APPENDIX 7 – FACTUAL REPORT

FACTUAL REPORT

Elleray Hall & North Lane Depot/East Car Park

Prepared For: Richmond & Wandsworth Council

ISSUE 01

Concept: 20/3521- FR01 21/06/2021

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DEVELOPMENT	Name	Signature	Date
Prepared by:	N Carsandas		21/06/2021
Checked by:	O Savvidou		21/06/2021
Approved by:	M Dedic		21/06/2021

Issued to:	Jomas Associates Ltd

Date	Issue	Amendment Details/ Reason for issue	Issued to
09/04/2021	Issue 00	DRAFT	Jomas Associates
21/06/2021	Issue 01	FINAL: Monitoring and water sampling complete	Jomas Associates

Notes:

CONTENTS

1. PROJECT PARTICULARS

Site Location:	Elleray Hall & North Lane Depot/East Car Park
Client:	Richmond & Wandsworth Council
Investigation Supervisor:	Jomas Associates Ltd
Fieldwork:	22/02/2021 – 03/03/2021
Laboratory Work:	26/02/2021 – 08/04/2021

2. PURPOSE AND SCOPE OF WORKS

The purpose of the investigation was to understand the ground and groundwater conditions at the site and to determine the nature and extent of any ground and groundwater contamination.

The site comprised two irregular-shaped plots of land to the north and south of Middle Lane, Teddington.

The south plot was situated adjacent to the junction of Elleray Road and Middle Lane and was occupied by a single storey iron-clad commercial-style building identified as Elleray Hall Social Centre.

The north plot was located adjacent to the north of Middle Lane and east of North Lane with the western section of the plot secured with hoarding enclosing a demolished building. The eastern section was car parking area accessed off North Lane.

The scope of the works comprised the following:

- 2 No. Cable Percussion Boreholes to a depth of 20.00m;
- 10 No. Dynamic Sampler Boreholes to a depth of 2.00m;
- 3 No. Machine Excavated Trial Trenches to a maximum depth of 2.70m;
- Dynamic Cone Penetrometer (DCP) Testing;
- Soakaway Tests;
- Logging and Photographing;
- Instrumentation Monitoring and Sampling;
- Geotechnical & Chemical Testing.

Table 1 – Exploratory Hole List

Hole ID	Hole Type	Depth (m)	Easting	Northing	Level (mOD)
BH1	CP	20.00	515674.60	170880.38	8.85
BH2	CP	20.00	515700.52	170863.87	8.96

Hole ID	Hole Type	Depth (m)	Easting	Northing	Level (mOD)
WS1	DS/DCP	2.00	515675.80	170903.02	8.87
WS2	DS/DCP	2.00	515656.41	170890.57	8.52
WS3	DS/DCP	2.00	515675.58	170888.52	8.78
WS4	DS/DCP	2.00	515667.17	170880.60	8.74
WS5	DS/DCP	2.00	515678.06	170872.74	9.01
WS6	DS/DCP	2.00	515719.98	170872.86	8.91
WS7	DS/DCP	2.00	515697.50	170866.14	8.98
WS8	DS/DCP	2.00	515704.96	170856.83	8.94
WS9	DS/DCP	2.00	515711.76	170835.53	9.00
WS10	DS/DCP	2.00	515703.65	170828.35	9.09
STP1	TT	2.60	515682.35	170882.26	9.00
STP2	TT	2.50	515664.87	170888.10	8.66
STP3	TT	2.70	515700.13	170858.01	8.93

Key

CP – Cable Percussion Borehole
DS/DCP – Dynamic Sampler Borehole & DCP Location
TT – Trial Trench

3. DESCRIPTION OF WORKS

The works were carried out in accordance with the Jomas Associates' "Elleyray Hall & North Lane Depot/ East Car Park" Ground Investigation Specification document with reference P3152J2114/TE, Rv00, dated 26/11/2020 and Concept's Method Statement with reference no: 20/3521, Rv00, dated 01/0/2021.

The northern plot was bounded by residential property to the north and east, North Lane on the west and Middle Lane in the south. The southern plot was bounded by Middle Lane to the north and residential property to the south, east and west. The approximate centre of the site was located at National Grid Reference: E515702, N170871.

The locations of all exploratory holes are shown in the Exploratory Hole Location Plan presented in Section 7 of this report.

4. INVESTIGATION METHODS

4.1 Ground Penetrating Radar Survey (GPR)

The GPR survey was undertaken by subcontractor Terrascan.

The survey was designed to obtain information from the subsurface on the position of any additional underground services not locatable using conventional electromagnetic locators and to identify additional ground anomalies, voids and obstructions that may be present.

All the services were marked out in the ground.

4.2 Utilities Survey and Inspection Pits

Prior to boring commencing all exploratory hole locations were checked for utilities /buried services using a CAT and genny, existing utility information and hand dug inspection pits to an appropriate depth as identified by the services plans. A hand dug inspection pit was excavated at each exploratory hole location to an appropriate depth as identified by the services plans typically to a maximum depth of 1.20m.

Where surface asphalt was encountered it was broken out by hand held electric breaker.

4.3 Detailed Unexploded Ordnance Risk Assessment

A Detailed Unexploded Ordnance Risk Assessment was carried out by Primely Ltd on behalf of Jomas Associates Ltd with Document titled “Elleyray Hall & North Lane Deport, Teddington TW11 And East car Park, Teddington TW11”, dated 16/01/2021. The report is included in Appendix A.

The site was assessed as low risk of items of unexploded German aerial delivered and other types of munitions. Therefore, a UXO survey clearance was not undertaken during drilling.

4.4 Cable Percussion Drilling

2 No Cable Percussion Boreholes (BH1 and BH2) were drilled to a depth of 20.00m using a standard cable percussion rig (Dando 175) with 150mm diameter casing.

4.4.1 Sampling and Testing during Cable Percussion Drilling

Bulk samples were taken at regular intervals in the Made Ground and thereafter at each change in strata. Undisturbed Thin Walled samples (UT) were taken in accordance with EC7 using a down-hole sliding hammer in cohesive material at regular intervals or as instructed by the Investigation Supervisor.

Standard Penetration Tests (SPT) were carried out at specified intervals or as otherwise instructed by the Investigation Supervisor. The resulting SPT “N” blowcount values are presented in the relevant borehole records. Where an SPT using a split spoon sampler was not possible, due to the granular nature of the material, a solid cone was used. The SPT hammer calibration sheet is included in Section 8 of this report.

