i2 Analytical
7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	**17-55222**						
					Client:	**CONCEPT**	
Location	**Triton Square**						
Lab Reference (Sample Number)	787511				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	21/07/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	CH-10 2						
Depth (m)	0.65-0.80						
Solid Waste Analysis							
TOC (%)**	-				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg) **	-				6000	--	--
Sum of PCBs (mg/kg) **	-				1	--	--
Mineral Oil (mg/kg)	-				500	--	--
Total PAH (WAC-17) (mg/kg)	-				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:01	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0024			0.0202	0.5	2	25
Barium *	0.0338			0.285	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0009			0.0075	0.5	10	70
Copper *	0.0088			0.074	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0021			0.0178	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	0.0036			0.030	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	< 0.0004			< 0.0040	4	50	200
Chloride *	2.4			20	800	4000	25000
Fluoride	0.077			0.65	10	150	500
Sulphate *	31			260	1000	20000	50000
TDS	100			870	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	< 0.100			< 1.00	500	800	1000
Leach Test Information							
Stone Content (%)	-						
Sample Mass (kg)	-						
Dry Matter (%)	-						
Moisture (%)	-						

Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation ** = MCERTS accrediited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Analytical Report Number : 17-55222

Project / Site name: Triton Square

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Evangelos Kafantaris
Concept Site Investigations
Unit 8
Warple Mews
Warple Way
London
W3 0RF

t: 020 88112880

e: evangelos@conceptconsultants.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 17-55220

Project / Site name:	Triton Square	**Samples received on:**	24/07/2017
Your job number:	17-2961	**Samples instructed on:**	24/07/2017
Your order number:	CL1128	**Analysis completed by:**	31/07/2017
Report Issue Number:	1	**Report issued on:**	31/07/2017
Samples Analysed:	3 soil samples		

Signed:

Dr Irma Doyle
Senior Account Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 17-55220

Project / Site name: Triton Square
Your Order No: CL1128

Lab Sample Number				787507	787508	787509		
Sample Reference				CH-10	CH-10	CH-10		
Sample Number				2	3	4		
Depth (m)				0.65-0.80	0.80-1.12	1.12-1.40		
Date Sampled				21/07/2017	21/07/2017	21/07/2017		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	13	9.2	18		
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	-		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	10.9	9.0	8.0		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	-		
Total Sulphate as SO_4	%	0.005	MCERTS	0.287	0.039	0.043		
Water Soluble SO4 as SO4 (2:1) Gallery 16h extraction	g/l	0.00125	MCERTS	0.265	0.108	0.177		
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	15	11	19		
Total Sulphur	%	0.005	MCERTS	0.117	0.014	0.016		
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.3	< 0.1	-		
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0		
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0		
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Phenanthrene	mg/kg	0.05	MCERTS	0.19	< 0.05	-		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Fluoranthene	mg/kg	0.05	MCERTS	0.36	< 0.05	-		
Pyrene	mg/kg	0.05	MCERTS	0.30	< 0.05	-		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.18	< 0.05	-		
Chrysene	mg/kg	0.05	MCERTS	0.13	< 0.05	-		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.16	< 0.80	-		
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.1	5.7	-		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.33	0.31	-		
Boron (water soluble)	mg/kg	0.2	MCERTS	2.0	0.5	-		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	-		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13	14	-		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	11	-		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	8.6	-		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	9.9	-		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	22	20	-		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	27	20	-		
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	24		

Analytical Report Number: 17-55220

Project / Site name: Triton Square
Your Order No: CL1128

Lab Sample Number				787507	787508	787509		
Sample Reference				CH-10	CH-10	CH-10		
Sample Number				2	3	4		
Depth (m)				0.65-0.80	0.80-1.12	1.12-1.40		
Date Sampled				21/07/2017	21/07/2017	21/07/2017		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	12		

Analytical Report Number: 17-55220

Project / Site name: Triton Square
Your Order No: CL1128

Lab Sample Number				787507	787508	787509		
Sample Reference				CH-10	CH-10	CH-10		
Sample Number				2	3	4		
Depth (m)				0.65-0.80	0.80-1.12	1.12-1.40		
Date Sampled				21/07/2017	21/07/2017	21/07/2017		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-		
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	-		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	-		
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	-		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	-		
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	-		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	-		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	-		
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	-		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	10	< 10	-		
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	10	< 10	-		
PCBs								
PCB Congener 077	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 081	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 105	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 114	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 118	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 123	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 126	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 156	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 157	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 167	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 169	mg/kg	0.001	NONE	< 0.001	-	-		
PCB Congener 189	mg/kg	0.001	NONE	< 0.001	-	-		
Total PCBs	mg/kg	0.012	NONE	< 0.012	-	-		

Analytical Report Number : 17-55220

Project / Site name: Triton Square

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
787507	CH-10	2	0.65-0.80	Light brown sand with gravel.
787508	CH-10	3	0.80-1.12	Light brown gravelly sand.
787509	CH-10	4	1.12-1.40	Brown clay and sand.

The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 17-55220

Project / Site name: Triton Square

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
PCBs WHO 12 in soil	Determination of PCBs (WHO-12 Congeners) by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil by Gallery 16hr	Determination of water soluble Sulphate by discrete analyser (precipitation method).	In house method based on BS1377-3: 1990.	L082B-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Analytical Report Number : 17-55220

Project / Site name: Triton Square

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L038	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

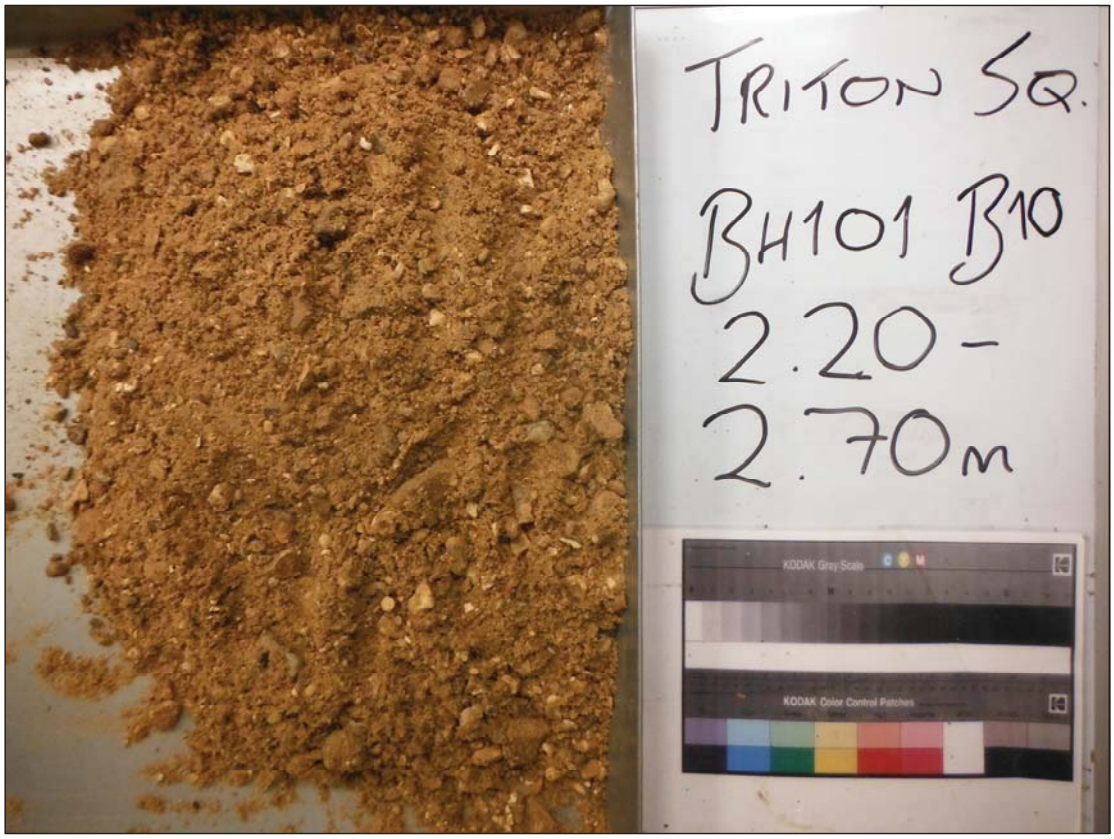
12 PHOTOGRAPHS

Unit 8, Warple Mews
Warple Way
London W3 0RF

CONCEPT SITE INVESTIGATIONS

Tel: 020 8811 2880
Fax: 020 8811 2881
email: si@conceptconsultants.co.uk

Site Name	1 Triton Sq	Job No.	17/2961	HOLE	BH101
Carried out for	British Land	Date		Photograph	01 & 02



Photograph No 01

Photograph No 02

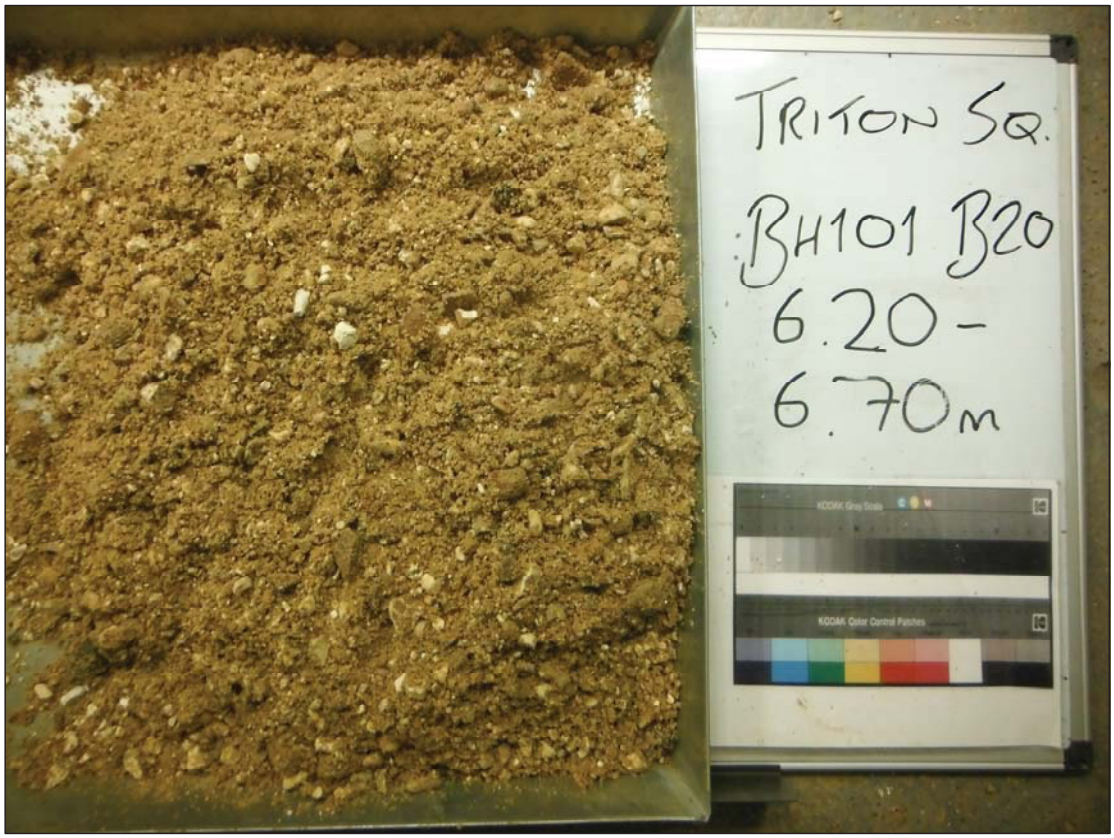
Unit 8, Warple Mews
Warple Way
London W3 0RF

