95	U 61	120 blows	7.50	dry
17.05-17.50	SPT S	N=46 (5,7/8,10,12,16)	7.50	dry
17.05	D 62			
17.05-17.50	D 63			
17.05-17.50	B 64			
18.00	D 65		7.50	
18.00-18.45	U 66	150 blows		dry
18.55-19.00	SPT S	N=57 (10,12/14,13,15,15)	7.50	dry
18.55	D 67			
18.55-19.00	D 68			
18.55-19.00	B 69			
19.00	D 70			
19.50-19.95	U 71	150 blows 350 mm rec	7.50	dry

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill / Instruments
Firm to stiff brown sandy CLAY, with frequent fine to medium sand in partings, and sand sized crystals of selenite. (LONDON CLAY FORMATION)	(10.60)		
14.05 m Minor, horizontal to sub horizontal fissures. Spacings 10 / 20 / 40 mm. 14.50-15.00 m Minor horizontal to sub horizontal fissures. Spacings 10 / 20 / 40 mm			
15.55-16.00 m Becoming slightly brown grey in colour.			
Very stiff dark orange brown slightly mottled dark orange slightly sandy CLAY. Sand is fine. Occasional partings and pockets of light grey fine sand / silt. (LAMBETH GROUP)	18.10 -2.76		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks *

From	to (m)	
18.55	19.00	U100 attempted

Chiselling

Depths (m)	Time	Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: British Library Centre for Conservation

Project No.: D4050

Carried out for: Sir Robert McAlpine Ltd

Borehole: **BH01**

Borehole Log

Soil Mechanics

Drilled by BJ Logged by AI Checked by AL	Start 08/06/2004 End 09/06/2004	Equipment, Methods and Remarks Dando 3000 Hand dug inspection pit from GL to 1.20m. Cable percussive boring from 1.20m to 44.00m.	Depth from / to 1.20m / 36.00m 36.00m / 44.00m	Diameter 200mm 150mm	Casing Depth 36.00m 37.00m	Ground Level Coordinates National Grid	+15.34 mOD - -

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
20.05-20.50	SPT S	N=62 (12,14/15,15,16,16)	7.50	dry
20.05	D 72			
20.05-20.50	D 73			
20.05-20.50	B 74			
21.00	D 75		7.50	
21.00-21.45	U 76	150 blows 350 mm rec		dry
21.55-22.00	SPT S	N=48 (6,9/12,12,12,12)	7.50	dry
21.55	D 77			
21.55-22.00	D 78			
21.55-22.00	B 79			
22.00	D 80			
22.50-22.95	U 81	150 blows 350 mm rec	7.50	dry
23.05-23.50	SPT S	N=43 (8,9/10,11,11,11)	7.50	dry
23.05	D 82			
23.05-23.50	D 83			
23.05-23.50	B 84			
24.00	D 85		7.50	
24.00-24.45	U 86	150 blows		dry
24.55-25.00	SPT S	N=53 (6,9/10,13,14,16)	7.50	dry
24.55	D 87			
24.55-25.00	D 88			
24.55-25.00	B 89			
25.00	D 90			
25.50-25.95	U 91	150 blows	7.50	dry
26.05-26.50	SPT S	N=49 (4,9/11,12,12,14)	7.50	dry
26.05	D 92			
26.05-26.50	D 93			
26.05-26.50	B 94			
27.00	D 95		7.50	
27.00-27.45	U 96	150 blows		dry
27.55-28.00	SPT S	N=54 (9,10/10,14,14,16)	7.50	dry
27.55	D 97			
27.55-28.00	D 98			
27.55-28.00	B 99			
28.00	D 100			
28.50-28.95	U 101	150 blows	10/06/2004 7.50 7.50 11/06/2004 7.50	1800 dry dry 0800 dry
29.05-29.50	SPT S	N=60 (6,12/14,14,16,16)	7.50	dry
29.05	D 102			
29.05-29.50	D 103			
29.05-29.50	B 104			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Very stiff dark orange brown slightly mottled dark orange slightly sandy CLAY. Sand is fine. Occasional partings and pockets of light grey fine sand / silt. (LAMBETH GROUP)	(4.40)		
Very stiff slightly dark orange light brown grey CLAY. (LAMBETH GROUP)	22.50 -7.16		
26.05-27.00 m Frequent partings of light brown fine sand. Occasional to rare partings of cream fine sand.	(9.00)		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks *

From	to (m)	
24.55	25.00	U100 attempted

Chiselling

Depths (m)	Time	Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: British Library Centre for Conservation

Project No.: D4050

Carried out for: Sir Robert McAlpine Ltd

Borehole

BH01

Borehole Log

Soil Mechanics

Drilled by BJ Logged by AI Checked by AL	Start 08/06/2004 End 09/06/2004	Equipment, Methods and Remarks Dando 3000 Hand dug inspection pit from GL to 1.20m. Cable percussive boring from 1.20m to 44.00m.	Depth from / to 1.20m 36.00m 36.00m 44.00m	Diameter 200mm 150mm	Casing Depth 36.00m 37.00m	Ground Level +15.34 mOD Coordinates - National Grid -

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
30.00	D 105		7.50	
30.00-30.45	U 106	150 blows		dry
30.55-31.00	SPT S	N=54 (10,10/12,14,14,14)	7.50	dry
30.55	D 107			
30.55-31.00	D 108			
30.55-31.00	B 109			
31.00	D 110			
31.50-31.95	U 111	150 blows	7.50	dry
32.05-32.50	SPT S	N=60 (9,11/14,15,15,16)	7.50	dry
32.05	D 112			
32.05-32.50	D 113			
32.05-32.50	B 114			
33.00	D 115			
33.50-33.95	U 116	150 blows	7.50	dry
34.05-34.18	SPT S	50 (25 for 70mm/50 for 60mm)	7.50	dry
34.05	D 117			
34.05-35.19	D 118			
34.05-35.00	B 119			
35.00	D 120		7.50	
35.00-35.45	U 121	150 blows		dry
35.55-35.69	SPT S	50 (25 for 70mm/50 for 70mm)	7.50	dry
35.55	D 122			
35.55-36.00	D 123		11/06/2004	1800
35.55-36.00	B 124		7.50	dry
			14/06/2004	0800
			37.00	dry
36.50-36.70	U 125			
37.00-37.06	SPT S	50 (25 for 20mm/50 for 40mm)	37.00	dry
37.00-37.06	D 126			
37.00-37.50	B 127			
38.50-38.64	SPT S	50 (25 for 70mm/50 for 70mm)	37.00	dry
38.50-38.64	D 128			
38.50-39.00	B 129			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Very stiff slightly dark orange light brown grey CLAY. (LAMBETH GROUP)			
30.55-31.50 m Slightly grey very dark orange red in colour			
Very stiff grey dark grey very sandy CLAY. Sand is fine to medium. Locally very sandy fine to medium. (UPNOR FORMATION)	31.50 -16.16		
33.00 m Multi coloured			
	(5.20)		
Very dense grey to dark grey fine to medium SAND. (THANET SAND FORMATION)	36.70 -21.36		VPIE
	(3.30)		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks *

From	to (m)	
34.05	35.08	U100 attempted
36.50	36.70	U100 attempted
36.70	44.00	Water added.

Chiselling

Depths (m)	Time	Tools used
40.00 -40.10	45 mins	Chisel

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: British Library Centre for Conservation

Project No.: D4050

Carried out for: Sir Robert McAlpine Ltd

Borehole

BH01

Sheet 4 of 5

Borehole Log

Soil Mechanics

Drilled by BJ Logged by AI Checked by AL	Start 08/06/2004 End 09/06/2004	Equipment, Methods and Remarks Dando 3000 Hand dug inspection pit from GL to 1.20m. Cable percussive boring from 1.20m to 44.00m.	Depth from / to / Diameter / Casing Depth 1.20m / 36.00m / 200mm / 36.00m 36.00m / 44.00m / 150mm / 37.00m	Ground Level +15.34 mOD Coordinates - National Grid -

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
40.00-40.14 40.00-40.14 40.00-40.50	SPT S D 130 B 131	50 (25 for 70mm/50 for 70mm)	37.00	dry
41.50-41.63 41.50-41.63 41.50-42.00	SPT S D 132 B 133	50 (25 for 70mm/50 for 60mm)	37.00	dry
43.00-43.07 43.00-43.14 43.00-44.00	SPT S D 134 B 135	(75 for 70mm)	37.00	1.10
			14/06/2004 37.00	1800 1.40

Strata

Description		Depth, Level (Thickness)	Legend	Backfill/ Instruments
Recovered as black grey sandy GRAVEL. Gravel is angular, fine to coarse sized dark grey black flint. Sand is fine to medium. (UPPER CHALK WITH FLINTS)	40.00-40.14 m Chalk present at end of SPT sample.	40.00 -24.66 (4.00)		
	43.00-43.14 m Recovered as cream white putty of chalk.			
EXPLORATORY HOLE ENDS AT 44.00 m		44.00 -28.66		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks *

From	to (m)	
41.50		U100 attempted

Chiselling

Depths (m)	Time	Tools used
40.00 -40.10	45 mins	Chisel
43.50 -43.70	45 mins	Chisel

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: British Library Centre for Conservation