Small, disturbed samples were retrieved from the cutting shoe of the UT100 sampler, the SPT split spoon sampler and at intervals specified by the Investigation Supervisor.

Environmental samples (tubs, jars and vials) were taken for chemical analysis in the Made Ground or at each change of strata and where visual or olfactory evidence of contamination was noted or as instructed by the Investigation Supervisor. Headspace readings for volatile organic compound (VOC) content were taken in all the samples using a Phocheck Tiger photoionization detector.

The borehole logs are presented in Section 8 of this report.

4.5 Dynamic Sampling Boreholes

10 No. Dynamic Sampling Boreholes (WS1-WS10) were carried out to a depth of 2.00m. The boreholes were drilled using a tracked Geo drive-tube sampling rig.

Semi-rigid plastic core liners were recovered from each borehole location. The excavated soil was logged in accordance with BS 5930:2020 and photographed.

Environmental samples (tubs, jars and vials) were taken for chemical analysis mostly from the inspection pits. Headspace readings for volatile organic compound (VOC) content were taken using a Phocheck Tiger photoionization detector. Representative bulk and disturbed samples were taken for soil analysis.

SPTs were carried out at the base of the inspection pit at 1.20m depth and at 2.00m. All boreholes were aborted at 2.00m depth due to refusal.

The borehole logs along with the SPT hammer calibration sheet are presented in Section 9 and the core photographs are presented in Section 16 .

4.6 Machine Excavated Trial Trenches

3 No. Trial pits (STP1-STP3) were machine excavated to a maximum depth of 2.70m using a JCB 3CX backhoe with extension arm. The pits were carried out to for sample collection and to conduct soakaway testing to determine suitability of soakaway drainage.

Environmental samples (tubs, jars and vials) were taken for chemical analysis in the Made Ground or at each change of strata and where visual or olfactory evidence of contamination was noted or as instructed by the Investigation Supervisor. Headspace readings for volatile organic compound (VOC) content were taken in all the samples using a Phocheck Tiger photoionization detector. Bulk samples were also taken for soils analysis.

The trial trenches were logged and photographed. The logs and photographs are presented respectively in Section 10 and Section 16 of this report.

4.7 Dynamic Cone Penetrometer Testing (DCP)

10 No. TRL DCP Tests were carried out at locations adjacent to the dynamic sampling boreholes shown on the Exploratory Site Location Plan in Section 7.

An 8 kg free fall hammer is lifted and dropped through a height of 575mm. The penetration distance of the cone tip is then recorded and the cycle repeated. Continuous measurements can be made down to a depth of approximately 850mm or when extension shafts are fitted to a maximum recommended depth of 2.00m. Where sub-pavement layers have different strengths, the boundaries can be identified and the thickness determined.

The DCP results and graphs are presented in Section 11 of this report.

4.8 Soakaway Tests

Soakaway Tests were carried out in trial pits STP1-STP3 using 50mm diameter pipes installed at the base of each pit, backfield with pea shingle to 1.20m depth. Water was then rapidly pumped in the pipes using a bowser. The water levels were recorded at the

start of each test and at regular intervals. The results of the tests are presented in Section 12 of this report.

4.9 Standpipe Installations and Backfill

Monitoring wells were installed in the boreholes as follows:

Table 2 – Monitoring Installation Details

Hole ID	Base of Borehole (m bgl)	Diameter of Installation (mm)	Type of Installation	Base of Installation (m bgl)	Response Zone	
					Top (m bgl)	Bottom (m bgl)
BH1	20.00	50	GMP	6.30	1.00	6.30
BH2	20.00	50	GMP	6.60	1.00	6.60
WS1	2.00	50	GMP	2.00	1.00	2.00
WS2	2.00	50	GMP	2.00	1.00	2.00
WS6	2.00	50	GMP	2.00	1.00	2.00
WS10	2.00	50	GMP	2.00	1.00	2.00

KEY
GMP – Gas and groundwater Standpipe

The boreholes were backfilled with bentonite pellets with gas/groundwater response zones backfilled with a 10mm pea shingle filter with a geosock surround. All installations were finished with bentonite pellets to the surface with concrete and a lockable stopcock cover flush with the ground.

The boreholes with no installations were backfilled with bentonite pellets upon completion.

4.10 Instrumentation Monitoring and Sampling

Groundwater monitoring was carried out during fieldworks. Gas and groundwater monitoring and sampling was carried out by Concept subsequent to completion of the boreholes on 4No scheduled visits between 10/03/2021 and 09/06/2021.

All boreholes were developed least one week prior to sampling using a Wasp pump which provides a relatively high pumping rate to remove water and entrained sediment. Development continued until either the well ran dry, the water ran clear or at least 10 well volumes were removed.

Water sampling was carried in BH2 on 17/03/2021 and in BH1 on 09/06/2021. Water samples were taken using a peristaltic pump at a low pumping rate. The pump tubing was lowered to target the standpipe response zone and a dipmeter was used during purging to ensure that the pumping rate did not reduce the water level. Generally, the water level remained steady at pumping rates of 1 litre every 3 minutes. Water

parameters (pH, conductivity, dissolved oxygen, temperature and Redox levels) were recorded during purging using a flow cell and a YSI Professional Probe. Purging was considered complete when parameters stabilised to within 10%. Generally the water was noted as clear and the purging complete after 3 litres were removed. On completion of purging, the water samples were collected in bottles Eurofins (1No glass, 1No plastic and 1No vial). They were then transferred to Concept laboratory inside cool boxes protected by bubble wrap and kept in the fridge until collection from the chemical laboratory was arranged. The borehole was purged and sampled using a new length of tubing.

An In-Situ Rugged interface was used to prove/disprove the presence LNAPL and DNAPL. However, neither LNAPL nor DNAPL were detected throughout the water column in the boreholes therefore a Geosense dipmeter was used for the subsequent visits. The gas concentrations were recorded using a Gas data GFM436 monitor. Where 0.00 is shown on the results indicates value lower than the detection limit of the machine. The accuracy of the instruments is summarised in Section 13 where the gas monitoring reports and groundwater results are presented.

4.11 Logging / Laboratory Testing

Logging of all soil samples was carried out in accordance with BS 5930:2020.

Geotechnical testing was performed at Concept Site Investigations laboratory in accordance with BS1377:1990 unless otherwise stated in the report. Concept is accredited by UKAS for tests where the UKAS logo is appended to the individual test report or summary. Approved signatories for laboratory testing are as follows:

- LG – Lynn Griffin (Quality Manager)
- KM – Kasia Mazerant (Laboratory Manager)

Where subcontracted analysis has been carried out, the details of the laboratory (and accreditation where applicable) are shown in the individual test report or summary.