CONCEPT SITE INVESTIGATIONS

Tel: 020 8811 2880
Fax: 020 8811 2881
email: si@conceptconsultants.co.uk

Site Name	1 Triton Sq	Job No.	17/2961	HOLE	BH101
Carried out for	British Land	Date		Photograph	03 & 04

Photograph No 03



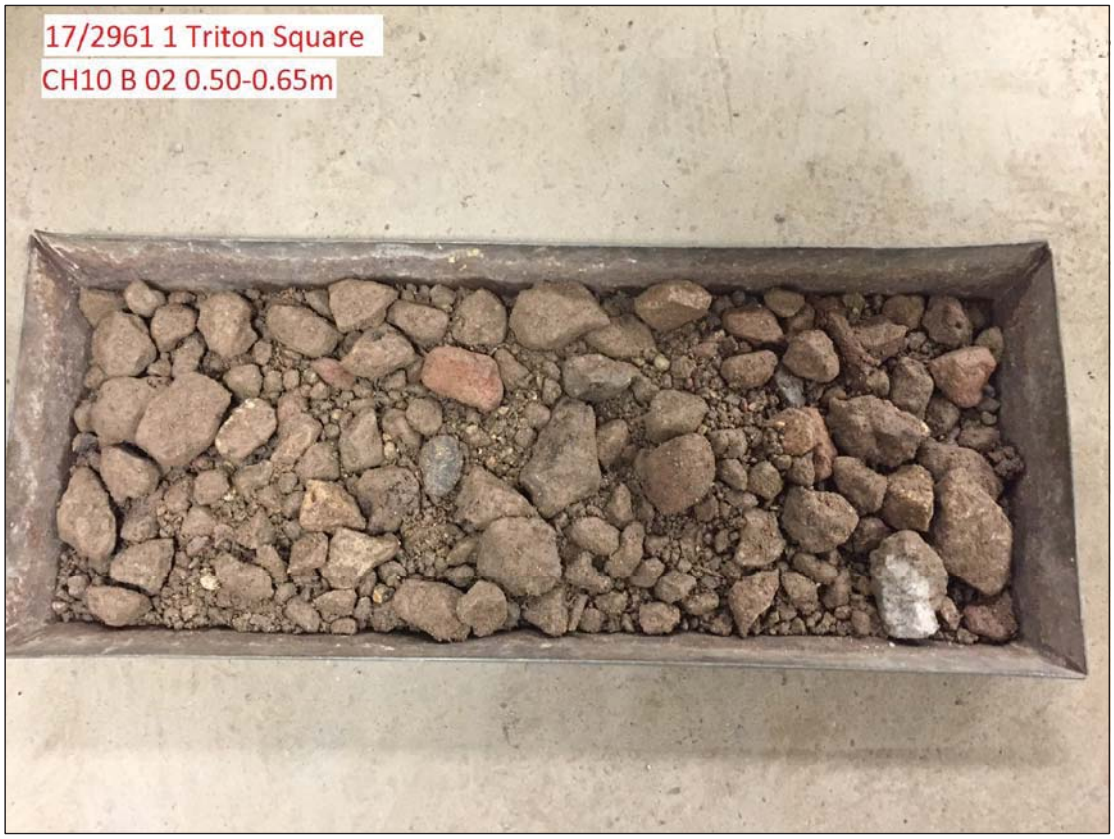
Photograph No 04

Unit 8, Warple Mews
Warple Way
London W3 0RF

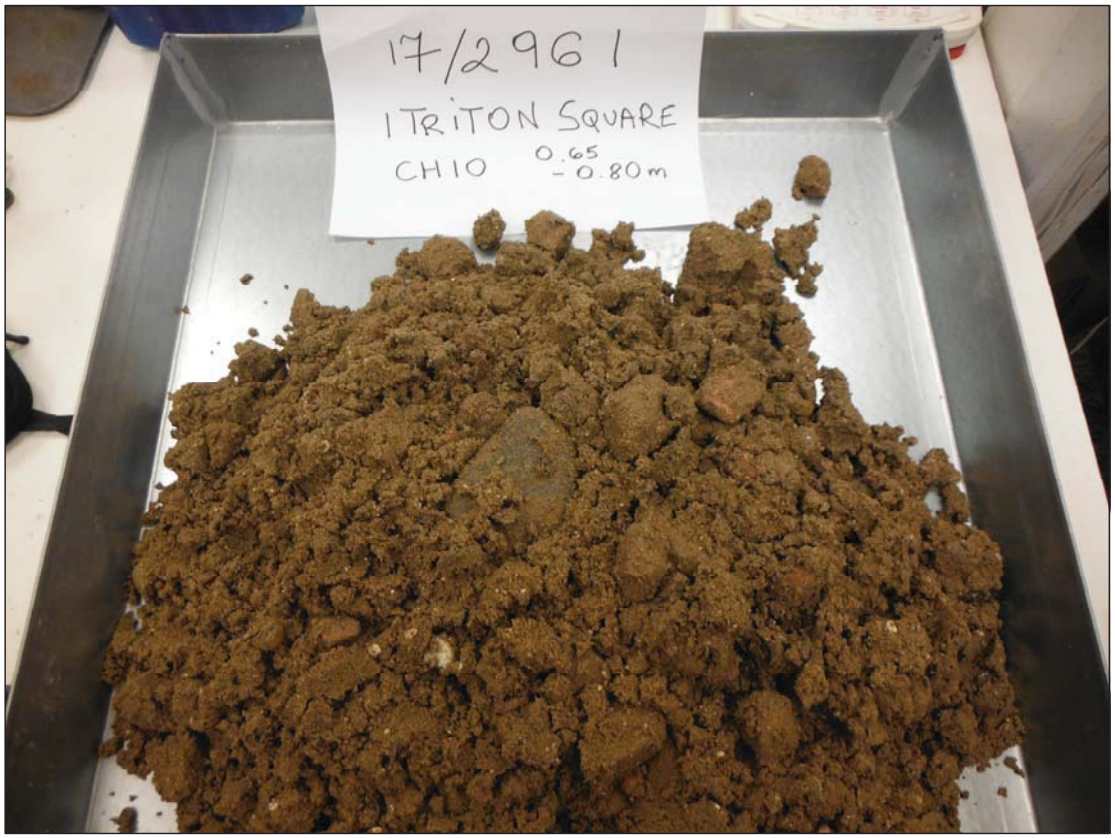
CONCEPT SITE INVESTIGATIONS

Tel: 020 8811 2880
Fax: 020 8811 2881
email: si@conceptconsultants.co.uk

Site Name	1 Triton Sq	Job No.	17/2961	HOLE	CH10
Carried out for	British Land	Date		Photograph	01 & 02



Photograph No 01



Photograph No 02

Unit 8, Warple Mews
Warple Way
London W3 0RF

CONCEPT SITE INVESTIGATIONS

Tel: 020 8811 2880
Fax: 020 8811 2881
email: si@conceptconsultants.co.uk

Site Name	1 Triton Sq	Job No.	17/2961	HOLE	CH10
Carried out for	British Land	Date		Photograph	03 & 04

Photograph No 03

Photograph No 04

Unit 8, Warple Mews
Warple Way
London W3 0RF

CONCEPT SITE INVESTIGATIONS

Tel: 020 8811 2880
Fax: 020 8811 2881
email: si@conceptconsultants.co.uk

Site Name	1 Triton Sq	Job No.	17/2961	HOLE	CH10
Carried out for	British Land	Date		Photograph	05 & 06

Photograph No 05

Photograph No 06

Appendix E

Laing Technology Group Limited, 1994 Ground Investigation

THE BRITISH LAND CORPORATION

REDEVELOPMENT

AT

REGENTS PLACE/TRITON SQUARE, LONDON

REPORT ON SITE INVESTIGATION

Project No. 94484 **April 1995**

VOLUME 1

CONTENTS - VOLUME 1

1.0	INTRODUCTION		(A)
2.0	SITE DESCRIPTION AND GEOLOGY		
3.0	SITE WORK		
4.0	LABORATORY		
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	4.2	Moisture Content	
	4.3	Index Properties	
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	4.6	Chemical Analyses	
	4.7	Quick Undrained Triaxial Tests	
	4.8	One Dimensional Consolidation Tests	
	4.9	Effective Stress Triaxial Tests	
FIGURES	Figure 1	Site Plan with Existing Buildings	(B)
	Figure 2	Site Plan Showing Basement	
TABLES	Table 1	Water depths in Piezometers and Standpipes	(C)
APPENDIX	Notes		(D)
	Exploratory Hole Records with Drilling Progress and Sample Detail Sheets		(E)
	Summary of Laboratory Test Results (Physical and Analytical)		(F)
	Exploratory Hole Location Plan		(G)

The British Land Corporation
Proposed Redevelopment
at Regents Place/Triton Square, London

REPORT ON SITE INVESTIGATION

Project No. 94484 **April 1995**

1.0 INTRODUCTION

At the request of Ove Arup & Partners, Consulting Engineers to The British Land Corporation, a site investigation was carried out at Regents Place and Triton Square, London, at the site of the proposed redevelopment.

Presented in this report are results of borings, trial pits and insitu and laboratory tests from this investigation; a factual report was requested.

2.0 SITE DESCRIPTION AND GEOLOGY

The site is located at Euston Road about 150m west of the intersection with Tottenham Court Road, London. Figures 1 and 2 show the site plan with existing buildings and basement respectively.

The Regents Place site (National Grid Reference TQ 290 822) presently consists of multi-storey office blocks, access roads and LEB building with an underground car park underlying the whole site.

The Triton Square site (National Grid Reference TQ 291 824) is generally level with perimeter access roads and access ramps to the Regents Place underground car park. The site is currently used for surface parking.

Geological records indicate the site to be underlain by River Terrace Deposits over London Clay, Woolwich and Reading Beds and Thanet Sand of Eocene Age.

3.0 SITE WORK

The site work was carried out during the period 29 November 1994 to 17th February 1995.

Twelve boreholes (seven at Regents Place, five at Triton Square) were constructed by cable percussion methods and nine trial pits were excavated (6 by hand and 3 by machine) at the positions shown on the appended site plan and attached Figures 1 and 2. Basement rigs were used in this underground car park, and conventional rigs at the surface parking at Triton Square. The depths of the boreholes, the descriptions and depths of the strata encountered and groundwater levels as recorded at the time of boring and collapses are given on the exploratory hole records and/or separate sheets. Representative disturbed and undisturbed samples were taken at the depths shown on the records. Standard penetration tests (with cone attachment in coarse soils) were made in granular and cohesive deposits to assess the relative density or stiffness of the materials, and the values of the penetration resistance ('N' values) are given in the borehole records.

Piezometers and standpipes were installed at the following depths (m):

BH 1	Piezometer at 16.30m	Standpipe at 1.43m
BH 2	Piezometer at 37.00m	Piezometer at 25.50m
BH 3	Piezometer at 46.80m	Piezometer at 10.20m
BH 4	Piezometer at 20.95m	
BH 5	Piezometer at 10.15m	Piezometer at 51.50m
BH 6	Piezometer at 16.00m	Standpipe at 7.00m
BH 7	Piezometer at 33.00m	
BH 8	Piezometer at 28.80m	Standpipe at 1.70m
BH 9	Piezometer at 45.60m	
BH 10	Piezometer at 11.50m	
BH 11	Piezometer at 24.45m	Standpipe at 2.80m
BH 12	Piezometer at 33.45m	

Water level readings taken during the course of the investigation and afterwards until 20th March 1995 are given in Table 1.

4.0 LABORATORY WORKS

4.1 General

A general programme of laboratory tests was carried out as instructed by the Consulting Engineers as detailed below:-

All soils tests were carried out in accordance with BS1377: 1990.