Project No.: D4050

Carried out for: Sir Robert McAlpine Ltd

Borehole: **BH01**

Sheet 5 of 5

Borehole Log

Soil Mechanics

Drilled BJ Logged CL Checked AL	Start 07/06/2004 End 08/06/2004	Equipment, Methods and Remarks Dando 3000 and HE60 Hand dug inspection pit from GL to 1.20m. Cable percussion boring from 1.20m to 20.05m. Rotary cored from 20.05m to 46.90m	Depth from	to	Diameter	Casing Depth	Ground Level +17.38 mOD Coordinates - National Grid -
			1.20m	20.05m	200mm	20.05m	
			20.05m	46.40m	200mm	46.90m	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.00-1.20	B 4		07/06/2004	0800 dry
0.30	ES 1			
0.75	ES 2			
1.20	ES 3			
1.50-1.95	U 5	33 blows	1.50	dry
2.05-2.50	SPT S	N=23 (3,4/4,6,6,7)	1.50	dry
2.05	D 6			
2.05-2.50	D 7			
2.05-2.50	B 8			
2.50-2.95	U 9	70 blows	1.50	dry
3.00	D 13			
3.05-3.50	SPT S	N=23 (2,3/6,5,6,6)	2.50	dry
3.05	D 10			
3.05-3.50	D 11			
3.05-3.50	B 12		3.00	
3.50-3.95	U 14	76 blows		dry
4.05-4.50	SPT S	N=29 (4,6/7,7,7,8)	3.00	dry
4.05	D 15			
4.05-4.50	D 16			
4.05-4.50	B 17			
4.50-4.95	U 18	90 blows	4.50	dry
5.05-5.50	SPT S	N=33 (5,7/9,8,8,8)	4.50	dry
5.05	D 19			
5.05-5.50	D 20			
5.05-5.50	B 21			
6.00	D 22		6.00	
6.00-6.45	U 23	111 blows		dry
6.55-7.00	SPT S	N=33 (4,5/7,9,9,8)	6.00	dry
6.55	D 24			
6.55-7.00	D 25			
6.55-7.00	B 26			
7.00	D 27			
7.50-7.95	U 28	95 blows	7.50	dry
8.05-8.50	SPT S	N=32 (6,8/8,8,8,8)	7.50	dry
8.05	D 29			
8.05-8.50	D 30			
8.05-8.50	B 31			
			07/06/2004	1800
			9.00	dry
9.00	D 32		9.00	
9.00-9.45	U 33	86 blows	08/06/2004	dry
			9.00	0800 dry
9.55-10.00	SPT S	N=38 (3,5/8,8,10,12)	9.00	dry
9.55	D 34			
9.55-10.00	D 35			
9.55-10.00	B 36			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Red brick paving (MADE GROUND)	0.08 +17.30		
	0.10 +17.28		
Light brown, fine to coarse SAND. MADE GROUND)	(0.35)		
	0.45 +16.93		
Brown sandy GRAVEL. Gravel is angular to subangular, fine to coarse sized flint and occasional brick. Sand is fine to coarse. (MADE GROUND)	(1.60)		
Firm to stiff brown CLAY. Occasional pockets of fine grey sand. (Weathered LONDON CLAY FORMATION)			
Firm grey brown CLAY with occasional pockets and partings of light brown, fine to medium sand. (LONDON CLAY FORMATION)	2.05 +15.33		
4.05-6.10 m Occasional horizontal to sub horizontal fissures, spacings 10 / 20 / 40 mm.	(4.05)		
Stiff fissured brown grey CLAY. Fissures are horizontal to sub horizontal. Spacings 10 / 20 / 40 mm. (LONDON CLAY FORMATION)	6.10 +11.28		
8.05-13.00 m Occasional fine sand sized selenite crystals. Occasional to frequent partings and pockets of grey dark grey to light grey fine to medium sand. Locally very sandy.	(6.90)		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks *

From	to (m)	
8.05	8.50	U100 attempted.

Chiselling

Depths (m)	Time	Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: British Library Centre for Conservation

Project No.: D4050

Carried out for: Sir Robert McAlpine Ltd

Borehole: **BH02**

Borehole Log

Soil Mechanics

Drilled	BJ	Start	07/06/2004	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	+17.38 mOD
Logged	CL	End	08/06/2004	Dando 3000 and HE60 Hand dug inspection pit from GL to 1.20m. Cable percussion boring from 1.20m to 20.05m. Rotary cored from 20.05m to 46.90m	1.20m	20.05m	200mm	20.05m	Coordinates	-
Checked	AL				20.05m	46.40m	200mm	46.90m	National Grid	-

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
10.00	D 37			
10.50-10.95	U 38	90 blows	10.50	dry
11.05-11.50	SPT S	N=36 (2,7/8,9,9,10)	10.50	dry
11.05	D 39			
11.05-11.50	D 40			
11.05-11.50	B 41			
12.00	D 42		12.00	
12.00-12.45	U 43	99 blows		dry
12.55-13.00	SPT S	N=36 (5,6/7,9,9,11)	12.00	dry
12.55	D 44			
12.55	D 45			
12.55-13.00	B 46			
13.00	D 47			
13.50-13.95	U 48	110 blows	13.50	dry
14.05-14.50	SPT S	N=35 (6,6/6,8,9,12)	13.50	dry
14.05	D 49			
14.05-14.50	D 50			
14.05-14.50	B 51			
15.00	D 52		15.00	
15.00-15.45	U 53	100 blows		dry
15.55-16.00	SPT S	N=38 (5,8/9,9,10,10)	15.00	dry
15.55	D 54			
15.55-16.00	D 55			
15.55-16.00	B 56			
16.00	D 57			
16.50-16.95	U 58	110 blows	16.50	dry
17.05-17.50	SPT S	N=40 (6,7/7,9,11,13)	16.50	dry
17.05	D 59			
17.05-17.50	D 60			
17.05-17.50	B 61			
18.00	D 62		18.00	
18.00-18.45	U 63	112 blows		dry
18.55-19.00	SPT S	N=42 (7,9/8,10,11,13)	18.00	dry
18.55	D 64			
18.55-19.00	D 65			
18.55-19.00	B 66			
19.00	D 67			
19.50-19.95	U 68	150 blows	19.50	dry
			08/06/2004 19.50	1800 13.50

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Stiff fissured brown grey CLAY. Fissures are horizontal to sub horizontal. Spacings 10 / 20 / 40 mm. (LONDON CLAY FORMATION)			
Firm fissured grey brown sandy CLAY, locally very sandy. Fissures are horizontal to sub horizontal, spacings 10 / 20 / 40 mm. Pockets and partings of fine to medium, grey sand and occasional selenite crystals. (LONDON CLAY FORMATION)	13.00 +4.38		
	(6.50)		
Recovered as; soft brown grey mottled light blue slightly sandy CLAY. Sand is	19.50 -2.12		
	(0.30)		
	19.80 -2.42		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks *

From	to (m)	
15.55	16.00	U100 attempted.

Chiselling

Depths (m)	Time	Tools used
13.00 -13.20	45 mins	Chisel

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: British Library Centre for Conservation

Project No.: D4050

Carried out for: Sir Robert McAlpine Ltd

Borehole

BH02

Borehole Log

Soil Mechanics

Drilled	BJ
Logged	CL
Checked	AL

Start 07/06/2004
End 08/06/2004

Equipment, Methods and Remarks
Dando 3000 and HE60
Hand dug inspection pit from GL to 1.20m. Cable percussion boring from 1.20m to 20.05m. Rotary cored from 20.05m to 46.90m

Depth from	to	Diameter	Casing Depth
1.20m	20.05m	200mm	20.05m
20.05m	46.40m	200mm	46.90m

Ground Level	+17.38 mOD
Coordinates	-
National Grid	-

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
20.05			D 69		
19.50-21.00	82 N/A N/A		Flush 19.50-21.00 water, 100 %	16/06/2004 19.50	0800
21.00-22.50	93 N/A N/A		Flush 21.00-22.50 water, 100 %		
21.90			D 1		
22.50-23.20	100 N/A N/A		Flush 22.50-23.20 water, 100 %		
22.90			D 2	16/06/2004 19.50	1800
				21/06/2004 19.50	0800
23.20-23.90	100 N/A N/A		Flush 23.20-23.90 water, 100 %		
23.90-25.40	87 N/A N/A		Flush 23.90-25.40 water, 100 %		
25.40-26.90	100 N/A N/A		Flush 25.40-26.90 water, 100 %		
26.70-26.80			D 3		
26.90-28.40	100 N/A N/A		Flush 26.90-28.40 water, 100 %		
28.40-29.90	100 N/A N/A		Flush 28.40-29.90 water, 100 %		

Strata

Description		Depth, Level (Thickness)	Legend	Backfill/ Instruments
fine to medium. (LAMBETH GROUP)				
Stiff to very stiff fissured light brown mottled light blue slightly sandy CLAY. Fissures are extremely closely to very closely spaced randomly orientated and occasionally polished and striated. Sand is fine to medium. (LAMBETH GROUP)		(2.93)		
Very stiff fissured brown mottled red blue sandy CLAY. Fissures are extremely closely to closely spaced, randomly orientated, polished and occasionally striated. Sand is fine to coarse. (LAMBETH GROUP)		23.00 -5.62 23.20 -5.82 (0.40) 23.60 -6.22		
Recovered as; very soft brown mottled red blue sandy CLAY. (LAMBETH GROUP)		(0.53) 24.13 -6.75		
Very stiff fissured brown mottled blue grey CLAY. Fissures are extremely to closely spaced randomly orientated and polished. (LAMBETH GROUP)	24.50-24.55 m Very friable	(0.77) 24.90 -7.52		
Very Stiff fissured blue grey CLAY. Fissures are extremely closely spaced randomly orrientated and polished. (LAMBETH GROUP)		(0.30) 25.20 -7.82 25.40 -8.02		
Very stiff fissured brown mottled blue CLAY. Fissures are extremely closely to closely spaced, randomly orrientated and polished.		(1.20)		
No Core Recovery		26.60 -9.22		
Very stiff fissured brown mottled blue CLAY. Fissures are extremely closely to closely spaced randomly orientated and polished. (LAMBETH GROUP)	27.10-27.60 m Very sandy, with pockets of yellow, green, brown sandy (fine to medium) clay Frequent 20mm pockets of fine sand	(0.50) 26.90 -9.52 27.10 -9.72		
Very stiff fissured black dark grey dark brown slightly sandy CLAY. Fissures are extremely closely to closely spaced, polished and decrease with depth. Occasional bands and partings of fine grey sand. (LAMBETH GROUP)		(0.65) 27.75 -10.37		
Light grey black brown thinly laminated sandy CLAY. Sand is fine. Abundant partings and bands of fine light grey sand. (LAMBETH GROUP)		(2.05)		
Very stiff thinly laminated black dark grey dark brown slightly sandy CLAY. Sand is fine. Occasional partings of fine grey sand. (LAMBETH GROUP)	29.80-33.00 m Predominantly	29.80 -12.42		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
None observed (see Key Sheet)			