The results are presented in tabular format in Section 14 of this report.

All chemical testing was specified and scheduled by Jomas Associates and carried out by Chemest in accordance with the requirements of UKAS ISO17025 and MCERTS. The results are presented in tabular format in Section 15 of this report.

4.12 Setting Out

The locations of all exploratory holes were agreed with the Investigation Supervisor and set out prior to commencement of the site works.

Following completion of the ground works the locations and elevations of the boreholes and pits were established by Concept using GPS equipment with accuracy between +/- 10mm and 30mm.

The co-ordinates and levels of the as-built locations of the boreholes and pits are shown in the Exploratory Hole Location Plan presented in Section 7 of this report.

5. GEOLOGICAL GROUND PROFILE

The geological strata encountered during the investigation are summarised in the table below. The Top and Bottom of the strata noted in the table indicates the highest and lowest boundaries encountered in all exploratory holes.

Table 3 - Geological Ground Profile

STRATUM	TOP (mOD)	BASE (mOD)	DESCRIPTION
TOPSOIL	8.66	8.37	Soft, dark brown silty CLAY with frequent rootlets.
MADE GROUND	9.09	7.04	Asphalt/ Brickwork/ Concrete over, Dark brownish grey sandy GRAVEL with low flint and concrete cobble content, occasional roots and strong hydrocarbon odour. Gravel comprises angular to subrounded fine to coarse flint, brick, concrete, coal, glass, bone, ceramic pipe and asphalt fragments. Brown slightly gravelly clayey silty fine to coarse SAND with occasional pockets of orangish brown clayey silt, shell fragments), roots and orange and black staining. Greyish brown slightly gravelly slightly sandy clayey SILT with low flint and brick cobble content and occasional roots. Soft, greenish grey slightly gravelly slightly sandy silty CLAY with occasional pockets of reddish brown silty fine sand and orangish brown silt, frequent dark grey flecks, slight hydrocarbon odour and dark grey staining.
ALLUVIUM	8.34	6.86	Firm, orangish brown mottled greenish grey slightly gravelly sandy clayey SILT with occasional pockets of reddish brown silty fine sand, frequent roots and occasional dark grey staining. Gravel is angular to subangular fine to medium flint. Greenish grey slightly gravelly sandy CLAY with occasional pockets of yellowish brown silt and reddish brown silty fine sand and frequent dark grey staining. Gravel is angular to rounded fine to medium flint. Sand is fine to medium.
KEMPTON PARK GRAVEL MEMBER	7.96	2.36	Very dense, brown silty sandy angular to subrounded fine to medium flint GRAVEL. Sand is fine to coarse.

STRATUM	TOP (mOD)	BASE (mOD)	DESCRIPTION
			Medium dense, brown clayey gravelly fine to medium SAND with occasional pockets of greyish brown and reddish brown sandy clay. Gravel is subangular to subrounded fine to coarse flint. Firm, orangish brown gravelly sandy clayey SILT.
LONDON CLAY FORMATION	2.55	Extent not proven	Very stiff, dark brown slightly sandy slightly micaceous silty CLAY with occasional partings of light grey silty fine sand, off-white shell fragments, white flecks and dark grey staining.

REFERENCES

British Standards Institution, (2015) Code of practice for ground investigations, British Standard BS5930: 2020, BSI, London

British Standards Institution, (2011) Investigation of potentially contaminated sites, British Standard BS10175: 2011+A2:2017, BSI, London.

UK Specification for Ground Investigation, (2011) Site Investigation Steering Group, Thomas Telford, London

British Geological Survey (1996) London and the Thames Valley 4th Edition, London HMSO.

British Standards Institution BS EN ISO 22475-1, (2006) Geotechnical Investigation and Testing – Sampling Methods and Groundwater Measurements – Part 1: Technical Principles for Execution

British Standards Institution BS EN 1997:1 (2004) EuroCode 7 - Geotechnical Design. Part 1 – General Rules.

British Standards Institution BS EN 1997:2 (2007) EuroCode 7 - Geotechnical Design. Part 2 - Ground Investigation and Testing.

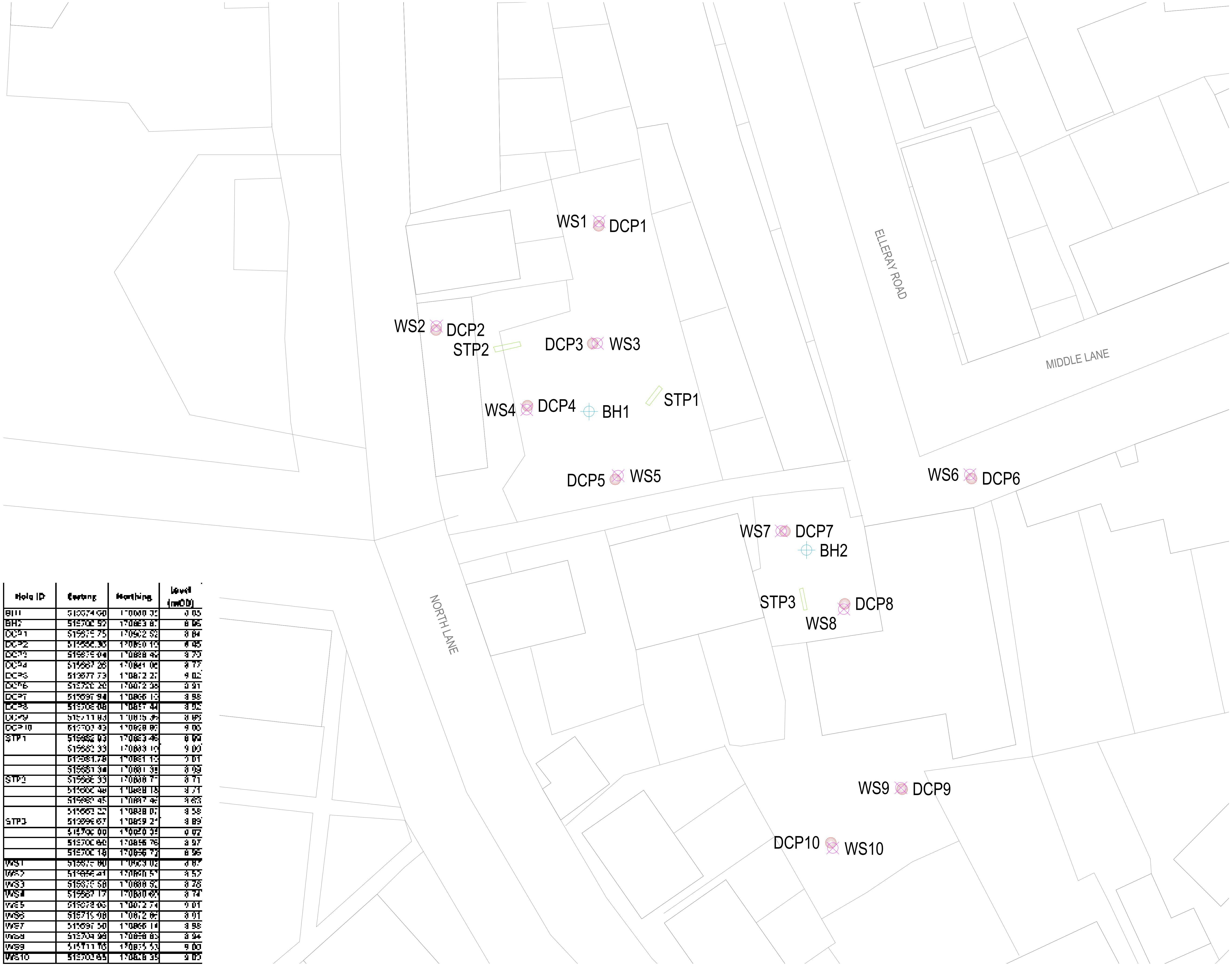
King C. (1981) The stratigraphy of the London Basin and associated deposits. Tertiary Research Special Paper, Vol. 6, Backhuys, Rotterdam, p158.