4.2 Moisture Content

The natural moisture contents of ten samples were determined. The results are given on the summary sheets.

Bulk and dry density along with moisture content determinations were carried out on nine samples.

4.3 Index Properties

Sixty three liquid and plastic limit tests were made on representative samples of cohesive soils and the results are given on the summary sheets together with the results of natural moisture content determinations. Where the samples contain a granular content the percentage of material passing the 425 micron sieve is indicated.

4.4 Sieve Analyses

The grading of seven samples of granular material were determined by sieve analyses. The resulting curves are presented on the appended graphs.

4.5 Particle Size Distributions

The particle size distribution of seven samples of soil were determined by sieve and pipette analyses. The resulting particle size distribution curves are presented on the appended graphs.

4.6 Chemical and Contamination Analyses

pH values were determined on thirty samples of soil. Total sulphate contents were determined on twenty two samples and water soluble sulphate contents were carried out on ten samples of soil. Ten water samples were tested for pH values and of these, nine sulphate determinations were carried out. Loss on ignition determinations were carried out on nine samples. Ten samples of soil and five samples of groundwater were tested for a range of possible chemical contaminants. The results of these tests are given on the appended summary sheets.

One sample of gas from the piezometer at 51.5m in BH5 was analysed by laboratory gas chromatography methods for the presence of methane, carbon monoxide, carbon dioxide, oxygen, nitrogen and hydrogen.

One sample was tested for asbestos. Certificate is enclosed.

Chemical Testing: Methods

Organic Matter Testing

All tests were carried out in accordance with Clause 3 of BS1377: Part 3: 1990.

Method of Test: Walkley & Black method using dichromate oxidation.

Total Sulphate Testing

All tests were carried out in accordance with Clause 5.5 of BS1377: Part 3: 1990.

Method of Test: Gravimetric method for acid extracts using barium chloride solution.

Sulphate Content in 2:1 Water : Soil Extract

All tests were carried out in accordance with Clause 5.5 of BS1377: Part 3: 1990.

Method of Test: Ion exchange.

pH Testing

All tests were carried out in accordance with Clause 9.5 of BS1377: Part 3: 1990.

Method of Test: Electromagnetic method.

Soil : Water ratio employed in pH determination 1:25 (30g:75ml)

Sulphate and pH of Groundwater

- The results of the Total Sulphate tests were carried out in accordance with BS1377: Part 3: Clause 5.6.6.2.
- The results of the pH tests were carried out in accordance with BS1377: Part 3: Clause 9.6.
- Water Sulphate: method : Gravimetric method for acid extracts - using a barium chloride solution.

Contamination Testing : Methods

Soils

Arsenic	-	Hydride generation (ICP)
Cadmium	-	Inductively coupled plasma spectrometry (ICP)
Lead	-	
Copper	-	
Chromium	-	
Mercury	-	Flameless atomic absorption spectrometry (cold vapour)
TEX	-	Soxhlek extraction of soil with toluene
CT	-	Thin layer chromatography screening/fluorimetry quantifying
MO	-	Fourier transform - Infra red spectroscopy.
Phenols		Distillation/UV spectrometry
Cyanide		

Loss on ignition	-	BS1377: Part 3: 1990 Clause 4.

Water

Arsenic	-	Hydride generation atomic absorption spectrometry
Cadmium Chromium Copper Lead	- - - -	Inductively coupled plasma spectrometry
Mercury	-	Flameless atomic absorption spectrometry (cold vapour)
MO	-	Fourier transform - Infra red spectroscopy.
CT	-	Thin layer chromatography screening/fluorimetry quantifying
Cyanide	-	Distillation/UV spectrometry
Chloride	-	Ion chromatography 'Dionex Dxico'
Sulphide	-	'DPD' spectrophotometric method

Gas Chromatography

Hydrogen	-	Component gases separated chromatographically and the concentration of hydrogen determined by comparison of peak area with a standard gas mixture.
Carbon Dioxide Methane Oxygen Nitrogen Chromium		Samples are introduced to the G.C. via a fixed volume of gas sampling loop. Two columns are used which are capable of separating the components, which are quantified using calibration gas mixture.

4.7 Quick Undrained Triaxial Tests

Two hundred and four 105mm diameter undrained triaxial compression tests were carried out on undisturbed samples and the results are given on the summary sheets together with the results of moisture content and density determinations.

4.8 One Dimensional Consolidation Tests

One dimensional consolidation tests were carried out on six undisturbed samples. The voids ratio / effective pressure relationships have been plotted and presented on the appended graphs, where the values of co-efficient of consolidation (c_v) and co-efficient of volume compressibility (m_v) for each loading sequence are also given.

4.9 Effective Stress Triaxial Tests

Consolidated undrained triaxial compression tests with pore water pressure measurement were carried out on four 105mm diameter specimens. The resulting effective shear strength parameters are given on the summary sheets, with detailed test data included in the appendix.

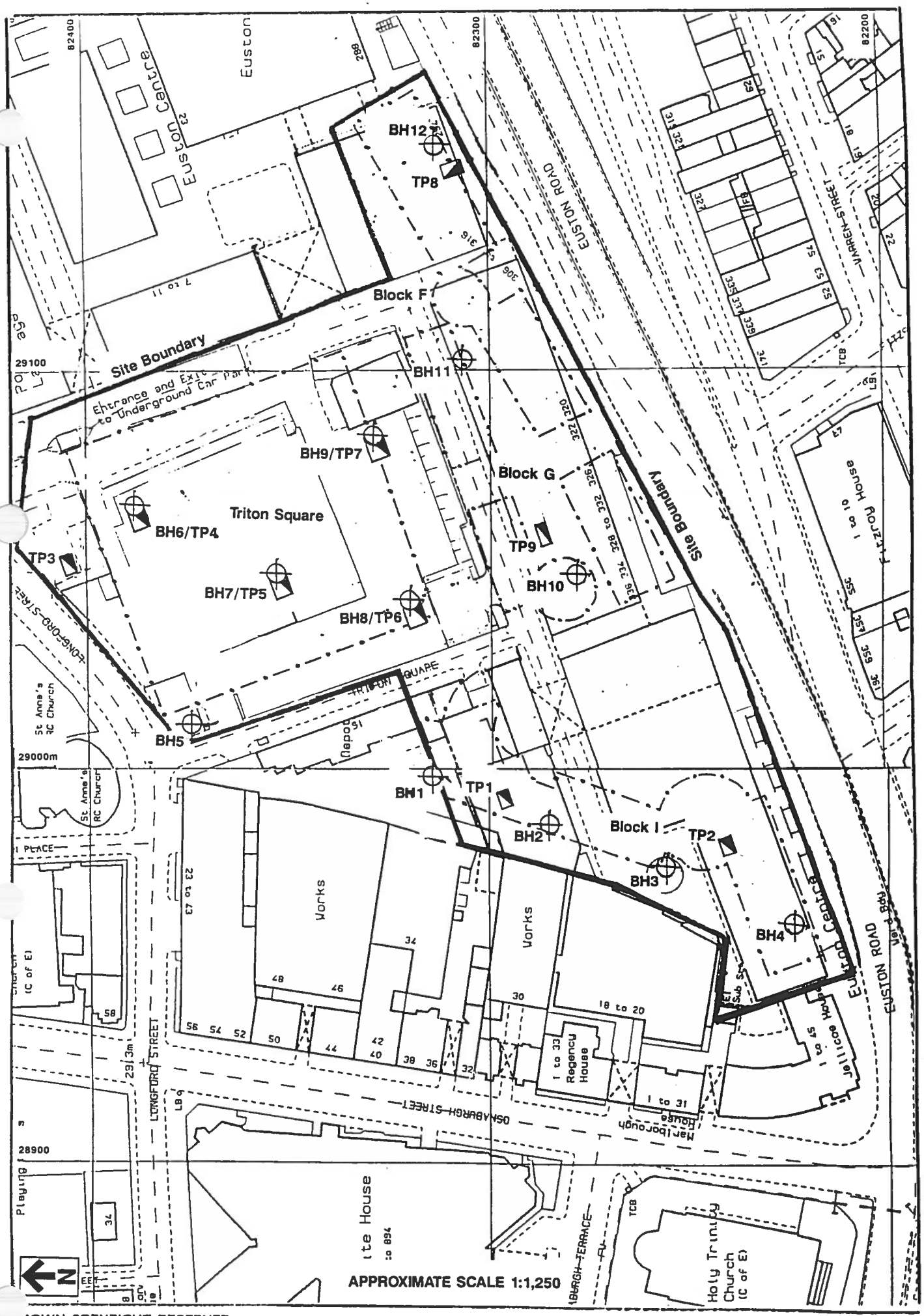
S R Revill
Geo-Environmental Engineer
BEng

H W Callington
Geotechnical Manager
BSc., MSc., DIC

Our Ref: SRR/HWC/AM/94484

LTG Service - Environmental
Laing Technology Group Limited
Page Street
Mill Hill
London
NW7 2ER

Revision 0



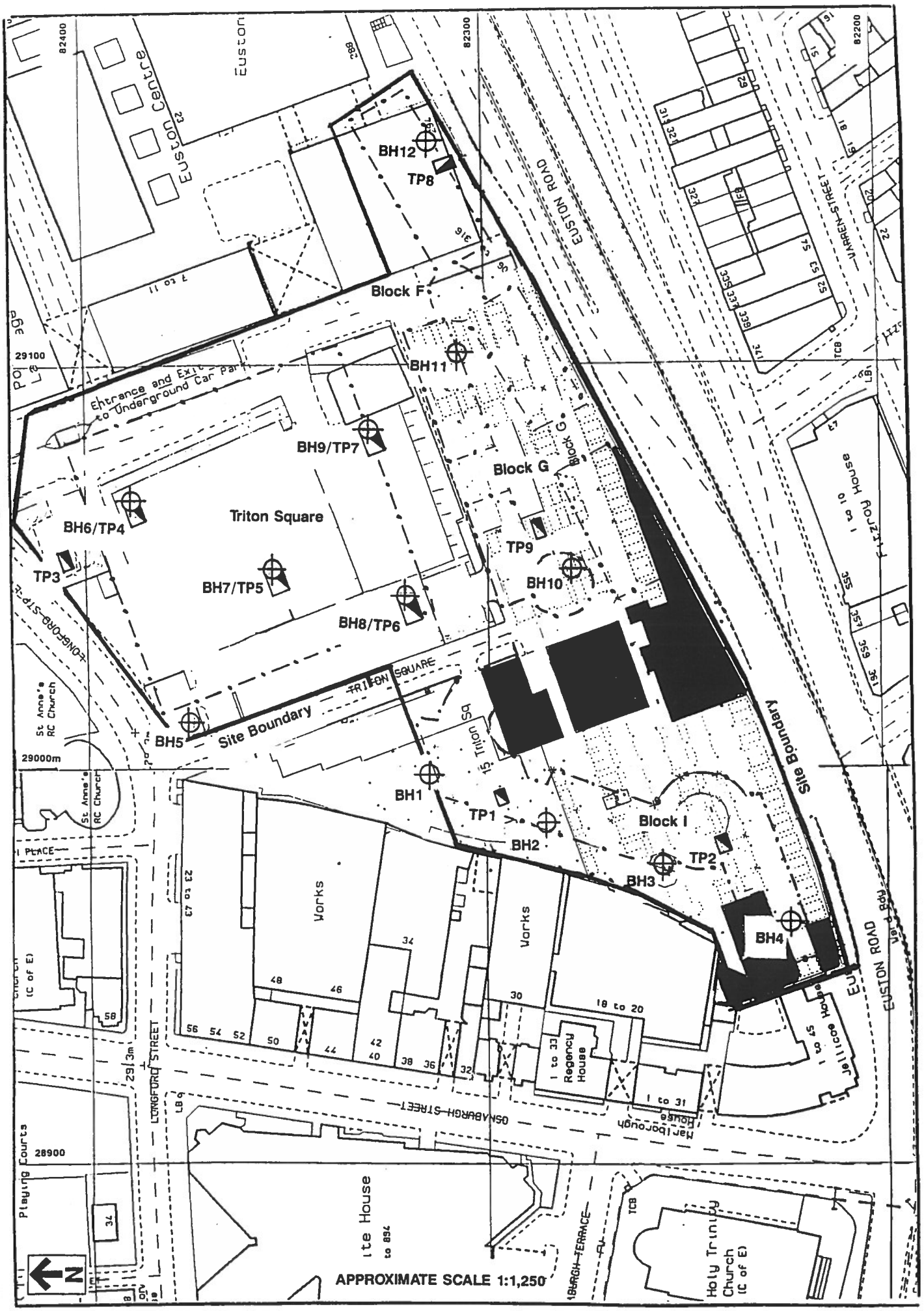
Borehole

Trial Pit

Proposed Development

SITE PLAN WITH EXISTING BUILDINGS

FIGURE 1



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Borehole

Trial Pit

Proposed Development

SITE PLAN SHOWING BASEMENT

FIGURE 2

TABLE 1: REGENT'S PLACE/TRITON SQUARE SI: WATER LEVEL DEPTHS (m) IN PIEZOMETERS AND STANDPIPES **Job Nos. 49198, 49200, AA961**