Depth Related Remarks *
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project	British Library Centre for Conservation
Project No.	D4050
Carried out for	Sir Robert McAlpine Ltd

Borehole
BH02

Borehole Log

Soil Mechanics

Drilled BJ Logged CL Checked AL	Start 07/06/2004 End 08/06/2004	Equipment, Methods and Remarks Dando 3000 and HE60 Hand dug inspection pit from GL to 1.20m. Cable percussion boring from 1.20m to 20.05m. Rotary cored from 20.05m to 46.90m	Depth from / to 1.20m / 20.05m 20.05m / 46.40m	Diameter 200mm 200mm	Casing Depth 20.05m 46.90m	Ground Level Coordinates National Grid	+17.38 mOD - -

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
29.90-31.40	100 N/A N/A		Flush: 29.90-31.40 water, 100 %		
				21/06/2004	1800
				19.50	
				22/06/2004	0800
				19.50	
31.40-32.90	100 N/A N/A		Flush: 31.40-32.90 water, 100 %		
32.90-34.40	100 N/A N/A		Flush: 32.90-34.40 water, 100 %		
34.40-35.90	67 N/A N/A		Flush: 34.40-35.90 water, 100 %		
36.50 35.90-37.40	100 N/A N/A	D 4	Flush: 35.90-37.40 water, 100 %		
37.40-38.90	100 N/A N/A		Flush: 37.40-38.90 water, 100 %		
38.90-40.40	87 N/A N/A		Flush: 38.90-40.40 water, 100 %		

Strata

Description		Depth, *Level* (Thickness)	Legend	Backfill/ Instruments
27.10m - 27.75m : Very stiff fissured blue grey mottled brown slighlty sandy CLAY. Fissures are closely spaced randomly orientated polished and occasionally striated. Sand is fine to medium. (LAMBETH GROUP)	light blue, brown mottled red brown in colour 30.60 m Becoming sandy			
27.75m - 29.80m : Very stiff fissured multicoloured slightly sandy CLAY. Fissures are extremely closely to closely spaced, randomly orrientated and polished. Sand is fine to medium. (LAMBETH GROUP)		(3.20)		
29.80m - 33.00m : Very stiff fissured blue brown mottled red/brown slighlty sandy CLAY. Fissures are closely spaced randomly orientated polished and occasionally striated. Sand is fine to medium. (LAMBETH GROUP)	32.90-33.00 m Becoming dark brown	33.00 -15.62		
Stiff to very stiff black brown very sandy CLAY. Sand is fine to medium rarely coarse. Occasional lenses and partings of grey fine to medium sand. (LAMBETH GROUP)	33.30-33.50 m Becoming predominantly a sand	(0.50) 33.50 -16.12		
Green mottled brown orange/red clayey fine to coarse SAND. Occasional 20mm lenses of silt. (LAMBETH GROUP)		(0.90)		
No Core Recovery		34.40 -17.02		
		(0.60)		
Dark grey green brown thinly laminated clayey fine to coarse SAND. Pockets and partings of fine to medium light grey, light green, brown sand. Occasional 20mm lenses of silt. (LAMBETH GROUP)		35.00 -17.62 (0.40) 35.40 -18.02 (0.50) 35.90 -18.52		
Green mottled brown orange/red clayey fine to coarse SAND. Occasional 20mm lenses of silt. (LAMBETH GROUP)	36.50-37.60 m Black rounded pebbles	(1.70)		VPIE
Dark grey green mottled brown thinly laminated clayey fine to coarse glauconitic SAND. Pockets and partings of fine to medium light grey light green brown sand. (UPNOR FORMATION)		37.60 -20.22		
Green brown grey fine to coarse SAND. Occasional bands upto 5mm thickness of grey brown sandy clay. (THANET SAND FORMATION)		(1.30)		
No Core Recovery		38.90 -21.52 39.10 -21.72		
Green brown grey fine to coarse SAND. Occasional bands upto 5mm thickness of grey brown sandy clay. (THANET SAND FORMATION)	39.90-40.10 m			

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
None observed (see Key Sheet)			

Depth Related Remarks *

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50 (c) MEGG 298 v1.1523/08/2004 13.58.58 AGS

Project British Library Centre for Conservation

Project No. D4050

Carried out for Sir Robert McAlpine Ltd

Borehole **BH02**

Borehole Log

Soil Mechanics

Drilled BJ Logged CL Checked AL	Start 07/06/2004 End 08/06/2004	Equipment, Methods and Remarks Dando 3000 and HE60 Hand dug inspection pit from GL to 1.20m. Cable percussion boring from 1.20m to 20.05m. Rotary cored from 20.05m to 46.90m	Depth from / to / Diameter / Casing Depth 1.20m / 20.05m / 200mm / 20.05m 20.05m / 46.40m / 200mm / 46.90m		Ground Level +17.38 mOD Coordinates - National Grid -	

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
41.20			D 5		
41.90-43.40	100 81 61		Flush: 41.90-43.40 water, 100 %		
43.40-44.90	100 84 76	50 220 480	Flush: 43.40-44.90 water, 100 %		
44.90-46.40	100 90 90		Flush: 44.90-46.40 water, 100 %		
				22/06/2004 19.50	1800

Strata

Description		Depth, *Level* (Thickness)	Legend	Backfill/ Instruments
Green brown grey fine to coarse SAND. Occasional bands upto 5mm thickness of grey brown sandy clay. (THANET SAND FORMATION)	Black rounded gravels and occasional to abundant bands of dark grey brown sandy clay, upto 18mm in thickness	(2.80)		
Black GRAVEL. Gravel is angular, fine to coarse sized flint. (BOREHEAD BEDS)	42.17-42.28 m Black, angular fine to coarse gravel of flint	41.90 -24.52 42.02 -24.64		
Moderately weak to moderately strong medium to high density cream white CHALK with occasional orange staining and occasional to abundant flaser marls, marl bands and marl lenses. Fractures are medium spaced (50/220/480), clean, open or occasionally infilled wih upto 1 to 2mm of soft, brown clay, with rare black speckling. Occasional bands of black, angular, fine to coarse flint. (UPPER CHALK FORMATION, CIRIA Grade B3)	42.40-42.73 m Abundant light grey flaser marls upto 60mm in width. 42.90-43.13 m Black, angular fine to coarse gravel of flint 42.93 m Intense black speckling 43.27-43.29 m 1mm brown clay infill on fracture surface 43.30-43.40 m Abundant light grey flaser marls upto 30 x 40mm. 43.54-43.57 m Bands of light grey marl, upto 2mm thickness 43.97-44.10 m Abundant light grey flaser marls and marl bands, upto 6mm in thickness 44.30-44.34 m Grey flaser marl 44.37-44.52 m Abundant flaser marls 20 x 15mm 44.45-44.64 m Shell fragments 44.75-44.85 m 1mm brown clay coating chalk gravels and fracture surfaces 44.85-44.86 m Light grey marl bands 45.08-45.13 m Light grey marl band, 7mm thickness, and flaser marls upto 10 x 15mm 45.21-45.28 m Light grey marl bands upto 20mm thickness 45.38-45.53 m Black, angular fine to coarse gravel of flint 45.60 m Occasional shell fragments 45.60-45.69 m Flaser marls and marl bands upto 10mm thickness 45.89-46.40 m Abundant light grey flaser marls upto 14mm thickness and	(4.38)		
EXPLORATORY HOLE ENDS AT 46.40 m		46.40 -29.02		

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
None observed (see Key Sheet)			

Depth Related Remarks *

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project British Library Centre for Conservation

Project No. D4050

Carried out for Sir Robert McAlpine Ltd

Borehole **BH02**

Sheet 5 of 5

Trial Pit Log

Soil Mechanics

Logged by EH Checked by AL	Start 11/06/2004 End 11/06/2004	Equipment, Methods and Remarks JCB3CX Machine dug trial pit from GL to 3.40m.	Dimensions and Orientation Width 1.90 m Length 2.00 m	Ground Level +15.25 mOD Coordinates - National Grid -

Samples and Tests

Depth	Type & No.	Date Records
0.25	ES 1	4Soil Samples Taken PID=1.30
0.50	B 2	
0.90	ES 3	4 Soil Samples Taken PID=1.70
1.20	B 4	
1.80 1.80-2.20	ES 5 B 6	4 Soil Samples Taken PID=2.30
2.70	ES 7	4 Soil Samples Taken PID=3.80
2.90	W 8	
3.20-3.40	B 9	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
1 Black TARMAC. (MADE GROUND)	0.20 +15.05		
2 Brown slightly clayey sandy GRAVEL. Gravel is subangular to subrounded, fine to coarse sized concrete, brick, tarmac, flint, slate and rare plastic and metal. Sand is fine to coarse. (MADE GROUND)	(3.20)		
EXPLORATORY HOLE ENDS AT 3.40 m	3.40 +11.85		