Aldiss, D. T. (2012) The stratigraphical framework for the Palaeogene successions of the London Basin, UK. British Geological Survey Open Report. British Geological Survey.

6. SITE LOCATION PLAN

Not to Scale / Map data ©2021 Google

7. EXPLORATORY HOLE LOCATION PLAN



Hole ID	Easting	Northing	Level (mOD)
BH1	515674.50	170880.35	9.05
BH2	515702.52	170853.87	8.95
DCP1	515675.75	170902.52	8.84
DCP2	515580.35	170850.15	8.45
DCP3	515675.04	170888.42	8.73
DCP4	515637.28	170841.08	8.77
DCP5	515677.73	170872.27	9.02
DCP6	515720.20	170872.38	8.91
DCP7	515697.94	170866.13	8.98
DCP8	515706.08	170857.44	8.92
DCP9	515711.83	170815.39	8.85
DCP10	515701.43	170828.85	9.00
STP1	515582.03	170853.46	8.94
	515582.33	170843.19	9.00
	515581.78	170851.13	9.01
	515581.34	170881.39	8.98
STP2	515582.33	170880.77	8.71
	515600.48	170828.18	8.71
	515587.45	170847.42	8.83
	515662.22	170828.07	8.58
STP3	515696.67	170859.24	8.89
	515700.00	170820.35	9.07
	515700.80	170856.76	8.97
	515700.18	170856.73	8.95
WS1	515675.80	170903.02	8.87
WS2	515656.41	170850.57	8.57
WS3	515675.58	170888.52	8.78
WS4	515637.17	170840.89	8.74
WS5	515678.05	170872.74	9.01
WS6	515715.98	170872.85	8.91
WS7	515697.50	170866.14	8.98
WS8	515704.99	170858.83	8.94
WS9	515711.76	170875.53	9.00
WS10	515702.85	170826.35	9.03

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North (indicative)

N E S W

KEY

- BH - Cable Percussion Borehole
- DCP - Dynamic Cone Penetration Test
- STP - Trial Pit / Soakaway Test
- WS - Dynamic Sampling Borehole

NOTES

1. Coordinates and levels quoted refer to Ordnance Survey (OS) National Grid.
2. Base drawing provided by Landmark Information Group Ltd., with licence number 100022432.
3. This drawing should not be scaled.
4. All levels are in mOD (metres above Ordnance Datum).

ISSUES

Revision	Details	By	Date
00	Drawing completed and corrected	AC	31/03/21

Client: Richmond & Wandsworth Council

Project: Elleray Hall & North Lane Depot/East Car Park

Address: Elleray Rd, Teddington TW11 0HG

Plan title: Exploratory Hole Location Plan

Project no	Drawing no	Revision
20/3521	01	00

Scale	Sheet size
NTS	A3 (297.00x420.00mm)

Date	Status
March 2021	Issue

Surveyed by	Drawn by	Checked by	Passed by
C	AC	AB	OS

8. CABLE PERCUSSION BOREHOLE LOGS

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Borehole No

BH1

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	24/02/21	8.85	E 515674.60 N 170880.38	20.00m
	Date Completed 26/02/21			

Client

Richmond & Wandsworth Council

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Barrel Type	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	1.20	IP	24/02/2021	24/02/2021	DR	DH/JM			Hand Excavated	
1.20	20.00	CP	24/02/2021	25/02/2021	DR	JM			Dando 175	AR779

WATER STRIKES

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)
10.00	10.00	20	6.80	

WATER ADDED

From (m)	To (m)
2.00	6.30

CHISELLING / SLOW DRILLING

From (m)	To (m)	Duration (hr)	Remarks
10.00	10.40	01:00	Claystone

HOLE

Depth (m)	Diameter (mm)
0.00	150
20.00	150

CASING

Depth (m)	Diameter (mm)
0.00	150
6.80	150

ROTARY RECOVERY

From (m)	To (m)	Duration (hr)	Recovery (%)

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation
GMP		6.30	1.00	6.30	26/02/2021

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date	Remarks
0.00	0.30	Concrete	26/02/2021	Flush Cover
0.30	1.00	Bentonite Pellets		
1.00	6.30	Pea Shingle		
6.30	20.00	Bentonite Pellets		

Issue: FINAL	CHD: AN	APRV: OS	Log Print Date & Time: 09/04/2021 12:46	AGS

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Borehole No

BH1

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	Date Completed 24/02/21 – 26/02/21	8.85	E 515674.60 N 170880.38	20.00m

Client

Richmond & Wandsworth Council

PROGRESS

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks
24/02/21	0.00		Dry	
24/02/21	1.20		Dry	
24/02/21	2.00	2.00	Wet	... Water Added
24/02/21	2.70	2.70	1.00	
24/02/21	3.00	3.00	1.50	
24/02/21	4.00	4.00	2.00	
24/02/21	4.50	4.50	4.00	
25/02/21	4.50	4.50	4.00	... Water Added
25/02/21	4.70	4.70	3.50	
25/02/21	5.70	5.70	4.50	
25/02/21	6.50	6.50	Dry	
25/02/21	10.00	6.80	10.00	... Water Strike
25/02/21	10.70	6.80	Dry	
25/02/21	20.00	6.80	Dry	