Location and Depth		Date																			
Borehole	Depth (m)	1994							1995												
		10/12	12/12	13/12	15/12	17/12	19/12	21/12	13/1	16/1♣	17/1	19/1	23/1	25/1	27/1	31/1	2/2	8/2	9/2	17/2	20/3
BH1	ST @ 16.37	1.27	1.4	1.37	1.02	1.02	1.01	0.49	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	-	0.99	1.38
	P @ 1.43	Dry	15.85	11.83	7.38	5.57	4.85	4.43	2.77	2.77	2.76	2.69	2.58	2.53	2.52	2.52	2.52	2.47	-	2.36	2.2
BH2	P @ 25.5						Dry	19.41	6.18	6.02	5.96	5.86	5.74	5.66	5.63	5.51	5.52	5.43	-	5.35	5.67
	P @ 37						Dry to 30	Dry to 30	30.03	27.26	26.86	28.11	27.34	26.55	25.90	24.87	24.28	21.7	-	20.11	11.47
BH3	P @ 10.2								6.36	5.9	5.76	5.55	5.21	-	5.02	4.99	-	-	4.76	4.52	Dry
	P @ 46.8								Dry to 30	Damp Base	Damp Base	Damp Base	Damp Base	-	Damp Base	Dry	-	-	Dry	Damp Base	Dry
BH4	P @ 20.95								2.09	2.1	-	2.01	1.95	-	1.80	1.78	-	1.78	-	1.71	2.53
BH5	P @ 10.15															5.65	-	5.41	-	-	(2)
	P @ 51.5															-	-	Dry to 50	-	-	(2)
BH6	ST @ 7															(1)	-	-	-	(1)	(2)
	P @ 16															Dry	-	Dry	-	Dry	(2)
BH7	P @ 33																	Dry	-	-	(2)
BH8	P @ 1.7																			15.59	7.98
	ST @ 28.8																			0.48	(2)
BH9	P @ 45.6															Dry	-		-		Dry
BH10	P @ 11.5																				4.09
BH11	P @ 2.8																			(2)	18.25
	ST @ 24.45																			(2)	1.85
BH12	P @ 33.45																	-	Dry	Dry	(2)

ST	Standpipe
P	Piezometer
(1)	Blocked at approximately 1.7m
(2)	Unable to take reading
♣	50m dip meter on site

G:\49198\TABLE.1

APPENDIX

NOTES:

1. General

The opinions and comments given in this report are subject to the limitations imposed by employing normal methods of site investigation. Factual evidence has been obtained largely from boreholes which, by their nature, only provide information about a relatively small volume of subsoil. There may, however, be special conditions pertaining to the site which have not been disclosed by the boreholes, and which have not been taken into account in the report.

The comments on groundwater conditions given on the borehole records are based on observations made at the time the site work was carried out and it should be noted that groundwater levels may vary due to seasonal or other effects.

2. Field Tests

The standard penetration test (SPT) is used to assess the density of non-cohesive soils. It consists of driving a 51mm diameter split spoon sampler into the soil using a 63.5 kg hammer falling freely through 760mm. The sampler is first driven an initial 0.15m to allow for the presence of disturbed material; the number of blows to drive the sampler a further 0.30m is then recorded as the 'N' value.

In gravel a solid cone is fitted to the sampler, 51mm diameter and 60 degree apex, and the test is made using a similar procedure.

SYMBOLS AND ABBREVIATIONS KEY SHEET

SHEET 1: General Abbreviations

EXPLORATORY POINT AND INSITU TESTS

EXPLORATORY POINT TYPES

CP or BH	Cable Percussion Borehole
DCP	Dynamic Cone Penetrometer
DP	Dynamic Probe Sampling
IP	Inspection Pit
RC	Rotary Cored
RO	Rotary Open Holed
SCP	Static Cone Penetrometer
TP	Trial Pit
W	Wash Boring
CP+RC	Combined hole type
ICBR	Insitu CBR test
IDEN	Insitu Density test
IRDX	Insitu Redox test
IRES	Insitu Resistivity test
IVAN	Insitu penetration Vane test

SAMPLE TYPES

B	Bulk disturbed
BLK	Block
C	Core
CBR	CBR mould
D	Small Disturbed
G	Gas
LB	Large Bulk disturbed
P	Piston
TW	Thin Wall
U	Undisturbed (open drive)
W	Water

STANDARD PENETRATION TEST TYPES

S	Split Spoon
C	Cone

STATIC CONE PENETROMETER TESTS

EC	Electric Cone
MC	Mechanical Cone
PC	Piezo Cone

DOWN HOLE INSITU TESTS

CPT	Cone Penetration
SPT	Split Spoon Penetration
V	Vane

OTHERS

K	Permeability test
PR	Pressuremeter test
*	Sample not recovered, or Seating drive not completed
**	Short sample

LABORATORY TESTING AND RESULTS

LABORATORY TEST RESULTS

PSD	Particle Size Distribution
Consol	Consolidation test
MC	Moisture Content
Atterberg:	
LL	Liquid Limit
PL	Plastic Limit
PI	Plastic Index
<425	Passing 425μm
PSD:	
Clay	% Clay sized
Silt	% Silt sized
Sand	% Sand sized
Grvl	% Gravel sized
Densities:	
Bulk	Bulk/Wet density
Dry	Dry density
Particle	Particle density (S.G.)
Compaction:	
Max density	Maximum dry density
Opt. MC	Optimum MC
Strength tests:	
Dia	Diarheter, average
Cell Press	Confining Pressure
Dev Stress	Maximum Deviator Stress
C	Shear Strength
Phi	Angle of Resistance
Consol:	
Mv	Coeff. of consolidation
Sulphate:	
Soil (%)	Total Sulphate
Soil (g/l)	2:1 Water soluable extract
Water (g/l)	Groundwater

LABORATORY TEST TYPES

Particle Size Distribution:	
DS	Dry Sieve
HY	Hydrometer
PP	Pipette
WS	Wet Sieve
PP+WS	Combination method
Compaction:	
H	Heavy (4.5kg)
S	Standard (2.5kg)
V	Vibratory
P	Proctor Mould
CBR	CBR Mould
Triaxial:	
CD	Consolidated Drained
CDM	CD (multistage)
CU	Consolidated Undrained with PWP measurement
CUM	CU (multistage)
UU	Unconsolidated Undrained
UUM	UU (multi-stage)
OTHR	
Shear Strength:	Other
Cu	Undrained
C'	Effective
C'p	Shear box peak
C'r	Shear box residual
P	Hand Penetrometer
V	Vane

OTHERS

PWP	Pore Water Pressure
CBR	Californian Bearing Ratio

ROCK CORING

TCR	Total Core Recovery
SCR	Solid Core Recovery
RQD	Rock Quality Designation

GB/tech 110

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Figure:

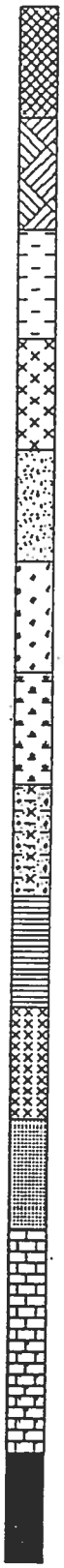
Title: SYMBOLS AND ABBREVIATIONS: Sheet 1

LTG

SYMBOLS AND ABBREVIATIONS KEY SHEET

SHEET 2: Material and general symbols

MATERIAL SYMBOLS



FILL and MADE GROUND

TOPSOIL

CLAY

SILT

SAND

GRAVEL

PEAT

BOULDER CLAY

CLAYSTONE (MUDSTONE)

SILTSTONE

SANDSTONE

LIMESTONE

CHALK

COAL

COMBINED MATERIALS (examples)

Silty CLAY

Sandy CLAY

Sandy SILT

Sandy silty CLAY

Clayey silty PEAT

SAND + GRAVEL

GROUNDWATER STRIKES

First strike

First rise

Second strike

Second rise

NOTE

This is not an exhaustive list of all possible combinations of symbols used on log forms. Other combinations are used as required.

Where more than two ground water strikes are encountered then the same base symbols are used with additional numeric superscripts.

NB: Some symbols have been enlarged on this sheet.

PIEZOMETER/STANDPIPE INSTALLATION

Piezometer tip

Single pipe installation

Dual pipe installation

Single pipe in dual pipe installation

Slotted pipe

Slotted pipe (Gas)

Perforated pipe

PIEZOMETER/STANDPIPE FILL MATERIAL

Sand

Gravel

Grout

Seal

Cement

Backfill

EAech 111B

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Figure:

Title: SYMBOLS AND ABBREVIATIONS: Sheet 2

LTG

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 05
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29012.0E 82375.0N	28.31	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
05/01/95 to 18/01/95	52.20	250 -150mm	250 -150mm	1 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
				0						
				0.10	28.21	MADE GROUND(tarmac)				
				(0.45) 0.55	27.76	MADE GROUND(concrete)				
				1 (0.75) 1.30	27.01	MADE GROUND(compact brick rubble and clay fill - driller's description).				
				(0.40) 1.70	26.61	MADE GROUND(loose brown sand and gravel with bricks - driller's description)				
				1.80	26.51	MADE GROUND(soft grey clay fill with building rubble - driller's description)				
				2 (1.00) 2.80	25.51	MADE GROUND(flagstone and brick fill - driller's description)				
				3 (0.90) 3.70	24.61	MADE GROUND(concrete).				
				4 (0.60) 4.30	24.01	MADE GROUND(light brown medium to coarse sandy subangular to rounded predominantly medium and coarse gravel with brick fragments and clay).				
4.20	1	D								
4.50-4.95	2	BC	17			Medium dense light brown medium to coarse sandy subangular to rounded fine to medium and occasionally coarse flint GRAVEL. (TERRACE GRAVEL)				
4.90	5	W								
5.50-5.95	3	BC	19	5 (2.50)						
6.50-6.95	4	BC	15	6						
				6.80	21.51					
7.00	6	D		7 (0.65) 7.45	20.86	Firm becoming firm to stiff light brown and orange brown extremely closely fissured CLAY. (WEATHERED LONDON CLAY)				
7.50-7.95	7	U	(30)			Firm to stiff dark grey brown extremely closely fissured CLAY locally with a little fine sand partings in clay fissures.				
				8						

Boring Progress & Water Obs.							Chiselling		
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins

Remarks:
Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole in Triton Square.