Depth	Type & No.	Records Date

Groundwater Entries

No.	Struck (m)	Post Strike Behaviour
1	2.90	-

Depth Related Remarks *

From to (m)

Stability

Shoring

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

AGS

Project British Library Centre for Conservation

Project No. D4050

Carried out for Sir Robert McAlpine Ltd

Trial Pit

TP1

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by EH Checked by AL	Start 11/06/2004 End 11/06/2004	Equipment, Methods and Remarks JCB3CX Machine dug trial pit from GL to 1.50m.	Dimensions and Orientation Width 0.90 m Length 1.80 m	Ground Level +15.33 mOD Coordinates - National Grid -

Samples and Tests

Depth	Type & No.	Date Records
0.35	ES 1a	>9999 ppm
0.35	ES 1b	
0.35	ES 1c	
0.35	ES 1d	
0.50	B 2	
0.90	ES 3	>9999 ppm
0.90	W 4	
1.10-1.40	B 5	
~~1.50~~	~~ES 6~~	~~4 Soil Samples Taken~~ PID=687.00

Strata

Description	Depth, *Level* (Thickness)	Legend	Backfill/ Instruments
1 Black TARMAC. (MADE GROUND)	0.25 *+15.08*		
2 Brown slightly clayey sandy GRAVEL. Gravel is subangular to subrounded, fine to coarse sized flint, brick, concrete, granite and tarmac. Sand is fine to coarse. Occasional wood and plastic fragments and cobbles of brick and concrete. (MADE GROUND)	(0.70)		
3 Firm fissured brown CLAY. Blue gleying on fissures. Abundant selenite crystals. Rare subangular fine to coarse sized claystone gravel. (Probable MADE GROUND) 1.00-1.50 m Becoming clayey.	0.95 *+14.38* (0.55)		
EXPLORATORY HOLE ENDS AT 1.50 m	1.50 *+13.83*		

Depth	Type & No.	Records Date

Groundwater Entries

No.	Struck (m)	Post Strike Behaviour
1	0.85	-

Depth Related Remarks *

From to (m)

Stability

Shoring N/A

Weather Warm, dry

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

AGS

Project British Library Centre for Conservation

Project No. D4050

Carried out for Sir Robert McAlpine Ltd

Trial Pit

TP2

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by EH Checked by AL	Start 11/06/2004 End 11/06/2004	Equipment, Methods and Remarks JCB3CX Machine dug trial pit from GL to 2.20m.	Dimensions and Orientation Width 0.80 m Length 1.50 m	Ground Level +17.39 mOD Coordinates - National Grid -

Samples and Tests

Depth	Type & No.	Date Records
0.30	ES 1	4 Soil Samples Taken
0.35	B 2	PID=4.60
0.60	ES 3	4 Soil Samples Taken
0.70	B 4	PID=2.30
1.20	ES 5	4 Soil Samples Taken PID=1.40
1.50	D 6	
2.00	ES 7	4 Soil Samples Taken
2.10	B 8	PID=1.20
2.20	W 9	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Soft dark brown sandy CLAY. Sand is fine to coarse. 2 Frequent roots and rootlets (<20mm). (MADE GROUND)	0.10 +17.29		
Soft orange brown sandy CLAY. Sand is fine to coarse. Rare subangular fine to coarse sized brick gravel. Occasional rootlets. (MADE GROUND)	(0.50)		
3 Orange slightly clayey very sandy GRAVEL. Gravel is subrounded, fine to coarse sized flint with rare shells and cobbles of concrete. Sand is fine to coarse. (MADE GROUND)	0.60 +16.79		
1.80-2.20 m Gravel becomes pinky brown flint and brick.	(1.60)		
EXPLORATORY HOLE ENDS AT 2.20 m — 2.20 m Plastic geotextile pieces.	2.20 +15.19		

Depth	Type & No.	Records Date

Groundwater Entries

No.	Struck (m)	Post Strike Behaviour
1	2.10	-

Depth Related Remarks *
From to (m)

Stability Stable

Shoring N/A

Weather Dry, warm

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

Project	British Library Centre for Conservation
Project No.	D4050
Carried out for	Sir Robert McAlpine Ltd

Trial Pit

TP3

Sheet 1 of 1

Department of the Environment

Borehole Location Plan

Appendix D

Sheet 2

KEY

- Borehole – rotary-drilled, cored
- Borehole – rotary-drilled, 'open-hole'
- Borehole – shell and auger
- Columns

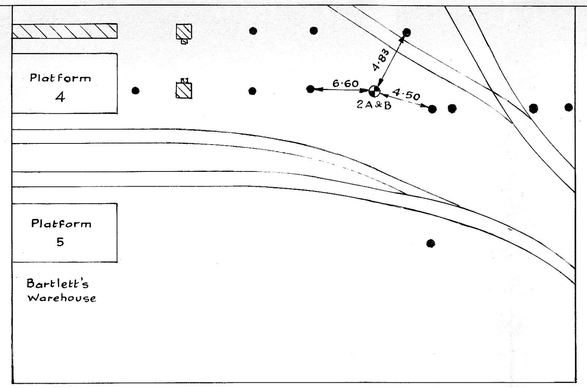
Notes

1. The details for the location plan are taken from a plan supplied by British Railways. The scale is approximately 1:500
2. The location of the London Transport Underground Tunnels and the British Railway Tunnel have been added from a recent survey which is a slightly different scale from above.
3. It should be noted that the sketch plans detailing the borehole locations are not to scale. All the measurements shown are in metres.
4. The ground levels at the borehole positions are:–

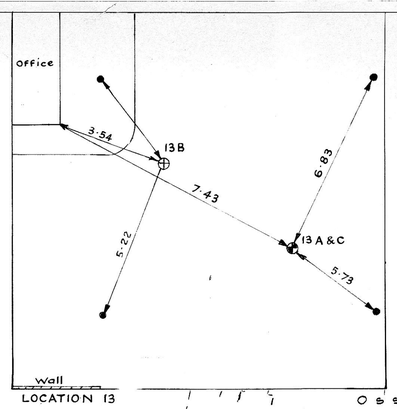
Borehole	Ground Level (m O.D.)
RC 1	19·33
RC 1A	19·29
RC 2	19·46
RC 3	18·37
RC 13	18·46
SG 11	19·75
SG 12	19·24
SG 14	19·45
SG 15	18·53
SG 16	19·50
SG 17	17·54

The ground levels adjacent to the boreholes sunk exclusively for piezometer installations are given at the appropriate appendix.