SPT DETAILS

Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
C	1.20	N19	2, 3 / 5, 4, 4, 6		Dry
C	2.00	N50/0.265	3, 5 / 8, 13, 18, 11	2.00	1.00
C	3.00	N50/0.29	2, 5 / 8, 12, 16, 14	3.00	1.50
C	4.00	N16	1, 4 / 4, 4, 3, 5	4.00	2.00
C	5.00	N13	1, 3 / 4, 3, 3, 3	5.00	3.50
C	6.00	N12	1, 2 / 3, 3, 3, 3	6.00	4.50
S	8.00	N20	2, 3 / 4, 5, 5, 6	6.80	Dry
S	10.00	N50/0.115	24 / 26, 24	6.80	Dry
S	12.00	N26	3, 4 / 5, 6, 7, 8	6.80	Dry
S	14.00	N30	3, 5 / 6, 7, 8, 9	6.80	Dry
S	16.00	N38	6, 7 / 7, 9, 10, 12	6.80	Dry
S	18.00	N50/0.285	15, 10 / 10, 11, 16, 13	6.80	Dry

GENERAL REMARKS

1. Borehole blowing in the gravels.
2. Slight water seepage encountered at 10.00m depth with no rise.

KEY

SAMPLES

ES - Environmental Sample (Tub, Vial, Jar)
U - 100mm Diameter Undisturbed Sample
UT - 100mm Diameter Thin Wall Undisturbed Sample
U38 - 38mm Diameter Undisturbed Sample
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
C - Core Sample, W-Water Sample, R-Root Sample

AZCL:Assumed Zone of Core Loss

INSTALLATION DETAILS

SPIE - Standpipe Piezometer
SPGW - Groundwater Monitor Standpipe
SPG/GW - Gas / Groundwater Monitor Standpipe
VWP - Vibrating Wire Piezometer
ICM - Inclinometer

HOLE TYPES

IP -Inspection Pit, TP-Trial Pit TT - Trial Trench
CP -Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic
DS -Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
DC -Diamond Coring, CP/R-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue: FINAL	CHD: AN	APRV: OS	Log Print Date & Time: 09/04/2021 12:46	AGS

CONCEPT
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Borehole No

BH1

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	24/02/21	8.85	E 515674.60 N 170880.38	20.00m
	Date Completed 26/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Cable Percussion	1 of 2

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
24/02/21		Dry	8.75		0.10	Asphalt.	0.25	ES1		VOC 1ppm	
			8.55		0.30	(MADE GROUND)	0.25	B2		VOC 0.7ppm	
			8.50		0.35	Dark grey slightly silty very sandy GRAVEL with slight hydrocarbon odour. Gravel comprises angular to subrounded fine to coarse flint, brick, concrete and asphalt fragments. Sand is fine to coarse.	0.40	ES3		VOC 0.4ppm	
			8.30		0.55		0.40	B4			
							0.60	ES5			
					(0.65)		0.60	B6		VOC 0.5ppm	
							1.00-1.20	ES7			
24/02/21		Dry	7.65		1.20	(MADE GROUND)	1.00-1.20	B8			
						Brickwork.	1.20		N19	2, 3 / 5, 4, 4, 6	
						(MADE GROUND)	1.20-1.65	B10			
					(0.80)		1.20	B9			
						Dark grey very gravely fine to coarse SAND. Gravel comprises angular to subrounded fine to coarse flint, brick, concrete and ceramic fragments.	1.80	D11			
24/02/21	2.00	Wet	6.85		2.00	(MADE GROUND)	2.00		N50/ 265 mm	3, 5 / 8, 13, 18, 11	
							2.00-2.40	B12			
						Firm, dark brown slightly sandy gravelly silty CLAY. Gravel comprises angular to subrounded fine to coarse flint and brick fragments. Sand is fine to coarse.	2.70	D13			
24/02/21	2.70	1.00				(MADE GROUND)					
24/02/21	3.00	1.50				0.90 ... becoming brown mottled orangish brown, greyish brown and slightly gravelly	3.00		N50/ 290 mm	2, 5 / 8, 12, 16, 14	
							3.00-3.45	B14			
						Medium dense, brown clayey gravelly fine to medium SAND with occasional pockets of greyish brown and reddish brown sandy clay. Gravel is subangular to subrounded fine to coarse flint.	3.70	D15			
24/02/21	4.00	2.00					4.00		N16	1, 4 / 4, 4, 3, 5	
					(4.30)	(KEMPTON PARK GRAVEL MEMBER)	4.00-4.45	B16			
24/02/21	4.50	4.00				Very dense, light brown sandy subangular to rounded fine to coarse GRAVEL. Sand is fine to coarse.					
25/02/21	4.50	4.00					4.70	D17			
25/02/21	4.70	3.50				(KEMPTON PARK GRAVEL MEMBER)					
						3.70 ... with low flint cobble content	5.00		N13	1, 3 / 4, 3, 3, 3	
						4.00 ... becoming medium dense and very sandy	5.00-5.45	B18			
						5.00 ... becoming sandy					
25/02/21	5.70	4.50					5.70	D19			
							6.00		N12	1, 2 / 3, 3, 3, 3	
			2.55		6.30		6.00-6.45	B20			
25/02/21	6.50	Dry				Stiff, greyish brown CLAY with rare pockets of dark grey silt (<20mm), occasional white flecks, off-white shell fragments and dark grey staining.	6.50-7.00	B21			
						(THAMES GROUP: LONDON CLAY FORMATION - B)	7.00-7.45	UT22	50 blows	100% Recovery	
							7.45	D23			
						7.50 ... with rare white flecks	7.70	D24			
							8.00		N20	2, 3 / 4, 5, 5, 6	
						8.00 - 8.50 ... with frequent bioturbation and occasional shell fragments (<3mm)	8.00-8.45	D25			
							8.70	D26			
						8.70 ... with rare shell fragments (<2mm)	9.00-9.45	UT27	70 blows	100% Recovery	
							9.45	D28			
						9.50 ... with occasional bioturbation	9.70	D29			
25/02/21	6.80	10.0					10.00		N50/ 115 mm	24 / 26, 24	
						10.00 - 10.20 ... with band of claystone	10.00-10.45	D30			
							10.00-10.40	B31			
25/02/21	6.80	Dry					10.70	D32			
						10.70 ... with occasional white flecks	11.00-11.45	UT33	100 blows	100% Recovery	