For abbreviations and symbols see key sheet

GE/tech 101 Produced by J.M.Davidson on gINT, 1992

LTG

Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 05
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29012.0E 82375.0N	28.31	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
05/01/95 to 18/01/95	52.20	250 -150mm	250 -150mm	2 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
8.00-8.45	8	B/S	12			(LONDON CLAY) Firm to stiff dark grey brown extremely closely fissured CLAY locally with a little fine sand partings in clay fissures.				
9.00-9.45	9	U	(40)							
9.45 9.50-9.95	10 11	D DS	15							
10.50-10.95	12	U	(35)			...below 10.50m stiff				
10.95 11.00-11.45	13 14	D DS	25							
12.00-12.45	15	U	(45)			...between 12.00 - 12.10m light grey mudstone, weak/				
12.45 12.50-12.95	16 17	D DS	24			...below 12.45m very closely fissured.				
13.50-13.95	18	U	(50)			Below 13.50m, very stiff				
13.95 14.00-14.45	19 20	D DS	25							
				(14.50)						
15.00-15.10 15.10-15.30	21	U B	(100)			...between 15.10 - 15.30m grey siltstone, moderately strong to moderately weak.				
15.50-15.95	22	U	(95)							

Boring Progress & Water Obs.							Chiselling		
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins

Remarks:
Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole in Triton Square.

For abbreviations and symbols see key sheet

GE/tech 101

LTG

Scale: 1:50	Processed in accordance with	Processed by:	Logged by:
All dimensions in metres	BS5930, BS5750 and AGS standards	DC	SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 05
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29012.0E 82375.0N	28.31	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
05/01/95 to 18/01/95	52.20	250 -150mm	250 -150mm	3 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
15.95	23	D	31			Stiff dark grey brown very closely fissured CLAY locally with a little fine sand partings in clay fissures.				
16.00-16.45	24	DS								
17.00-17.45	25	U	(50)							
17.45	26	D	32							
17.50-17.95	27	DS								
18.50-18.95	28	U	(50)							
18.95	29	D	40							
19.00-19.45	30	DS								
20.00-20.45	31	D								
20.45	32	D	34							
20.50-20.95	33	DS								
21.50-21.95	34	U	(70)							
21.95	35	D	30	21.95	6.36					
22.00-22.45	36	DS				Stiff dark brown grey intact slightly fine sandy CLAY with occasional selenite crystals with a trace of black cemented material.				
23.00-23.45	37	U	(70)							
23.45	38	D	32							
23.50-23.95	39	DS								

Boring Progress & Water Obs.							Chiselling			Remarks:
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins	Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole in Triton Square.

For abbreviations and symbols see key sheet

GE/tech 101 Produced by J.M.Davidson on gINT, 1992

LTG

Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 05
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29012.0E 82375.0N	28.31	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
05/01/95 to 18/01/95	52.20	250 -150mm	250 -150mm	4 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo. Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
				24						
				(4.55)		Stiff dark brown grey intact slightly fine sandy CLAY with occasional selenite crystals.				
24.50-24.95	40	U	(60)							
24.95	41	D	37	25						
25.00-25.45	42	DS								
26.00-26.45	43	U	(60)	26						
26.45	44	D	43	26.50	1.81					
26.50-26.95	45	DS				Very stiff dark grey very closely fissured CLAY with occasional selenite crystals.				
				27						
27.50-27.95	46	U	(80)							
27.95	47	D	38	28						
28.00-28.45	48	DS				...below 27.95m slightly sandy.				
				(3.40)						
29.00-29.45	49	U	(50)	29						
29.45	50	D	45							
29.50-29.95	51	DS								
				29.90	-1.59					
30.00	52	D		30		Very stiff mottled brown blue grey and red brown intact intact CLAY. (WOOLWICH AND READING BEDS)				
30.50-30.95	53	U	(70)							
30.95	54	D	50	31						
31.00-31.45	55	DS								
				32						

Boring Progress & Water Obs.							Chiselling			Remarks:
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins	Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole in Triton Square.

For abbreviations and symbols see key sheet

GE/tech 101 Produced by J.M.Davidson on gINT, 1992

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Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 05
Project No: 94484	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29012.0E 82375.0N	28.31	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
05/01/95 to 18/01/95	52.20	250 -150mm	250 -150mm	5 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
32.00-32.45	56	U	(80)			Very stiff intact mottled intact CLAY.				
32.45	57	D	67							
32.50-32.95	58	DS				...below 32.50m very closely fissured				
33.50-33.95	60	U	(50)							
33.95	61	D	44							
34.00-34.45	62	DS				...@33.95m very stiff bluish grey mottled yellow and red fissured (blocky) CLAY.				
35.00-35.45	63	U	(45)							
35.45	64	D	51							
35.50-35.95	65	DS				...@35.50m very closely fissured, (fissure surfaces smooth).				
36.50-36.95	66	U	(60)	(13.05)						
36.95	67	D	42							
37.00-37.45	68	DS				...@36.95m appearing extremely closely fissured, becoming darker in colour.				
38.00-38.45	69	U	(70)							
38.45	70	D	68							
38.50-38.95	71	DS				...@38.50m purple and light blue.				
39.50-39.95	72	U	(100)			...@39.50m becoming red brown to brown				

Boring Progress & Water Obs.							Chiselling			Remarks:
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins	Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole in Triton Square.

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GE/tech 101 Produced by J.M.Davidson on gINT, 1992

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Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 05
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29012.0E 82375.0N	28.31	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
05/01/95 to 18/01/95	52.20	250 -150mm	250 -150mm	6 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
39.95	73	D	92							
40.00-40.45	74	DS				Very stiff intact mottled intact CLAY.				
41.00-41.45	75	U	(80)							
41.45	76	D	80							
41.50-41.95	77	DS								
42.50-42.95	78	U	(120)							
42.95	79	D	77	42.95	-14.64					
43.00-43.45	80	DS				Very stiff dark grey sandy to very sandy CLAY with occasional fine gravel.				
44.00-44.45	81	U	(120)							
44.45	82	D	150	(2.95)						
44.50-44.75	83	DS				...@44.50m becoming blue grey and purple.				
45.50-45.95	84	U	(120)							
45.95	85	D	150	45.90	-17.59	From 45.50m, becoming a very stiff green mottled brown sandy CLAY with fequent inclusions of light grey fine sand.				
46.00-46.25	86	BC		(0.90)		Very stiff dark green grey occasional brown poorly laminated very sandy CLAY locally appearing as a clayey sand; occasional subrounded medium flint gravel.				
46.80	87	D		46.80	-18.49					
47.00-47.21	88	DS	250			Very dense medium grey occasionally brown silty fine SAND with occasional pockets of sandy clay. (THANET SAND)				

Boring Progress & Water Obs.							Chiselling			Remarks:
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins	Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole in Triton Square.

For abbreviations and symbols see key sheet

GE/tech 101

LTG

Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

Project Name: TRITON SQUARE/REGENTS PLACE					Record of Borehole No: BH 05
Project No: 94484	Client: THE BRITISH LAND CORPORATION				
Co-ordinates (National): 29012.0E 82375.0N	Ground level (mAOD): 28.31	Method: CABLE PERCUSSION			
Date: 05/01/95 to 18/01/95	Depth of Hole: 52.20	Hole diameter: 250 -150mm	Casing diameter: 250 -150mm	Sheet: 7 of 7	Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
48.00-48.13	89	DS	84/125	48		Very dense medium grey occasionally brown silty fine SAND with occasional pockets of sandy clay and occasional laminations of dark grey clay.				
49.00-49.17	90	DS	100/170	49		...from 49.00m no clay identified.				
				(4.80)						
50.00-50.15	91	DS	69/150	50						
51.00-51.21	92	DS	250	51						
51.60	93	D		51.60	-23.29					
				(0.30) 51.90	-23.59	Very dense black angular to subangular fine to coarse flint GRAVEL with a little silty fine sand.				
52.00-52.18	94	DS	110/175	52		White mottled brown and grey CHALK with no flints.				
				(0.30) 52.20	-23.89	EXPLORATORY HOLE COMPLETED AT 52.20m.				

Boring Progress & Water Obs.							Chiselling			Remarks:
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins	Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole in Triton Square.
										For abbreviations and symbols see key sheet

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Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

PROJECT NAME TRITON SQUARE/REGENTS PLACE

PROJECT NO. 94484

CLIENT THE BRITISH LAND CORPORATION

EXPLORATORY HOLE NO. 5

BORING PROGRESS, WATER OBSERVATIONS AND CHISELLING

BORING PROGRESS AND WATER OBSERVATIONS								CHISELLING		
DATE	TIME	DEPTH m	CASING m	WATER m	RISE m	SEALED m		FROM m	TO m	MINUTES
06/12/94	Start	GL	NIL	DRY						
	End	0.65	NIL	DRY						
07/12/94	Start	0.65	NIL	DRY						
	End	2.05	NIL	DRY						
09/12/94	Start	1.80	NIL	DRY						
	Chisel	1.80	NIL	1.80				1.80	2.90	75 minutes
	End	2.90	2.90	DRY						
05/01/95	Start	3.70	4.30	DRY						
	Strike	5.10	4.50	5.10	n/r	7.20				
	End	6.90	7.20	6.30						
06/01/95	Start	6.90	8.20	4.90						
	End	9.95	8.20	8.70						
09/01/95	Start	8.50	8.20	5.80						
	End	11.45	10.00	DRY						
10/01/95	Start	11.45	11.00	DRY						
	Strike	15.10	10.00	15.10	n/r	n/s				
	Chisel	15.10	10.00	15.10				15.10	15.30	45 minutes
	End	23.95	10.00	DRY						
11/01/95	Start	23.10	10.00	22.90						
	Strike	25.40	10.00	25.40	25.30	30.35				
	End	30.00	30.30	DRY						
12/01/95	Start	30.00	30.30	28.70						
	End	32.80	32.80	DRY						
13/01/95	Start	32.80	32.80	29.40						
	End	40.45	34.00	DRY						
16/01/95	Start	34.40	34.00	27.10						
	End	44.75	34.00	DRY						
17/01/95	Start	41.30	34.00	40.20						
	End	46.30	46.30	DAMP						
18/01/95	Start	46.20	46.30	15.90						
	Chisel	51.60	47.00	DRY				51.60	52.00	75 minutes
	End	52.175	47.00	DRY						

nr = no rise n/s = not sealed

Concrete obstruction between 2.90 & 3.70m broken out with pecker (JCB used). Casing pulled out and reinserted at 9.95m

Borehole collapsed overnight 10/1/95 – 11/1/95 from 23.95 – 23.10m

Borehole collapsed weekend 13/1/95 – 15/1/95 from 40.15 – 34.40m

Borehole collapsed overnight 16/1/95 – 17/1/95 from 44.75 – 41.30m

LTG SERVICES

BPWOC

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 06
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29062.0E 82389.0N	28.47	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
11/01/95 to 25/01/95	48.45	250- 150mm	250- 150mm	1 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
				0						
				0.10	28.37	MADE GROUND: TARMAC.				
				(0.35) 0.45	28.02	MADE GROUND: Brick cobbles with coarse sand fine to coarse gravel and some clay (HARDCORE)				
				0.60	27.87					
				0.75	27.72	MADE GROUND: Concrete slab reinforced with 6mm diameter steel bars at 200mm centres.				
				1 (0.25) 1.00	27.47	MADE GROUND: Loose to medium dense coarse orange sand with fine to medium angular gravel.				
				(0.70)		MADE GROUND: Firm grey brown clay with occasional gravel (reworked)				
				1.70	26.77	MADE GROUND: Medium dense fine to coarse angular to rounded gravel with some brown silt and sand and a little clay.				
1.90	1	D		1.90	26.57					
2.00-2.45	2	BC	25	2						
2.30	3	D		(0.40) 2.30	26.17	MADE GROUND: MADE GROUND: Medium dense dark brown to black fine to medium sand with silt and some rotting wood, pottery and glass fragments (EXCAVATION FACE C ONLY)				
						MADE GROUND(Medium dense brown very clayey silty fine to coarse sand with some fine to coarse flint gravel with occasional brick fragments).				
3.00-3.45	4	BC	52	3		Dense brown fine to coarse SAND and subangular to rounded fine to coarse flint GRAVEL. (TERRACE GRAVEL)				
3.70	5	D				...from 3.70 - 5.70m becoming a sandy GRAVEL.				
4.00-4.45	6	BC	30	4						
4.70	7	D								
5.00-5.45	8	BC	26	5						
				(5.50)						
5.70	9	D								
6.00-6.45	10	BC	20	6						
6.50	123	W								
6.70	11	D								
7.00-7.45	12	BC	20	7						
7.70	13	B		7.80	20.67	...@7.70m becoming a fine to coarse SAND with some to much gravel.				
7.80	14	D		8						

Boring Progress & Water Obs.							Chiselling			Remarks:
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins	Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole at Triton Square.