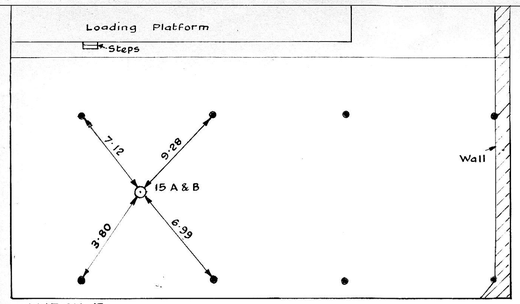
LOCATION 2



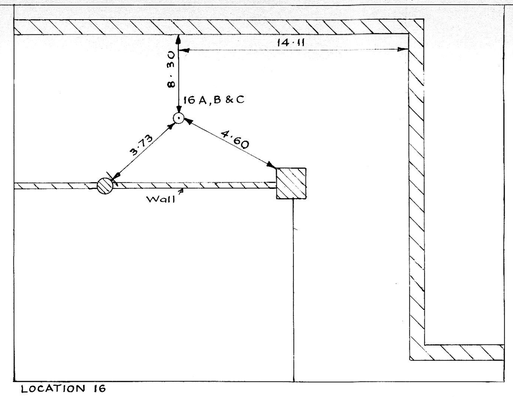
LOCATION 13

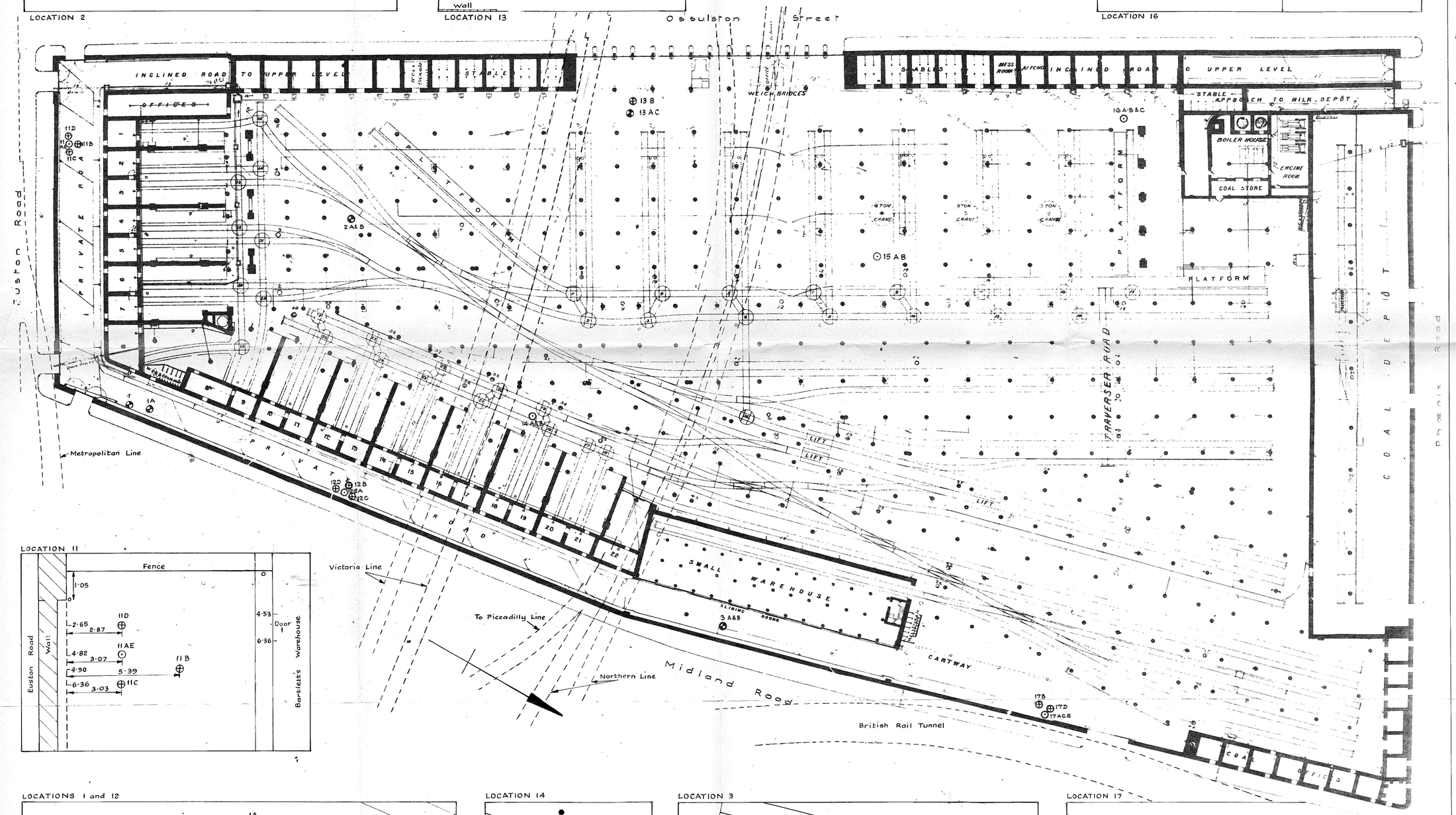


LOCATION 15



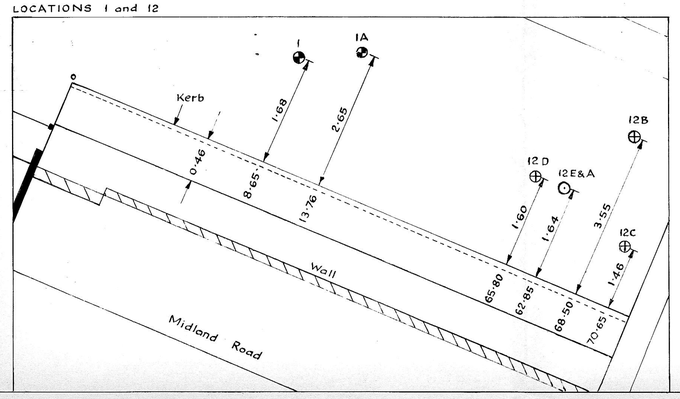
LOCATION 16



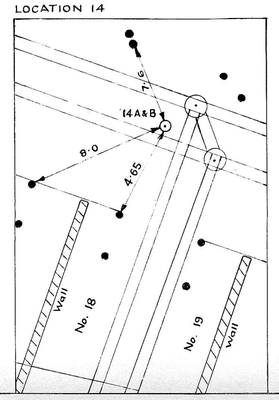


LOCATION 11

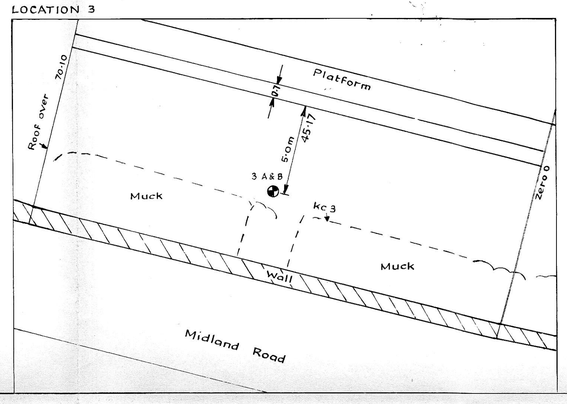
LOCATIONS 1 and 12



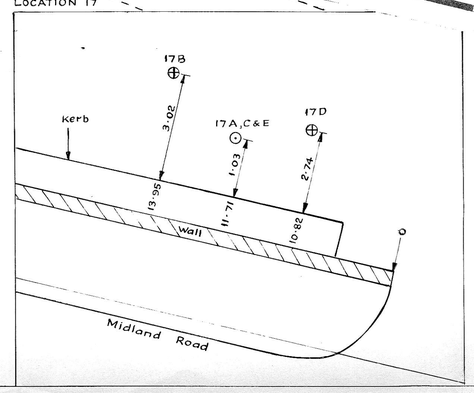
LOCATION 14



LOCATION 3



LOCATION 17



British Library 1977 Investigation

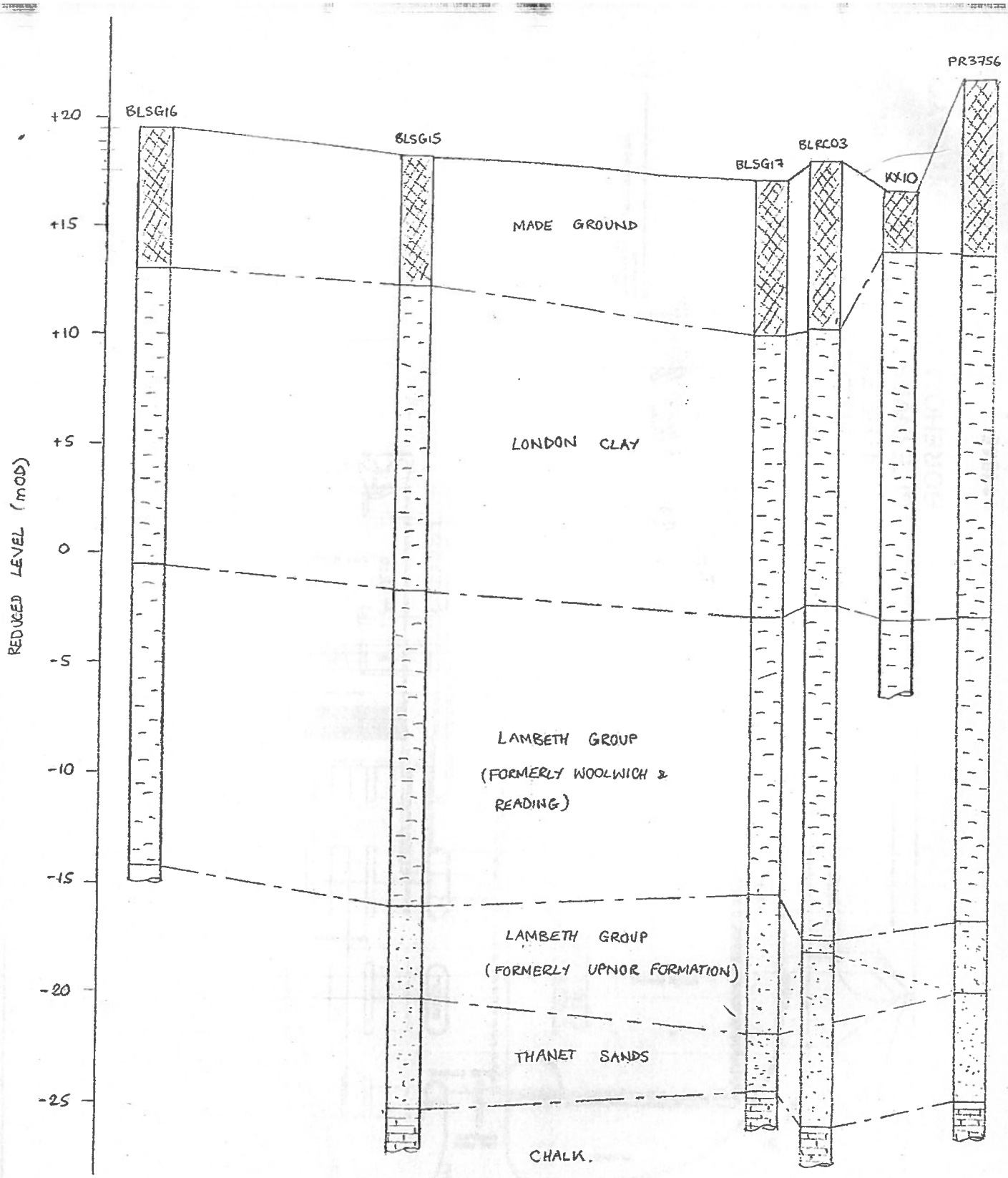
LONDON (St. Pancras)