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Borehole No

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Elleray Hall & North Lane Depot/East Car Park

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20/3521	24/02/21	8.85	E 515674.60 N 170880.38	20.00m
	Date Completed 26/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Cable Percussion	2 of 2

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
							11.45	D34			
						11.50 ... becoming silty	11.70	D35			
						11.70 ... with occasional dark grey staining	12.00		N26	3, 4 / 5, 6, 7, 8	
						12.00 - 12.45 ... with frequent bioturbation	12.00-12.45	D36			
							12.70	D37			
					(12.70)	12.70 ... with rare off-white shell fragments (<2mm)	13.00-13.45	UT38	100 blows	100% Recovery	
							13.45	D39			
						13.50 ... with occasional pockets of dark grey silty fine sand (<5mm)	13.70	D40			
						13.70 ... with occasional off-white shell fragments (<3mm)	14.00		N30	3, 5 / 6, 7, 8, 9	
						14.00 ... with rare bioturbation	14.00-14.45	D41			
							14.70	D42			
						14.70 ... with 1No pyrite nodule (<4mm)	15.00-15.45	UT43	100 blows	100% Recovery	
							15.45	D44			
						15.50 ... becoming very closely fissured	15.70	D45			
						15.70 ... with occasional pockets of light brown silty fine sand (<25mm)	16.00		N38	6, 7 / 7, 9, 10, 12	
						16.00 ... becoming very stiff with occasional pockets of grey silty fine sand (<25mm) and bioturbation	16.00-16.45	D46			
							16.70	D47			
							17.00-17.45	UT48	100 blows	100% Recovery	
							17.45	D49			
							17.70	D50			
						17.70 ... with rare off-white shell fragments (<2mm)	18.00		N50/ 285 mm	15, 10 / 10, 11, 16, 13	
							18.00-18.45	D51			
			-10.15		19.00		19.00	D52			
						Very stiff, dark brown slightly sandy slightly micaceous silty CLAY with rare partings of light grey fine sand, off-white shell fragments (<2mm) and white flecks. (THAMES GROUP: LONDON CLAY FORMATION - A3ii)	19.50-19.95	UT53	100 blows	100% Recovery	
					(1.00)		19.90	D54			
25/02/21	6.80	Dry	-11.15		20.00	19.00 ... becoming slightly sandy with rare laminae of light grey fine sand, off-white shell fragments and foraminifera					
						End of Borehole					

Issue:	Logger:	CHD:	APRV:	Log Print Date & Time:	
FINAL	DH/JM	AN	OS	09/04/2021 12:46	AGS

Report ID: CONCEPT-CABLE PERCUSSION BOREHOLE || Project: 203521 ELLERAY HALL & NORTH LANE DEPOT.GPJ || Library: CONCEPT LIBRARY - 2021.GLB || Date: 9 April 2021

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Borehole No

BH2

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	22/02/21	8.96	E 515700.52 N 170863.87	20.00m
	Date Completed 24/02/21			

Client

Richmond & Wandsworth Council

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Barrel Type	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	1.20	IP	22/02/2021	22/02/2021	DR	JM			Hand Excavated	
1.20	20.00	CP	22/02/2021	25/02/2021	DR	JM			Dando 175	AR779

WATER STRIKES

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)
19.30	19.30	20	8.10	

WATER ADDED

From (m)	To (m)
1.80	6.60

CHISELLING / SLOW DRILLING

From (m)	To (m)	Duration (hr)	Remarks
19.30	19.60	00:30	Claystone

HOLE

Depth (m)	Diameter (mm)
0.00	150
20.00	150

CASING

Depth (m)	Diameter (mm)
0.00	150
8.10	150

ROTARY RECOVERY

From (m)	To (m)	Duration (hr)	Recovery (%)

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation
GMP		6.60	1.00	6.60	24/02/2021

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date	Remarks
0.00	0.30	Concrete	24/02/2021	Flush Cover
0.30	1.00	Bentonite Pellets		
1.00	6.60	Pea Shingle		
6.60	20.00	Bentonite Pellets		

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	Date Completed 24/02/21			

Client

Richmond & Wandsworth Council

PROGRESS

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks
22/02/21	0.00		Dry	
22/02/21	1.20		Dry	
22/02/21	1.80		Wet	... Water Added
22/02/21	2.50	2.20	1.00	
22/02/21	3.50	3.50	2.50	
22/02/21	4.50	4.50	4.00	
22/02/21	4.95	4.95	4.80	
23/02/21	4.95	4.95	4.30	... Water Added
23/02/21	5.20	5.20	4.00	
23/02/21	6.20	6.20	6.00	
23/02/21	7.50	7.50	6.10	
23/02/21	8.20	7.00	6.50	
23/02/21	9.50	8.10	Dry	
23/02/21	16.95	8.10	Dry	
24/02/21	16.95	8.10	Dry	
24/02/21	19.30	8.10	19.30	... Water Strike
24/02/21	19.50	8.10	Dry	
24/02/21	20.00	8.10	Dry	

SPT DETAILS

Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
S	1.50	N14	5, 4 / 3, 3, 3, 5		Dry
C	2.50	N50/0.29	2, 3 / 7, 10, 15, 18	2.20	1.00
C	3.50	N50/0.19	2, 6 / 12, 22, 16	3.50	2.50
C	4.50	N10	1, 2 / 3, 2, 3, 2	4.50	4.00
C	5.50	N12	1, 2 / 3, 3, 3, 3	5.50	4.00
C	6.50	N12	4, 3 / 2, 3, 3, 4	6.50	6.00
S	8.50	N19	2, 3 / 3, 4, 5, 7	7.00	6.50
S	10.50	N24	2, 4 / 5, 6, 6, 7	8.10	Dry
S	12.50	N31	3, 5 / 6, 7, 8, 10	8.10	Dry
S	14.50	N33	3, 5 / 6, 8, 9, 10	8.10	Dry
S	16.50	N36	4, 5 / 7, 8, 10, 11	8.10	Dry
S	18.50	N41	5, 6 / 8, 10, 11, 12	8.10	Dry
C	19.50	N37	22, 3 / 7, 8, 10, 12	8.10	Dry