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GE/tech 101 Produced by J.M.Davidson on gINT, 1992

LTG

Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 06
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29062.0E 82389.0N	28.47	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
11/01/95 to 25/01/95	48.45	250- 150mm	250- 150mm	2 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo. Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
						8				
8.00-8.45	15	U	(34)	(0.50) 8.30	20.17	Firm to stiff light and dark brown grey intact CLAY (WEATHERED LONDON CLAY)				
8.50-8.95	16/17	D/DS	22			Firm to stiff light and dark brown grey intact CLAY				
						Stiff dark grey brown poorly thinly laminated CLAY. (LONDON CLAY)				
						9				
9.20	18	D				...@9.20m not laminated, very closely fissured.				
9.50-9.95	19	U	(35)							
						10				
10.00-10.45	20/21	D/DS	23			...@10.00m locally with a little light brown sand, poorly thinly laminated and blocky in texture				
10.70	22	D								
11.00-11.45	23	U	(40)	(5.10)		11				
11.50-11.95	24/25	D/DS	25							
						12				
12.20	26	D								
12.50-12.95	27	U	(45)							
13.00-13.45	28/29	D/DS	34			13 ...@13.00m becoming very stiff and with a little fine sand.				
				13.40	15.07					
				13.55	14.92	CLAYSTONE (driller's description).				
13.70	30	D				Very stiff dark grey brown very closely fissured CLAY locally with a little fine sand.				
14.00-14.45	31	U	(47)			14				
14.50-14.95	32/33	D/DS	29							
						15				
15.20	34	D								
15.50-15.95	35	U	(50)	(3.75)						
						16				

Boring Progress & Water Obs.							Chiselling		
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins

Remarks:
Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole at Triton Square.

For abbreviations and symbols see key sheet

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Scale: 1:50	Processed in accordance with	Processed by:	Logged by:
All dimensions in metres	BS5930, BS5750 and AGS standards	DC	SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 06
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29062.0E 82389.0N	28.47	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
11/01/95 to 25/01/95	48.45	250- 150mm	250- 150mm	3 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo. Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
16.00-16.45	36/37	D/DS	29			Very stiff dark grey brown very closely fissured CLAY locally with a little fine sand.				
16.70	38	D								
17.00-17.45	39	U	(50)			@17.00m, becoming closely to very closely fissured with occasional pockets of silty fine sand.				
17.30	42	D		17.30	11.17					
17.50-17.95	40/41	D/DS	46			Very stiff dark grey brown intact slightly sandy CLAY with occasional selenite and dark grey mottling with black decayed wood fragment (charcoal?)				
				(0.90)						
18.20	43	D		18.20	10.27					
18.50-18.95	44	U	(55)			Very stiff dark grey brown intact CLAY with a little fine sand				
19.00-19.45	45/46	D/DS	43							
19.70	47	D				...@19.70m locally a sandy CLAY.				
20.00-20.45	48	U	(55)							
20.50-20.95	49/50	D/DS	45							
21.20	51	D								
21.50-21.95	52	U	(55)							
22.00-22.45	53/54	D/DS	36			...@22.00m locally a sandy CLAY.				
22.70	55	D				...@22.70m becoming a very stiff dark brown grey intact sandy CLAY with many pockets/laminations of light brown silty fine sand; occasional decayed wood fragments.				
23.00-23.45	56	U	(57)							
				(10.10)						
23.50-23.95	57/58	D/DS	38							

Boring Progress & Water Obs.							Chiselling			Remarks:
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins	Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole at Triton Square.

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Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 06
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29062.0E 82389.0N	28.47	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
11/01/95 to 25/01/95	48.45	250- 150mm	250- 150mm	4 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
						24				
24.20	59	D				Very stiff dark brown grey intact sandy CLAY with many pockets/laminations of light brown silty fine sand;				
24.50-24.95	60	U								
25.00-25.45	61/62	D/DS	48			25 ...@25.00m occasional pyritised nodule, becoming with occasional pockets/laminations of fine sand.				
25.70	63	D								
26.00-26.45	64	U				26 @26.00m, closely laminated with occasional thin laminations of light grey silty fine sand.				
26.50-26.95	65/66	D/DS	50			...@26.50m becoming slightly sandy to sandy, occasional pyrite nodule.				
26.70	67	D				...@26.70m occasional black decayed wood fragment				
						27				
27.50-27.95	68	U	(55)							
28.00-28.45	69/70	D/DS	60			28 ...@28.00m occasional pyrite nodule.				
28.30	71	D		28.30	0.17					
28.70	72	D				Very stiff light blue grey and light brown blocky CLAY. (WOOLWICH AND READING BEDS) ...@28.70m becoming with some red brown mottle and very closely fissured (fissures smooth).				
29.00-29.45	73	U	(60)			29				
29.50-29.95	74/75	D/DS	88			...@29.50m appearing extremely closely fissured.				
						30				
30.20	76	D								
30.50-30.95	77	U	(65)							
31.00-31.45	78/79	D/DS	65			31 ...from 31.00 - 31.70m becoming predominantly red brown in colour and blocky in texture, blue mottle appearing on fissure surfaces.				
31.70	80	D				...@31.70m becoming blue grey in colour, mottled purple and yellow.				
						32				

Boring Progress & Water Obs.							Chiselling			Remarks:
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins	Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole at Triton Square.

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Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 06
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29062.0E 82389.0N	28.47	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
11/01/95 to 25/01/95	48.45	250- 150mm	250- 150mm	5 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
32.00-32.45	81	U	(65)			Very stiff light blue grey and light brown blocky CLAY.				
32.50-32.95	82/83	D/DS	59			...@32.50m locally intact, predominantly purple in colour (occasional fine gravel sized ironstone fragments).				
33.20	84	D				...@33.20m becoming brown mottled grey locally; fissure surfaces smooth.				
33.50-33.95	85	U	(70)							
34.00	86/87	D/DS	59	(11.70)		...@34.00m light blue grey purple and yellow; texture blocky (colour varying widely with depth)				
34.70	88	D								
35.00-35.45	89	U	(70)							
35.50-35.95	90/91	D/DS	70							
36.20	92	D				...@36.20m very to extremely closely fissured				
36.50-36.95	93	U	(70)							
37.00-37.45	94/95	D/DS	93							
37.70	96	D				...@37.70m red brown in colour, generally darker in colour.				
38.00-38.45	97	U	(75)							
38.50-38.95	98/99	D/DS	103							
39.20	100	D								
39.50-39.95	101	U	(75)							
				40.00	-11.53					

Boring Progress & Water Obs.							Chiselling		
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins

Remarks:
Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole at Triton Square.

For abbreviations and symbols see key sheet

GE/tech 101 Produced by J.M.Davidson on gINT, 1992

LTG

Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

Project Name:		Record of Borehole No:
TRITON SQUARE/REGENTS PLACE		BH 06
Project No: 9 4 4 8 4	Client: THE BRITISH LAND CORPORATION	

Co-ordinates (National):	Ground level (mAOD):	Method:		
29062.0E 82389.0N	28.47	CABLE PERCUSSION		
Date:	**Depth of Hole:**	**Hole diameter:**	**Casing diameter:**	**Sheet:**
11/01/95 to 25/01/95	48.45	250- 150mm	250- 150mm	6 of 7

Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
				40						
40.00-40.30	102/103	D/DS	120			Very stiff dark brown mottled blue grey laminated closely fissured CLAY with fine laminations of light grey silt.				
				(0.80)						
40.80	104	D		40.80	-12.33					
41.00-41.30	105	U	(100)	41		Very stiff dark grey very sandy intact CLAY locally appearing as a clayey sand.				
				(0.50)						
41.35-41.65	106/107	D/DS	112	41.30	-12.83	Very stiff dark blue grey and brown intact very sandy CLAY with occasional fine gravel.				
				42						
42.30	108	D				...@42.30m becoming green and brown occasionally purple				
42.50-42.85	109	U	(100)	(2.50)		From 42.50m to 42.85m, becoming greenish yellow, brown purple sandy to very sandy CLAY				
42.90-43.20	110/111	D/DS	126	43		...@42.90m occasional pocket/parting of slightly clayey fine sand.				
43.80	112	D		43.80	-15.33					
44.00-44.30	113	BC	120	44		Very stiff dark grey very sandy CLAY with much subrounded to rounded fine to coarse gravel occasional pockets/laminations of fine sand (slightly clayey).				
				(1.20)						
44.70	114	D								
45.00-45.28	115/116	D/DS	129	45						
				45.00	-16.53	Interlaminated very stiff dark grey slightly sandy CLAY and light grey silty fine SAND.				
				(0.70)		...@45.30m becoming a very stiff CLAY with many pockets/laminations of light grey fine sand, occasional flint gravel.				
45.70	117	D		45.70	-17.23					
46.00-46.20	118	DS	60	46		Very dense grey slightly clayey silty fine SAND, occasional fine gravel. (THANET SAND)				
46.60	119	D				...@46.00m not clayey but with occasional pockets of soft brown clay.				
47.00-47.15	120	DS	73/150	47						
				(2.75)		...@47.00m becoming a silty fine SAND				
47.70	121	D								
				48						

Boring Progress & Water Obs.							Chiselling		
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins

Remarks:
Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole at Triton Square.

For abbreviations and symbols see key sheet

GE/tech 101

LTG

Scale: 1:50	Processed in accordance with	Processed by:	Logged by:
All dimensions in metres	BS5930, BS5750 and AGS standards	DC	SR

Project Name: TRITON SQUARE/REGENTS PLACE					Record of Borehole No: BH 06
Project No: 94484	Client: THE BRITISH LAND CORPORATION				
Co-ordinates (National): 29062.0E 82389.0N	Ground level (mAOD): 28.47	Method: CABLE PERCUSSION			
Date: 11/01/95 to 25/01/95	Depth of Hole: 48.45	Hole diameter: 250- 150mm	Casing diameter: 250- 150mm	Sheet: 7 of 7	Machine Number

Samples & Tests				Strata		Description of Strata	Geology	Legend	Water	Piezo Backfill
Depth (m)	No.	Type	SPT CPT 'N' value	Depth (m)	Reduced Level (m)					
				48						
48.30-48.45	122	DS		48.45	-19.98	EXPLORATORY HOLE COMPLETED AT 48.45m.				