British Library – Euston Road Site

Investigation No. FGE/277

Drawing No. CEL/soils/922/2/77

CIVIL ENGINEERING LABORATORY, Cardington



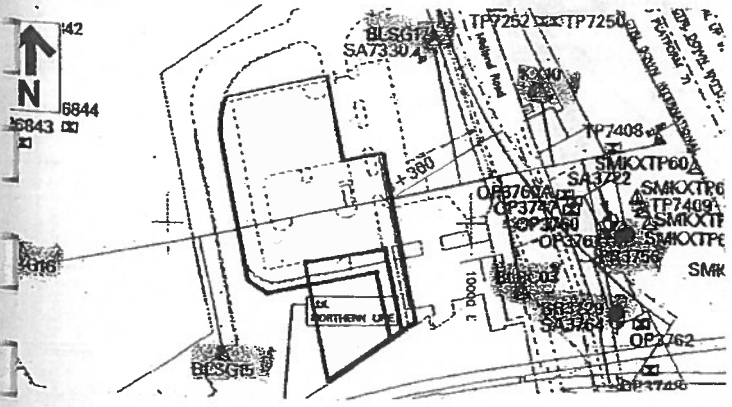


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FIGURE 4.1

Record of Borehole No. SG 15

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
							GL	18.53	
6.5.76							0.20	18.33	TARMAC over GRANITE SETTS on lean-mix CONCRETE
							0.50	18.03	Brick rubble FILL
			1.00	1.30	U 100		1.20	17.33	Brick rubble FILL with brown sandy CLAY matrix
			1.65	1.95	S 4				Brown, silty sandy CLAY with brick and flint fragments
							2.00	16.53	(LONDON CLAY - disturbed surface)
			2.00	2.50	U 100				Firm to stiff brown mottled grey silty CLAY with pockets of orange-brown SILT/fine SAND. Numerous gypsum crystals. (LONDON CLAY)
			2.65	2.95	S 11				
			3.00	3.50	U 100				
		1.70							
									Concentration of gypsum crystals, 20-30mm thick, at 4.8 m.
			4.00	4.50	U 100				
			4.65	4.95	S 18				
			4.80		D				
			5.00	5.50	U 100				
			6.00	6.50	U 100		6.00	12.53	Stiff grey-brown fissured silty CLAY with occasional dustings of SILT/fine SAND along predominently horizontal discontinuities. (LONDON CLAY)
			6.65	6.95	S 23				
7.0	DRY	1.70							
7.5.76	DRY	1.70	7.00	7.50	U 100				Small CLAYSTONE at 6.0 m.
							8.00	10.53	
			8.00	8.50	U 100				Water entry-seepage, cut off during drilling. Stiff to very stiff, grey fissured silty and variably sandy CLAY. Predominently horizontal discontinuities with patches and partings of grey or brown, fine-grained SAND.
			8.65	8.95	S 27				
			9.00	9.50	U 100				
			10.00	10.50	U 100				
			10.65	10.95	S 28				
			11.00	11.50	U 100				Very sandy with numerous patches and partings of fine SAND between 11.0 m and 12.5 m.
			12.00	12.50	U 100				
			12.65	12.95	S 34				
			13.00	13.50	U 100				
13.5	DRY	1.70							
8.5.76	DRY	1.70							
			14.00	14.50	U 100				Very sandy, with numerous pockets and partings of fine-grained SAND, between 15.0 m and 16.0 m.
			14.65	14.95	S 39				
			15.00	15.50	U 100				
			16.00	16.50	U 100				Water entry - slight seepage.
			16.65	16.95	S 34				
			17.00	17.50	U 100				
			18.00	18.50	U 100				
19.0	DRY	1.70	18.65	18.95	S 35				Very sandy, with occasional carbonaceous patches below 19.0 m.
9.5.76	18.0	1.70	19.00	19.50	U 100				
							20.00	-1.47	

Grout to 27.40

REMARKS

TYPE OF BORING

DIAMETER OF BORING

CASING TUBES

BOREHOLE NO. SG 15

Record of Borehole No. SG 15 (contd.)

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE		LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
								20.00	-1.47	
			20.00	20.50	U	100				Very stiff, grey silty sandy CLAY with carbonaceous patches (LONDON CLAY)
			20.65	20.95	S	53		20.70	-1.54	
			21.00	21.50	U	100				Very stiff brown mottled brey, silty CLAY, becoming sandy from 21.5 m. (WOOLWICH and READING BEDS)
22.50	DRY	1.70	22.15	22.45	S	53				
10.5.76	20.80	1.70						22.50	-3.97	
		22.30	23.00	23.50	U	100				Very stiff, red-brown mottled grey fissured, silty CLAY. Band of mainly red-brown silty CLAY from 24.0 m - 25.0 m. Numerous polished and striated discontinuities. (WOOLWICH and READING BEDS)
		24.00	24.15	24.45	S	80				
			25.00	25.50	U	100				
25.50	DRY	24.00								
11.5.76	24.00	24.00	24.00			W				
			26.15	26.45	S	56				
			27.00	27.50	U	100				
								27.40	-8.87	Very stiff, black, silty and very sandy, carbonaceous CLAY with thin partings of pyritised SILT/fine SAND.
								28.00	-9.47	
			28.15	28.45	S	53				Very stiff light grey and brown silty CLAY with numerous small inclusions of white silt.
								28.50	-9.97	
			29.00	29.50	U	100				Very stiff, predominently brick-red mottled light brown, silty CLAY. (WOOLWICH and READING BEDS)
29.80	DRY	24.00								
12.5.76	27.00 (2)	24.00	30.15	30.45	S	62				
			31.00	31.50	U	100		31.00	-12.47	
										Very stiff, grey and brown mottled, fissured silty CLAY, Friable. Numerous polished and striated surfaces.
			32.15	32.45	S	78				
33.80	DRY	24.00	33.00	33.50	U	100				Becoming gradually darker brown with depth.
13.5.76	31.50 (3)	24.00								
			34.15	34.38	S	93‡				Dustings of light grey SILT along predominantly horizontal discontinuities below 34.0 m. (WOOLWICH and READING BEDS)
			34.50	34.90		BD		34.50	-15.97	
		34.80	34.90	35.05	S	104‡				
36.1	DRY	34.80								Very dense, dark greenish-grey, clayey and silty, fine-grained SAND. Darker with depth and increasing patches. (THANET SANDS - reworked?)
14.5.76	DRY	34.80	36.40	36.70	S	95				
			37.35	37.65	S	95				
			38.35	38.58	S	96‡				
								38.70	-20.17	
			39.20	39.35	S	(4)				Very dense, light grey, silty fine-grained SAND with occasional rounded, blackened flint pebbles. (THANET SANDS)
40.2	DRY	34.80						40.00	-21.47	

Grout to G.L

Grout to 44.0m

REMARKS

(2) Borehole collapsed overnight up to 27.00 m.
(3) Borehole collapsed overnight up to 31.50 m.
(4) Test terminated after "seating blows".

TYPE OF BORING

DIAMETER OF BORING

CASING TUBES

BOREHOLE NO. SG 15 (Continued)

Record of Borehole No. SG15 (contd.)

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
							40.00	-21.47	
15.5.76	DRY	34.80	40.35	40.42	S 144‡				Very dense, light grey, silty, fine-grained SAND with occasional rounded, blackened flint pebbles. (THANET SANDS)
			41.35	41.42	S 160‡				
			42.20	42.35	S (4)				
			43.20	43.31	S (4)				
43.40	DRY	34.80					43.70	-25.17	
16.5.76	DRY	34.80	43.80	43.95	S (4)		44.00	-25.47	CHALK with flints - chisel used from 43.8 m (CHALK)
	(5)		43.40	43.70	3D				
			43.70	43.80	BD				End of borehole.

REMARKS
(4) Test terminated after "seating blows".
(5) Borehole collapsed overnight up to 41.0 m.
(6) Borehole collapsed to 40.0 m shortly after encountering the Chalk; the borehole was terminated with the agreement of the Consultants.

TYPE OF BORING

DIAMETER OF BORING

CASING TUBES

BOREHOLE NO. SG 15 (Continued)

Record of Borehole No. SG16

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH (m)	REDUCED LEVEL (m) OD	DESCRIPTION OF STRATA
							GL	19.50	
28.11.75							0.30	19.20	GRANITE SETTS on lean-mix CONCRETE
			1.00	1.50	U 100		0.50	19.00	Brown SAND and GRAVEL with bricks, ash etc (FILL)
									Soft to firm grey silty CLAY with brick and coal fragments (MADE GROUND)
1.50	DRY						1.50	18.00	
29.11.75	DRY	NIL							Firm to stiff brown mottled grey silty CLAY, with pockets of orange-brown SILT and numerous gypsum crystals.
		1.50	2.15	2.45	S 11				
			3.00	3.50	U 100				(LONDON CLAY)
									Stiff to very stiff below 4.0 m; colour becoming grey-brown with depth.
			4.15	4.45	S 20				
			5.00	5.50	U 100				CLAYSTONE from 5.5 m to 5.7 m. Slight seepage of water encountered.
			6.15	6.45	S 16		6.50	13.00	
			7.00	7.50	U 100				Very stiff, grey, fissured, silty CLAY. Dustings of SILT along near horizontal and vertical discontinuities.
7.50	DRY	1.50							
1.12.75	5.70	1.50	5.70		W				
8.00	DRY	6.00	8.15	8.45	S 25				
2.12.75	7.50	6.00							
			9.00	9.50	U 100				
							9.50	10.00	
			10.15	10.45	S 30				Very stiff, grey, fissured, silty variably sandy, CLAY with patches and pockets of light grey SILT/fine-grained SAND.
			11.00	11.50	U 100				(LONDON CLAY)
			12.15	12.45	S 33				
			13.00	13.50	U 100				
							13.50	6.00	
14.50	DRY	6.00	14.15	14.45	S 33				Very stiff, grey, fissured, silty CLAY with occasional SILT/fine SAND partings and pockets
3.12.75	13.80	6.00	13.80		W				
			15.00	15.50	U 100		15.00	4.50	
			16.15	16.45	S 39				Very stiff, grey, fissured, silty and variably sandy CLAY, with numerous partings and pockets of grey SILT and fine SAND.
			17.00	17.50	U 100				(LONDON CLAY)
			18.15	18.45	S 52				
			19.00	19.50	U 100				
19.50	DRY	6.00							
4.12.75	19.20	6.00	19.20		W		20.00	-0.50	

REMARKS

(1) Disturbed sample (Jar) taken from the cutting shoe of all U100 and from SPT.
(2) The slight water seepage from 5.5 m was not sealed off by the casing. Slight increase in water seepage below 14.0 m.