GENERAL REMARKS

1. Borehole blowing in the gravels.
2. Water seepage encountered at 19.30m depth with no rise.

KEY

SAMPLES

ES - Environmental Sample (Tub, Vial, Jar)
U - 100mm Diameter Undisturbed Sample
UT - 100mm Diameter Thin Wall Undisturbed Sample
U38 - 38mm Diameter Undisturbed Sample
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
C - Core Sample, W-Water Sample, R-Root Sample

AZCL:Assumed Zone of Core Loss

INSTALLATION DETAILS

SPIE - Standpipe Piezometer
SPGW - Groundwater Monitor Standpipe
SPG/GW - Gas / Groundwater Monitor Standpipe
VWP - Vibrating Wire Piezometer
ICM - Inclinometer

HOLE TYPES

IP -Inspection Pit, TP-Trial Pit TT - Trial Trench
CP -Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic
DS -Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
DC -Diamond Coring, CP/R-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

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Borehole No

BH2

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	22/02/21	8.96	E 515700.52 N 170863.87	20.00m
	Date Completed 24/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Cable Percussion	1 of 2

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
22/02/21		Dry	8.86		0.10	Asphalt.	0.30	ES1		VOC 9.2ppm	
					(0.50)	(MADE GROUND)	0.30	B2			
			8.36		0.60	Light brown slightly clayey sandy GRAVEL with low flint and concrete cobble content. Gravel comprises angular to subrounded fine to coarse flint, brick and concrete fragments. Sand is fine to coarse.	0.60	ES3		VOC 6.4ppm	
							0.60	B4			
			7.96		1.00		0.90-1.00	ES5		VOC 41.6ppm	
						(MADE GROUND)	0.90-1.00	B6			
22/02/21		Dry					1.20	ES7		VOC 42ppm	
							1.20-1.50	B8			
						Soft, greenish grey slightly gravelly slightly sandy silty CLAY with occasional pockets of reddish brown silty fine sand (<25mm) and frequent dark grey flecks. Gravel is subangular to rounded fine to coarse flint. (MADE GROUND)	1.20	B9			
					(1.20)		1.50		N14	5, 4 / 3, 3, 3, 5	
22/02/21		Wet					1.50-1.95	D10			
							2.00-2.50	ES11		VOC 36.3ppm	
			6.76		2.20	0.80 ... becoming very silty	2.20	D12			
22/02/21	2.20	1.00				Firm, orangish brown gravelly sandy clayey SILT. Gravel is subangular to subrounded fine to medium flint. Sand is fine to medium. (KEMPTON PARK GRAVEL MEMBER)	2.50		N50/ 290 mm	2, 3 / 7, 10, 15, 18	
						1.20 ... with 1No flint cobble	2.50	B13			
							3.20	D14			
22/02/21	3.50	2.50				Very dense, brown sandy angular to subrounded fine to coarse GRAVEL. Sand is fine to coarse. (KEMPTON PARK GRAVEL MEMBER)	3.50		N50/ 190 mm	2, 6 / 12, 22, 16	
						2.50 - 2.95 ... becoming clayey with occasional pockets of orangish brown clay (<25mm)	3.50	B15			
						3.50 ... becoming dense	4.20	D16			
22/02/21	4.50	4.00			(4.40)		4.50		N10	1, 2 / 3, 2, 3, 2	
						4.50 ... becoming medium dense and very sandy	4.50	B17			
22/02/21	4.95	4.80									
23/02/21	4.95	4.30					5.20	D18			
23/02/21	5.20	4.00					5.50		N12	1, 2 / 3, 3, 3, 3	
							5.50	B19			
23/02/21	6.20	6.00					6.20	D20			
						6.20 ... with 2No flint cobbles	6.50		N12	4, 3 / 2, 3, 3, 4	
			2.36		6.60		6.50	B21			
						Firm to stiff, dark greyish brown CLAY with rare frequent light grey flecks and occasional dark grey staining. (THAMES GROUP: LONDON CLAY FORMATION - B)	7.20	D22			
23/02/21	7.50	6.10				7.00 ... with 1No off-white shell fragment (<4mm)	7.50-7.95	UT23	50 blows	100% Recovery	
							7.95	D24			
23/02/21	7.00	6.50				8.00 ... with rare off-white flecks	8.20	D25			
						8.20 ... with rare dark grey staining	8.50		N19	2, 3 / 3, 4, 5, 7	
							8.50-8.95	D26			
							9.20	D27			
23/02/21	8.10	Dry					9.50-9.95	UT28	80 blows	100% Recovery	
							9.95	D29			
							10.20	D30			
							10.50		N24	2, 4 / 5, 6, 6, 7	
							10.50-10.95	D31			

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Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Cable Percussion	2 of 2

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
							11.20	D32			
						11.20 ... with rare pockets of light grey silt (<15mm) and off-white shell fragments (<3mm)	11.50-11.95	UT33	100 blows	100% Recovery	
							11.95	D34			
						12.00 ... with occasional light grey flecks and 1No pyrite nodule (<24mm)	12.20	D35			
						12.20 ... with frequent white flecks	12.50		N31	3, 5 / 6, 7, 8, 10	
					(11.90)	12.50 ... with occasional pockets of light grey silt (<6mm)	12.50-12.95	D36			
							13.20	D37			
						13.20 ... with occasional dark grey staining and rare white flecks	13.50-13.95	UT38	100 blows	100% Recovery	
							13.95	D39			
						14.00 ... with rare shell fragments (<10mm)	14.20	D40			
						14.20 ... with frequent pockets of light grey silt (<10mm) and white flecks	14.50		N33	3, 5 / 6, 8, 9, 10	
						14.50 ... with occasional white flecks	14.50-14.95	D41			
							15.20	D42			
							15.50-15.95	UT43	100 blows	100% Recovery	
							15.95	D44			
						16.00 ... with rare white flecks	16.20	D45			
							16.50		N36	4, 5 / 7, 8, 10, 11	
							16.50-16.95	D46			
23/02/21	8.10	Dry									
24/02/21	8.10	Dry					17.20	D47			
							17.50-17.95	UT48	100 blows	100% Recovery	
							17.95	D49			
						18.00 ... with rare pockets of light brown and light grey silty fine sand (<20mm)	18.20	D50			
			-9.54		18.50	18.20 ... with 1No off-white shell fragment (<2mm)	18.50		N41	5, 6 / 8, 10, 11, 12	
							18.50-18.95	D51			
						Very stiff, dark brown slightly sandy slightly micaceous silty CLAY with occasional partings of light grey silty fine sand, off-white shell fragments (<18mm) and white flecks.	19.20	D52			
24/02/21	8.10	19.3			(1.50)	(THAMES GROUP: LONDON CLAY FORMATION - A3ii)	19.50		N37	22, 3 / 7, 8, 10, 12	
24/02/21	8.10	Dry				19.20 ... with occasional pockets of light and dark grey silty fine sand (<8mm) and rare off-white shell fragments (<4mm)	19.50-20.00	B53			
24/02/21	8.10	Dry	-11.04		20.00	19.30 - 19.60 ... with band of claystone					
						End of Borehole					