Boring Progress & Water Obs.							Chiselling			Remarks:
Date	Time	Depth	Casing	Water	Rose	Sealed	From	To	Mins	Full boring progress, water observations and chiselling details are given on a separate sheet. Full SPT and U100 details are given on separate sheets. Borehole at Triton Square.

For abbreviations and symbols see key sheet

GE/tech 101 Produced by J.M.Davidson on gINT, 1992

LTG

Scale: 1:50 All dimensions in metres	Processed in accordance with BS5930, BS5750 and AGS standards	Processed by: DC	Logged by: SR

PROJECT NAME TRITON SQUARE/REGENTS PLACE

PROJECT NO. 94484

CLIENT THE BRITISH LAND CORPORATION

EXPLORATORY HOLE NO. 6

BORING PROGRESS, WATER OBSERVATIONS AND CHISELLING

BORING PROGRESS AND WATER OBSERVATIONS								CHISELLING		
DATE	TIME	DEPTH m	CASING m	WATER m	RISE m	SEALED m		FROM m	TO m	MINUTES
11/01/95	Start	1.90	1.90	DRY						
	Strike	6.50	7.00	6.50	6.10	n/s				
	End	7.60	7.60	6.70						
12/01/95	Start	7.60	7.60	6.10						
	Chisel	13.40	9.25	13.40				13.40	13.55	30 minutes
	End	16.45	9.25	DRY						
13/01/95	Start	16.45	9.25	DRY						
	End	23.95	9.25	DRY						
17/01/95	Start	19.00	9.25	19.00						
	End	26.70	9.25	DRY						
18/01/95	Start	26.70	9.25	26.10						
	End	31.45	9.25	DRY						
19/01/95	Start	31.45	9.25	30.00						
	End	35.95	9.25	DRY						
20/01/95	Start	35.95	9.25	34.50						
	End	40.30	9.25	DRY						
23/01/95	Start	40.30	9.25	39.00						
	End	41.65	9.25	DRY						
24/01/95	Start	41.65	9.25	40.10						
	Chisel	43.80	9.25	DRY				43.80	45.00	120 minutes
	End	45.50	9.25	DRY						
25/01/95	Start	45.50	9.25	DRY						
	End	48.45	9.25	47.10						

nr = no rise n/s = not sealed

Trial pit TP4 excavated to 1.90m at BH6 location.

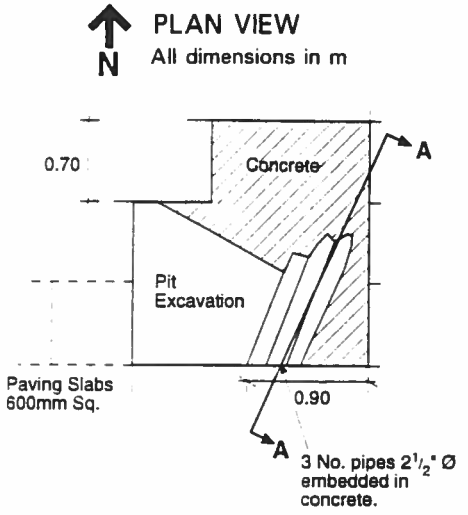
Borehole collapsed at start of day 17/1/95, from 23.95 – 19.00m

LTG SERVICES

OVE ARUP AND PARTNERS
REGENT'S PLACE
CORD OF TRIAL PIT - TP 3 Page 1 of 2

APPENDIX	
JOB NO.	49198/77
MADE BY	JMB
DATE MADE	11-13/12/94

DAILY PROG-RESS	DEPTH TO WATER	SAMPLE/ IN SITU TEST DEPTH FROM	DEPTH TO	TYPE	LEGEND	DEPTH	RED LEVEL	DESCRIPTION OF STRATA
	(m)	(m)	(m)			(m)	(mOD)	GROUND LEVEL 28.8
						0.05	28.75	PAVING SLABS
						0.13	28.67	Orange SAND and fine GRAVEL (founding bed for slabs)
						0.30	28.50	Loosely cemented pinky grey angular to rounded GRAVEL and SAND (low grade concrete?)
						0.44	28.36	
						0.47	28.33	Loose light brown medium to coarse SAND with fine to coarse gravel with some gravel sized brick pieces.
		0.60		B		0.60	28.20	Medium dense black SAND and GRAVEL - Asphalt?
								Loose brick COBBLES.
								Loose brick and concrete rubble, and brown SILT and SAND (Hardcore)
		1.10		J*				
		1.40		B				
		2.00		J				
12/12/94						2.10	26.70	BASE OF PIT



NOTES

Concrete struck at north end of pit 0.7m down. Assumed to be old petrol tank. Pipes leading to it.

* Sample taken from soil directly underneath entry point of pipes and tank.

No smell of petrol/organic chemicals in pit. Pin driven to 3m depth, still no noticeable trace of contaminents.

METHOD OF EXCAVATION

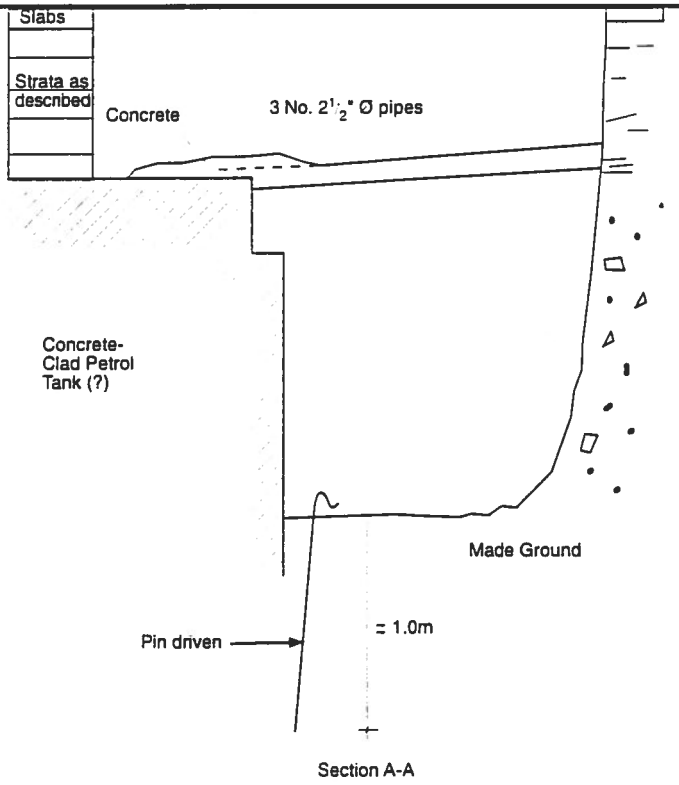
Hand Dug

TP 3

OVE ARUP AND PARTNERS
REGENT'S PLACE
RECORD OF TRIAL PIT - TP 3 **Page 2 of 2**

APPENDIX	
JOB NO.	49198/77
MADE BY	JMB
DATE MADE	11-13/12/94

ILY PROG-RESS	DEPTH TO WATER	SAMPLE/ IN SITU TEST DEPTH FROM	DEPTH TO	TYPE	LEG-END	DEPT	RED LEVEL	DESCRIPTION OF STRATA
	(m)	(m)	(m)			(m)	(mBD)	GROUND LEVEL
						0.05		Slabs
								Strata as described
						0.70		
						1.00		
						2.10		



NOTES

METHOD OF EXCAVATION

Hand Dug

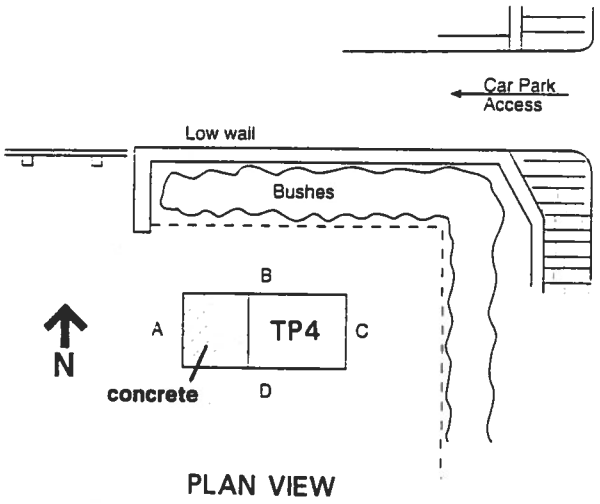
TP 3

A:\TP3.WB2 10-Apr-95

OVE ARUP AND PARTNERS
REGENT'S PLACE
RECORD OF TRIAL PIT - TP 4

APPENDIX	
JOB NO.	AA961
MADE BY	JMB
DATE MADE	6-9/12/94

DAILY PROG-RESS	DEPTH TO WATER	SAMPLE/ IN SITU TEST DEPTH FROM	DEPTH TO	TYPE		LEGEND	DEPTH	RED LEVEL	DESCRIPTION OF STRATA
	(m)	(m)	(m)				(m)	(mOD)	GROUND LEVEL 28.47
6/12/94							0.10	28.37	Tarmac
									Brick COBBLES with coarse sand, fine to coarse gravel and some clay (HARDCORE)
							0.45	28.02	Concrete slab reinforced with 6mm diameter steel bars at 200mm centres
		0.6	0.7	1	B		0.60	27.87	
									Loose to medium dense coarse orange SAND with fine to medium angular gravel
		0.8		2	J		0.75	27.72	
		0.9	1	3	B				Firm grey brown CLAY with occasional gravel (reworked)
							1.00	27.47	
									Medium dense fine to coarse, angular to rounded GRAVEL with some brown silt and sand and a little clay.
		1.75		5	J		1.70	26.77	
		1.75	1.9	4	B				Medium dense dark brown to black fine to medium SAND with silt and some rotting wood, pottery and gas fragments (EXCAVTION FACE C ONLY)
9/12/94							2.00	26.47	
									BASE OF PIT



PLAN VIEW

NOTES

. Reduced level estimated from Arup Associates Topo. survey

. Concrete obstruction in west half of pit at base level of 1.70m.

. 10" leading casing installed for BH6. Road pin hammered approx. 1.0m down base to prove no concrete (to depth of approx. 3m).