TYPE OF BORING
Shell-and-auger
1 ton Pilcon

DIAMETER OF BORING
240 mm – to 21.5 m
190 mm – to 27.0 m

CASING TUBES
250 mm – to 6.0 m
200 mm – to 20.7 m

BOREHOLE NO. SG 16

Record of Borehole No. SG 16 (contd.)

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
							20.00	-0.50	
		6.00	20.15	20.45	S 65				Very stiff, greenish-brown mottled grey silty CLAY, slightly sandy in patches. (WOOLWICH and READING BEDS)
			21.00	21.50	U 100				
21.50	DRY	20.70					21.50	-2.00	
5.12.75	20.50	20.70							Very stiff, light grey mottled red and greenish-brown silty CLAY. Fissured with numerous polished surfaces.
			22.50		W				
			22.15	22.45	S 62				
			23.00	23.30	U 100				
							24.00	-4.50	
			24.15	24.45	S 91				Very stiff, brown-green mottled grey, silty CLAY Fissured, numerous polised surfaces.
			25.00	25.40	U 100				
25.40	DRY	20.70							
6.12.75	21.10	20.70							
			26.15	26.45	S 74				
			27.00	27.50	U 100		27.00	-7.50	
							27.30	-7.80	Very dense grey and black carbonaceous CLAY – horizontal bedding.
			27.00	27.30	BD		28.00	-8.50	Very stiff, light brown and grey, very silty CLAY. Friable.
28.50	DRY	20.70	28.15	28.45	S 68				Very stiff, mauve, red-brown, light grey, and orange brown silty CLAY. Contains pockets and fragments of white, calcareous SILT around 28.0 m.
8.12.75	22.00	22.00	22.00		W				
28.50	(3)	27.00							
10.12.75	23.80	29.00	29.00	29.50	U 100				Irregular discontinuities with polished surfaces.
			30.15	30.45	S 86				
									Colour becomes predominently brown below 31.0 m.
			31.00	31.40	U 100				
									(WOOLWICH and READING BEDS)
32.00	DRY	29.00							
11.12.75	27.50	29.00	32.15	32.45	S 124				
			27.50		W				
			33.00	33.40	U 100				
							33.80	-14.30	Very dense, dark grey clayey SAND. (THANET SANDS – reworked?)
			34.15	34.30	S 154		34.80	-15.30	
			35.15	35.30	S 154				Very dense, grey-green clayey SAND with patches of orange-brown SAND and small pockets of carbonaceous material.
							36.00	-16.50	
			36.15	36.45	S 125				Very dense, grey-green clayey SAND with pockets and partins of light grey SILT/fine SAND.
37.00	DRY	29.00					37.00	-17.50	(THANET SANDS – reworked?)
									END OF BOREHOLE (4)

Fo
37.0m

REMARKS

(3) Borehole collapsed from 23.20 m over weekend. Bailed out 1.70 m of water and cleaned out borehole to 27.0 m using clay tool.

(4) The borehole was terminated because of the inability to clear the borehole or advance the casing.

TYPE OF BORING
Shell-and-auger
1 ton Pilcon

DIAMETER OF BORING
240 mm – to 21.5 m
190 mm – to 27.0 m
140 mm – to 37.0 m

CASING TUBES
250 mm – to 6.0 m
200 mm – to 20.7 m
150 mm – to 29.0 m

BOREHOLE NO. SG 16 (Continued)

Record of Borehole No. SG 17

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
							GL	17.54	
21.11.75		Nil					0.3	17.24	CONCRETE
			1.15	1.45	S 7				Brown sandy CLAY with concrete and brick fragments.
		Nil	1.30	1.50	BD				
		1.50					1.3	16.24	Dark brown gravelly CLAY with brick fragments and coal.
							2.3	15.24	
			2.50	3.00	U 100				Soft grey-green, very silty CLAY, slightly organic. Contains fragments of brick, coal and ash.
			3.00	3.50	U 100				
3.5	DRY	3.20					4.0	13.54	
22.11.75	DRY	3.20	4.15	5.45	S 8				Soft, grey-brown, silty CLAY with patches of orange-brown SAND and well-rounded flint pebbles. Some black organic, very silty pockets. Old pipe at 6.5 m.
			4.50	5.00	U 100				
			5.00	5.50	U 100				
							6.0	11.54	(MADE GROUND)
			5.65	5.95	S 8				Soft, black, silty CLAY with pieces of red tile and brick. Patchy appearance. Some light brown silty CLAY with rounded flint pebbles.
			6.00	6.50	U 100				
							7.00	10.54	(MADE GROUND)
			7.35	7.65	S 9				Firm, grey-brown becoming grey, silty CLAY. Small CLAYSTONE at 7.0 m.
			7.00	7.50	BD		8.00	9.54	
			8.00	8.50	U 100				Stiff to very stiff, grey, fissured silty, slightly sand CLAY. Numerous gypsum crystals. Partings of SILT/fine SAND and occasional patches of dark grey SAND.
			9.00	9.50	U 100				
9.5	DRY	3.20							
24.11.75	DRY	3.20	9.65	9.95	S 30		10.00	7.54	
			10.00	10.50	U 100				Very stiff, grey, fissured silty, sandy (occasionally very sandy) CLAY, with numerous thin partings of SILT/fine SAND.
			11.00	11.50	U 100				
			11.65	11.95	S 37				
			12.00	12.50	U 100				Very sandy, becoming clayey SAND in part, below 12.0 m.
			13.00	13.50	U 100				
			13.65	13.95	S 39				Slight water seepage from 13.5 m
			14.00	14.50	U 100				
			15.00	15.50	U 100				
15.50	DRY	3.20					15.50	+2.04	
25.11.75	15.00	3.20	15.65	15.95					Very stiff, silty, CLAY with traces of SAND, becoming sandy CLAY from 17.0 m to 18.0 m. Occasional patches of dark grey sand, pyritised in part.
			16.00	16.50	U 100				
			17.00	17.50	U 100				
			17.65	17.95	S 48				
			18.00	18.50	U 100				
			19.00	19.50	U 100				
							19.30	-1.76	Very stiff, brown, silty CLAY
20.00	DRY	3.20	19.65	19.95	S 72		20.00	-2.46	(WOOLWICH and READING BEDS)

Grout to 41.00 m

REMARKS

(1) Disturbed samples (jar) taken from the cutting shoe of all U100 and from SPT.

TYPE OF BORING
Shell-and-auger
2 ton Pilcon

DIAMETER OF BORING
240 mm – to 20.0 m

CASING TUBES
250 mm – to 3.2 m
200 mm – to 20.0 m
150 mm – to 35.6 m.

BOREHOLE NO. SG 17

Record of Borehole No. SG17 (contd.)

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
							20.00	-2.46	
26.11.75	19.00	3.20							Very stiff, brown, fissured silty CLAY. Polished and striated surfaces. Water seepage cut off by casing.
		20.00	20.50	21.00	U 100				
							21.00	-3.46	
			21.65	21.95	S 63				Very stiff, brick red mottled grey fissured, silty CLAY. Polished and striated surfaces.
									Colour varies with depth – predominently grey mottled brown below 23.5 m.
			22.50	23.00	U 100				
25.50	DRY	20.00							
27.11.75	DRY	20.00	23.65	23.95	S 47				
			24.50	25.00	U 100				
			25.65	25.95	S 49				
			26.30	26.50	BD		26.30	-8.76	Very stiff, gr , i y CLAY.
			26.50	27.00	U 100		26.50	-8.96	
									Very stiff, blue-gr greenish-yellow, b dark grey, ilty CL ches of SILT. Belo gravel-si eath odules.
			27.20	27.30	BD		27.40	-9.86	
			27.65	27.95	S 60				Very stiff, multicoloured - red, green, grey, mauve - fissured silty CLAY. Rough surfaces, friable.
			28.50	29.00	U 100				Minor variations in colour with depth.
29.50	DRY	20.00							
28.11.75	DRY	20.00	29.65	29.95	S 101				
			30.50	31.00	U 100				
			31.65	31.95	W 99				
			32.50	32.70	U 100				From 32.70m dark grey, very silty CLAY with partings of grey, fine-grained SAND.
32.50	DRY	20.00					32.70	-15.16	
29.11.75	30.70	20.00	32.95	33.18	S 110+		33.20	-15.66	Very dense, grey or dark grey, variably silty n SAND. (THANET SAND - reworked?)
	(2)	33.40	33.20	33.40	BD				Very dense, ray- reen, variably silty and clayey grained SAND.
33.75	DRY	33.40	33.40	33.60	BD				
1.12.75	31.50	33.70	33.90	34.20	S 90				35.0 m - patches of orange-brown SAND and small p of carbonaceous material.
			34.65	34.95	S 90				
			31.5		W				
35.70	DRY	33.70	35.40	35.63	S 96+				36.0 m - p. c. s and partings of light grey SILT and fine-grai d SAND.
2.12.75	DRY	33.70							
		34.50	36.40	36.63	S 105+				
			37.15	37.23	S 110+				37.0 m - int rbedded thin layers (1-3 mm thick) of dark grey SILT.
									(THANET SAND - reworked?)
			37.90	37.98	S 152+		37.75	-20.21	Very dense, light grey, fine-grained SAND (THANET SANDS)
33.90	DRY	35.40	38.65	38.80	S 132+		38.50	-20.96	Very dense, light grey, fine-grained SAND with thin layer of dark grey SILT. Occasional, well rounded, black flints.
3.12.75	DRY	35.40	38.90	39.10	D		39.10	-21.56	
			39.40	39.43	S 102+				Very dense, light grey, fine-grained SAND. (THANET SANDS)
							40.00	-22.46	

Grout to 44.4

REMARKS

(2) Borehole collapsed overnight from 30.7 m; slurry at 30.7 m.

TY OF BORING
hell-and-
ton Pile

DIAMETER OF BORING
240 mm – to 20.0 m
190 mm – to 33.4 m
140 mm – to 43.4 m

CASING TUBES
250 mm – to 3.2 m
200 mm – to 20.0 m
150 mm – to 35.6 m

BOREHOLE NO. SG 17 (Continued)

Record of Borehole No. SG 17 (contd.)

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
							40.00	-22.46	
3.12.75		35.40	40.15	40.23	S 144‡				Very dense, light grey, fine-grained SAND.
			40.90	41.05	S 136‡				
			41.20	41.70	BD		41.20	-23.66	(THANET SANDS)
			41.85	41.93	S 130‡		41.70	-24.16	Very dense, dark grey, SAND and SILT with rounded, and angular flints (blackened)
41.90	DRY	35.60							
4.12.75	DRY	35.60							Off-white, brittle CHALK, with patches and vertical discontinuities stained grey.
			42.50	42.65	S (3)				
43.35	DRY	35.60	43.20	43.35	S (3)		43.35	-25.81	(CHALK)
									End of borehole

REMARKS
(3) Test terminated after "seating blows"

TYPE OF BORING
Shell-and-auger
2 ton Pilcon

DIAMETER OF BORING
240 mm - to 20.0 m
190 mm - to 35.4 m
140 mm - to 43.4 m

CASING TUBES
250 mm - to 3.2 m
200 mm - to 20.0 m
150 mm - to 35.6 m

BOREHOLE NO. SG 17 (Continued)

OVE ARUP & PARTNERS

JOB NO. 6271

FIG NO. 27

MADE BY CMRN/CC

DATE May 1977

RECORD OF BOREHOLE NO. RC3 (Sheet 1 of 3)

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
	m	m	m	m			m	mOD	Ground level 18.37mO.D.
5.1.76	NIL	NIL	0.00	0.60					(MADE GROUND)
(0.60)	G.L.						2.10	16.27	
6.1.76.	NIL	1.50	2.10	3.60	44%				Brick and stone fill over soft brown clay. 2.94 - 3.60 Strong concrete with flint and brick aggregate. 3.83 - 4.36 Soft to firm grey/brown, silty sandy CLAY.
		1.50	3.60	4.90	92%		4.36	14.01	(MADE GROUND)
		1.50	4.90	6.10	33%				Firm light brown silty CLAY, with abundant selenite crystals and well developed horizontal laminations. Irregular high angle joint planes.
		1.50	6.10	7.60	100%				7.58 - 7.60 Strong buff calcareous siltstone (CLAYSTONE) (WEATHERED LONDON CLAY)
							7.60	10.77	
		1.50	7.60	9.10	100%				Soft grey remoulded CLAY with fragments of claystone and inclusions of flint and brick sand (disturbed recovery).
(9.10)	G.L.								
7.1.76	3.00	9.00	9.10	10.00	100%				8.74 - 9.01 Stiff grey silty CLAY with feint horizontal laminations. 9.01 - 9.10 Strong buff calcareous siltstone (CLAYSTONE)
		9.00	10.00	11.50	100%				9.10 - 9.93 Soft brown CLAY with patches of decomposed concrete, flint, brick etc. (disturbed recovery). 9.93 -10.00 Strong grey calcareous siltstone (CLAYSTONE).
		9.00	11.50	12.80	100%				10.00 -10.57 Disturbed recovery - as above. 10.57 -11.61 Stiff brown/grey very silty CLAY. 11.61 -11.87 Stiff grey silty CLAY, feint horizontal laminations. 11.87 -13.49 Stiff brown/grey sandy silty CLAY with clear horizontal laminations.
		9.00	12.80	14.00	42%				13.49 -15.38 Stiff grey sandy silty CLAY, with some yellow/grey horizons, richer in sand. Well developed laminations.
		9.00	14.00	15.40	93%				15.38 -18.15 Becoming very stiff grey silty CLAY with sandy horizons.
		9.00	154.0	16.90	100%				18.15 -18.30 Interbedded dense buff silty clayey fine SAND and yellowish/grey sandy CLAY. (LONDON CLAY)
			16.90	18.30	100%				
									Continued

REMARKS

TYPE OF BORING

0.00 - 2.10 open pit.
2.10 - EOB rotary coring.

DIAMETER OF BORING

0.00 - 1.50	200mm
1.50 - 9.00	150mm
9.00 -44.2	120mm

CASING TUBES

0.0 - 1.5	200mm
1.5 - 9.0	150mm
9.0 -44.5	120mm

BOREHOLE NO. RC3

OVE ARUP & PARTNERS

JOB NO. 6271

FIG NO. 28

MADE BY CMRN/CC

DATE May 1977

RECORD OF BOREHOLE NO. RC3 (Sheet 2 of 3)

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
	m	m	m	m			m	mOD	
(18.30)	G.L.								
8.1.76	G.L.	9.00	18.30	19.80	53%				18.30 - 20.11 Very stiff silty sandy CLAY, with yellowish fine sand lenses, and blocky jointing.
		9.00	19.80	21.30					20.11 - 20.36 Hard yellowish grey sandy silty CLAY. Erosional sedimentary junction at 20.36.
							20.36	-1.99	(LONDON CLAY)
					100%				
		9.00	21.30	22.80					Hard variegated blue and buff/brown silty CLAY with continuous slickensided joints. Textureless.
					86%				24.3 - 28.0 Major joints, planar and continuous, but irregular orientation.
(22.80)	G.L								
12.1.76	G.L	22.30	22.80	24.30					
					40%				
		22.30	24.30	25.80					Continuing hard blue/grey interbedded or mottled with brown silty CLAY.
					100%				
		22.30	25.80	27.30					
					100%				28.6 - 29.4 Blocky jointing with slickensided surfaces.
		26.80	27.30	28.40					
					100%				
		26.80	28.40	29.90					29.44 - 29.87 Hard dark grey to black carbonaceous silty CLAY, with well developed laminations and traces of pyrite.
					100%				
(29.90)	G.L								
13.1.76	G.L	26.80	29.90	31.40					29.87 - 35.66 Hard blue/grey and brown mottled silty CLAY with variable texture.
					100%				
		26.80	31.40	32.20					32.6 - 33.6 Major joints and occasional discontinuous minor joints. Major joints continuous, with slickensided surfaces.
					100%				
			32.20	33.60					
					100%				35.66 - 36.19 Dense black carbonaceous, grading downwards into brownish grey silty clayey SAND. (Reworked Thanet Sands).
		26.80	33.60	35.10					
					93%				
		26.80	35.10	36.20					(WOOLWICH AND READING BEDS)
					100%				
		26.80	36.20	37.70			36.19	-17.82	Dense bright green ironstained medium SAND. No joints observed. Dense olive green and white silty medium and coarse sand with laminations of hard grey silty CLAY. Some ironstaining.
					100%				(THANET SANDS)

REMARKS

TYPE OF BORING

Rotary Core

DIAMETER OF BORING

0.00 - 1.50	200mm
1.50 - 9.00	150mm
9.00 -44.20	120mm

CASING TUBES

0.00 - 1.50	200mm
1.50 - 9.00	150mm
9.00 -44.50	120mm

BOREHOLE NO. RC3

OVE ARUP & PARTNERS

JOB NO. 6271

FIG NO. 29

MADE BY CMRN/CC

DATE May 1977

RECORD OF BOREHOLE NO. RC3 (Sheet 3 of 3)

DAILY PROGRESS	DEPTH TO WATER	DEPTHS OF CASING	SAMPLES DEPTH FROM	SAMPLES DEPTH TO	SAMPLES TYPE	LEGEND	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA
	m	m	m	m			m	mOD	
		26.80	37.70	39.20	100%				38.13 - 39.20 Dense grey clayey silty SAND, moderately developed laminations.
		26.80	39.20	40.70	60%				40.31 - 40.70 Dense greenish grey silty medium sand with flint pebbles.
					0%				43.18 - 43.29 Stiff dark greenish grey silty sandy CLAY. 43.29 - 44.10 Dense greenish grey silty SAND with flint pebbles and cobbles at base.
(42.70)	G.L								
15.1.76	G.L	42.70	42.70	44.20	54%				(THANET SANDS)
		42.70	44.20	45.40			44.10	-25.73	
			44.20	44.30	S (240)				44.10 - 44.20 Weak white CHALK with flint pebbles.
(45.40)	G.L				67%				
18.1.76	40.00	44.50	45.40	46.60	S (-)*				Poor recoveries of completely remoulded CHALK.
		44.50	46.60	47.80	50% S (-)*				Poor recovery and remoulding due to obstruction by flints.
(47.80)	NIL				83%				
19.1.76	NIL	44.50	47.80	49.00	S (-)*				Weak white CHALK, remoulded by drilling.
			49.00		42% S (-)*				
	G.L	44.50	49.00	50.20	33%				(UPPER CHALK)
			50.20		S (-)*		50.20	-31.83	END OF BOREHOLE

REMARKS

S.P.T. at 44.20: 80 blows for 4" gives S.P.T. of 240.
S.P.T. at 45.40: Seating drive not completed. Penetration for seating 3½" in 70 blows.
S.P.T. at 46.60: Seating drive not completed. Penetration for seating 2¾" in 50 blows.
S.P.T. at 47.80: Seating drive not completed. Penetration for seating 2½" in 50 blows.
S.P.T. at 49.00: Seating drive not completed. Penetration for seating 3½" in 70 blows.
S.P.T. at 50.20: Seating drive not completed. Penetration for seating 4½" in 73 blows.

TYPE OF BORING

Rotary Core

DIAMETER OF BORING

44.20 - 50.20 100mm

CASING TUBES

44.50 - 50.20 100mm

BOREHOLE NO. RC3