METHOD OF EXCAVATION

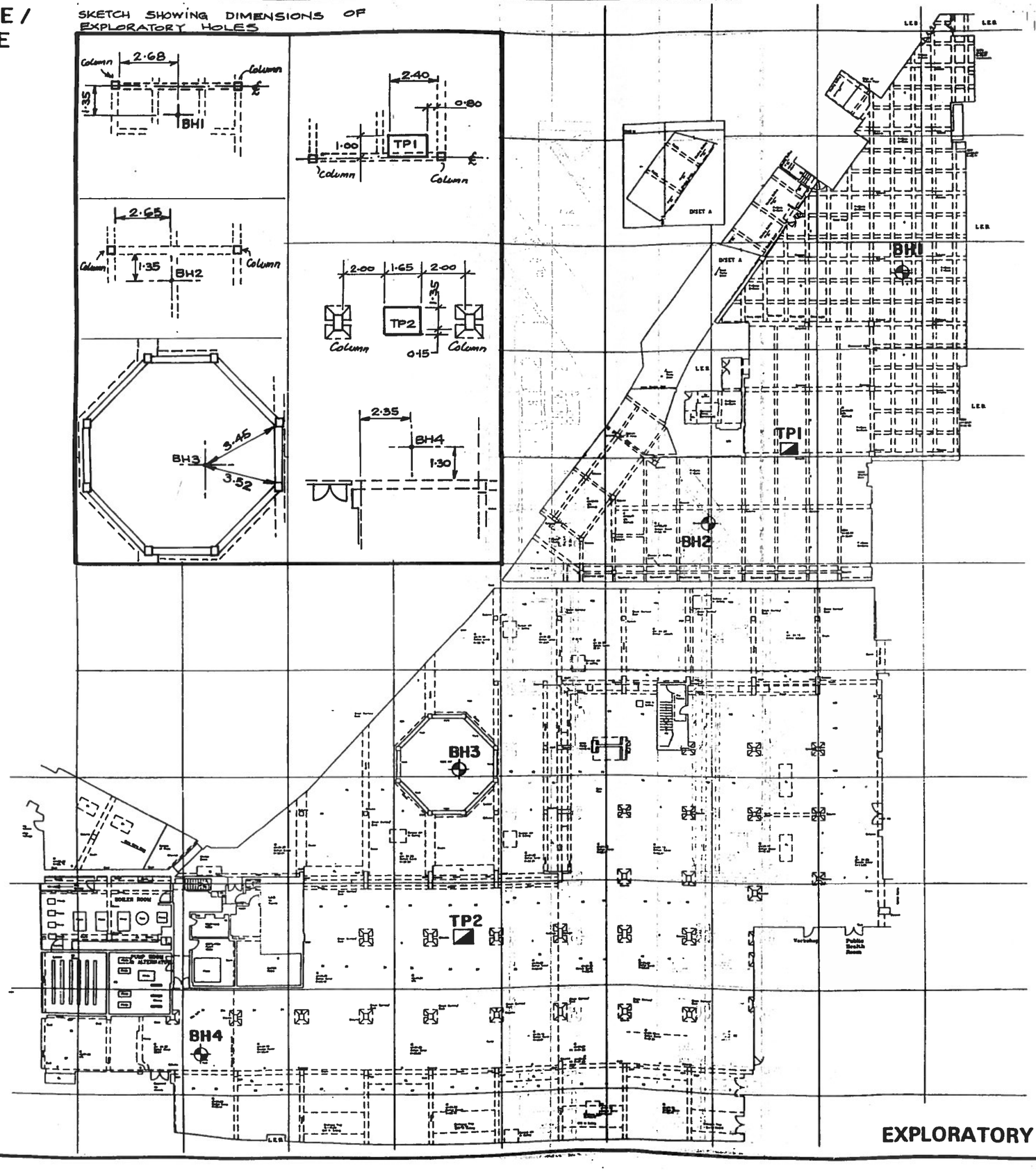
Hand Dug

TP 4

TRITON SQUARE / REGENTS PLACE

94484

SKETCH SHOWING DIMENSIONS OF EXPLORATORY HOLES



0 10 20 30

SCALE (m)

KEY

- BOREHOLE LOCATIONS
- TRIAL PIT LOCATIONS

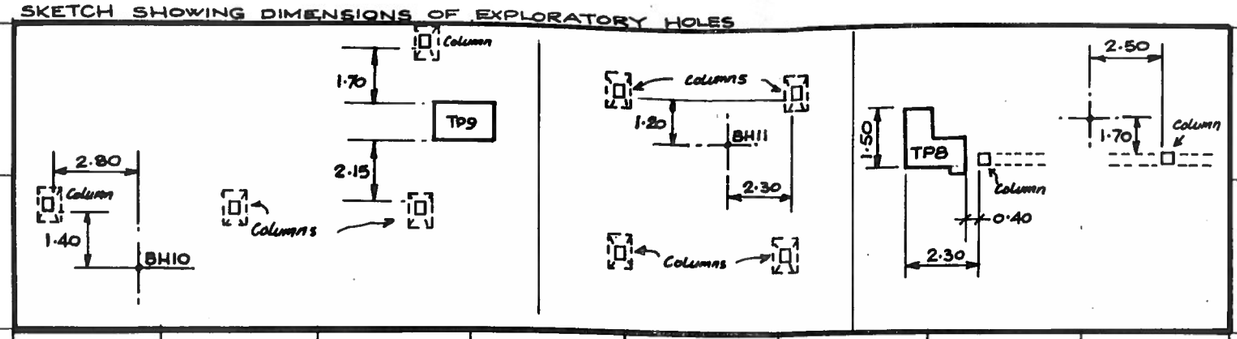
EXPLORATORY HOLE LOCATION PLAN

LTG SERVICES

TRITON SQUARE / REGENTS PLACE

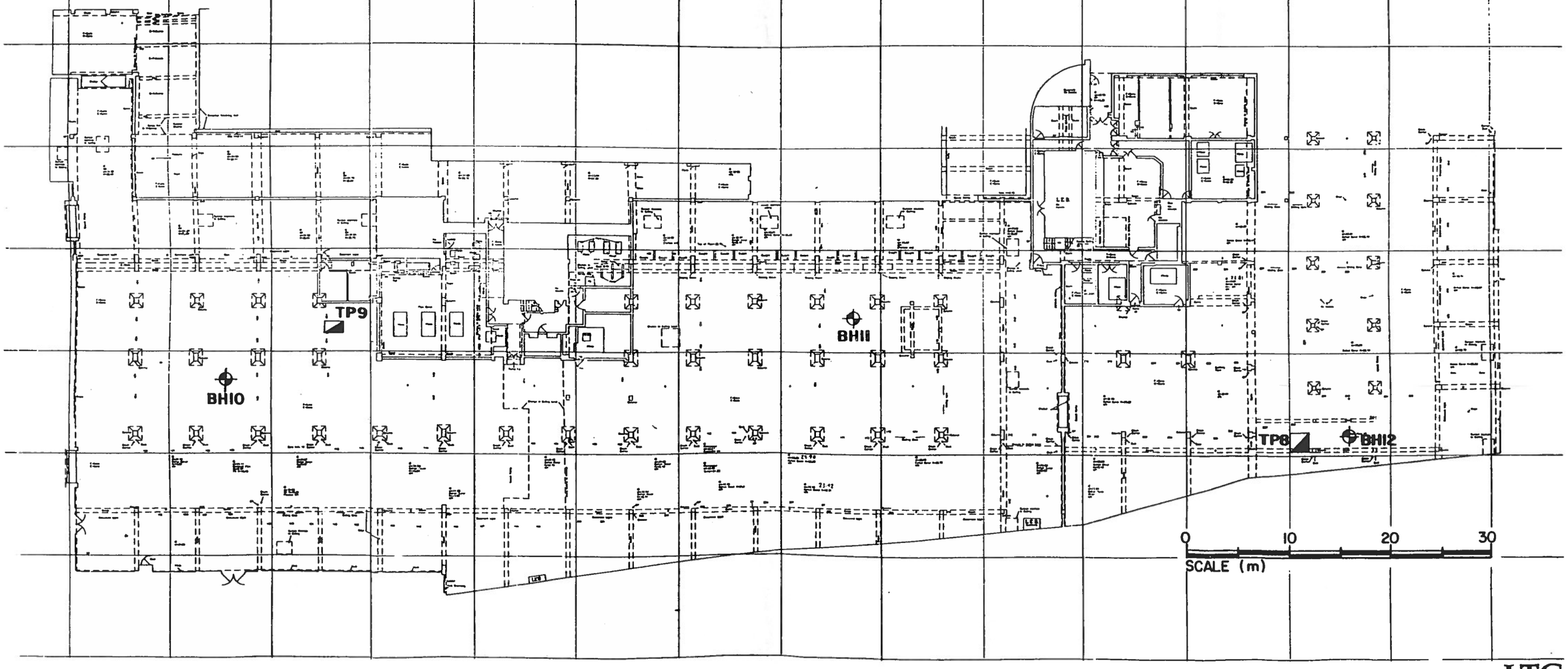
94484

SKETCH SHOWING DIMENSIONS OF EXPLORATORY HOLES



KEY

- BOREHOLE LOCATIONS
- TRIAL PIT LOCATIONS

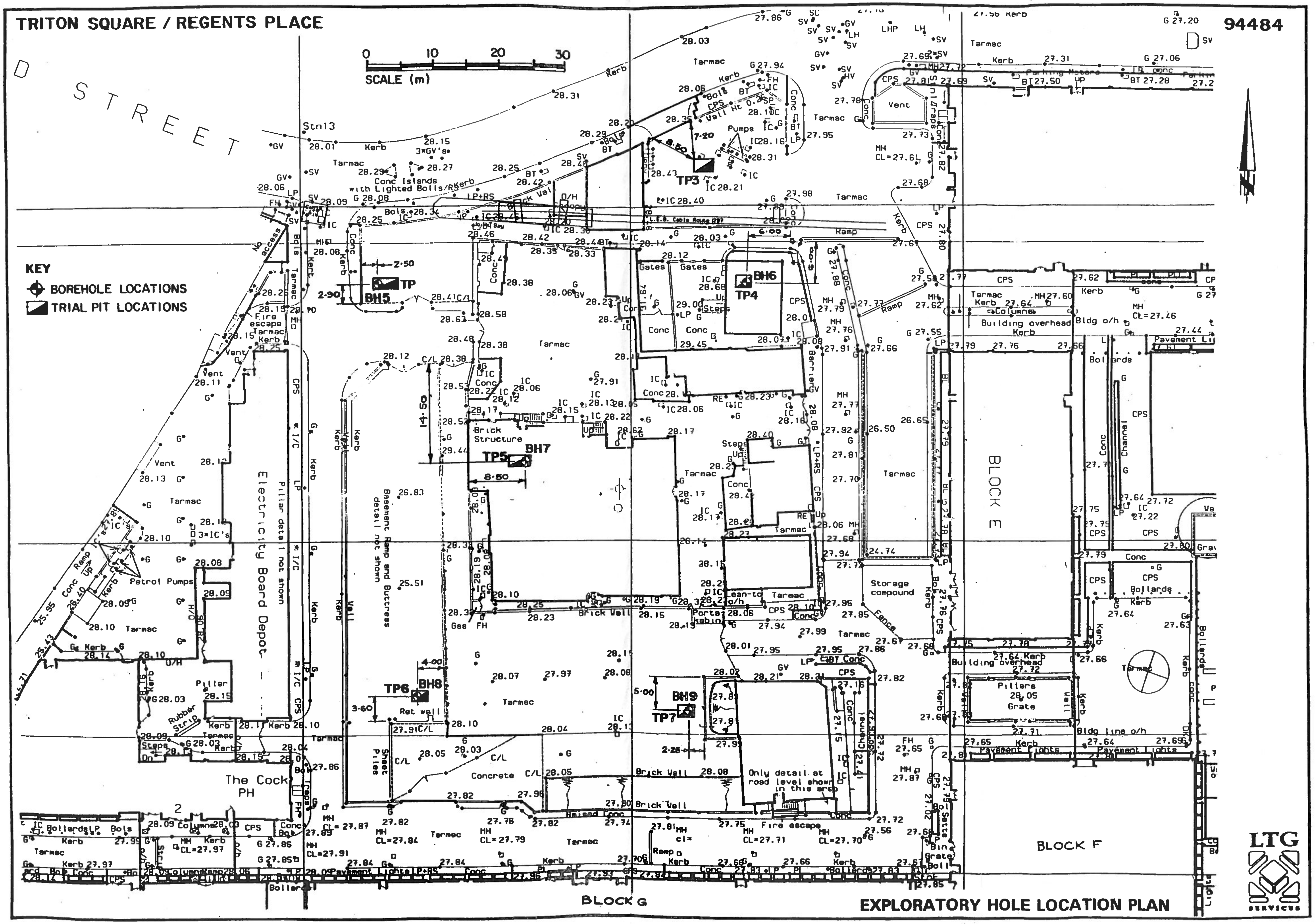


LTG SERVICES

EXPLORATORY HOLE LOCATION PLAN

TRITON SQUARE / REGENTS PLACE

94484



EXPLORATORY HOLE LOCATION PLAN

LTG SERVICES