Issue:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	JM	AN	OS	09/04/2021 12:46

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Report ID: CONCEPT-CABLE PERCUSSION BOREHOLE || Project: 203521 ELLERAY HALL & NORTH LANE DEPOT.GPJ || Library: CONCEPT LIBRARY - 2021.GLB || Date: 9 April 2021

SPT Hammer Energy Test Report

In accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref:	AR779
Test Date:	11/06/2020
Report Date:	11/06/2020
File Name:	AR779.spt
Test Operator:	CM

Instrumented Rod Data

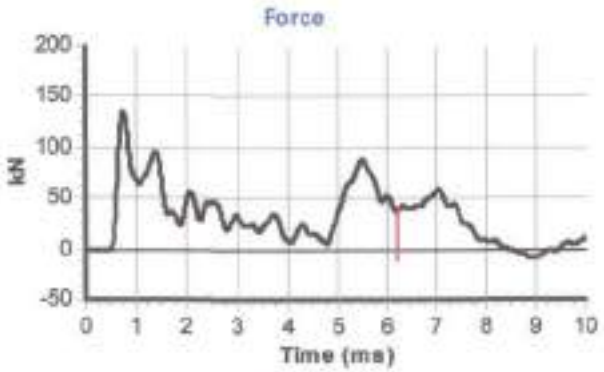
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	7080
Accelerometer No.2:	11609

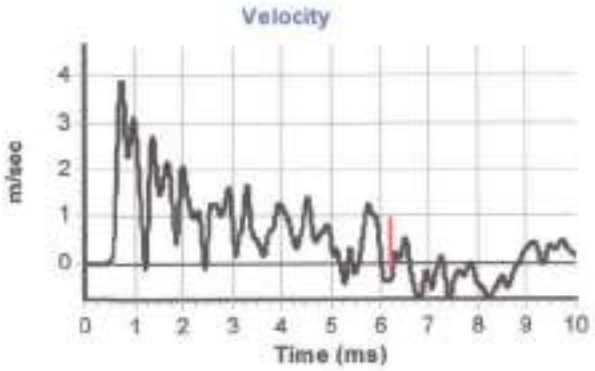
SPT Hammer Information

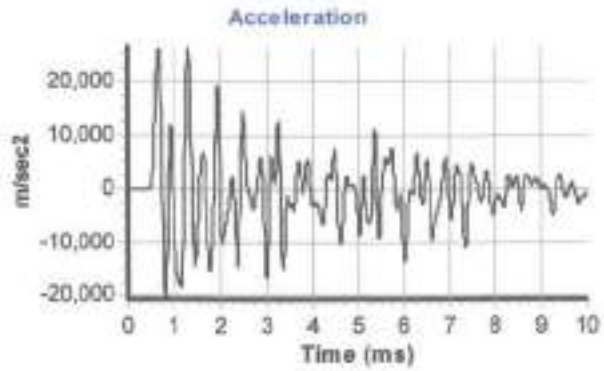
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

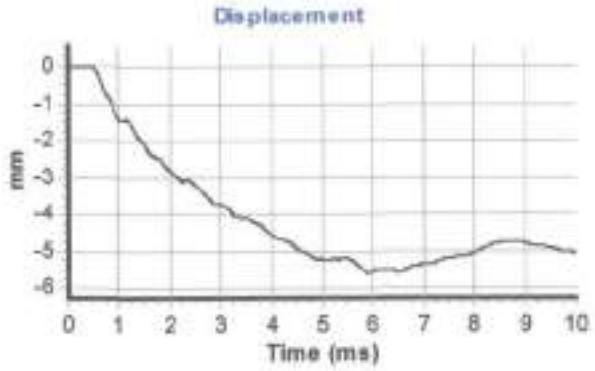
Comments / Location

CONCEPT ENGINEERING/71108









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	347

Energy Ratio E_r (%): 73

Signed: C.McCLUSKEY
Title: FITTER

The recommended calibration interval is 12 months

9. DYNAMIC SAMPLING BOREHOLE LOGS

CONCEPT
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Borehole No

WS1

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	26/02/21	8.87	E 515675.80 N 170903.02	2.00m
	Date Completed 26/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
26/02/21		Dry	8.77		0.10	Asphalt.	0.10-0.20	ES1		VOC 10ppm	
						(MADE GROUND)	0.10-0.20	B2			
					(0.20)						
			8.57		0.30	Dark grey sandy GRAVEL. Gravel comprises angular to subrounded fine to coarse flint and asphalt fragments. Sand is fine to coarse.	0.30-0.40	ES3		VOC 10.5ppm	
							0.30	B4			
					(0.25)						
			8.32		0.55	(MADE GROUND)	0.60-0.70	ES5		VOC 9.7ppm	
						Dark grey slightly gravelly slightly sandy CLAY with slight hydrocarbon odour and black staining. Gravel comprises angular to subrounded fine to coarse flint, brick and concrete fragments. Sand is fine to coarse.	0.60-0.70	B6			
					(0.25)						
			8.07		0.80		1.00-1.10	ES7		VOC 4.8ppm	
						(MADE GROUND)	1.00-1.10	B8			
26/02/21		Dry					1.20		N8	2, 2 / 2, 2, 2, 2	
						Greenish grey slightly gravelly sandy CLAY with occasional pockets of reddish brown silty fine sand (<25mm) and frequent dark grey staining. Gravel is angular to rounded fine to medium flint. Sand is fine to medium.	1.20-1.65	D9			
					(1.10)						
						(ALLUVIUM)					
			6.97		1.90	Firm, yellowish brown slightly gravelly sandy clayey SILT with frequent pockets of dark grey silty fine to medium sand and occasional pockets of greenish grey silty clay (<25mm). Gravel is subangular to rounded fine to medium flint.					
26/02/21	2.00	Dry	6.87		2.00	(ALLUVIUM)	2.00		N50/ 195 mm	9, 16 / 17, 22, 11	
						Medium dense to dense, orangish brown gravelly fine to medium SAND. Gravel is subangular to rounded fine to coarse flint. (KEMPTON PARK GRAVEL MEMBER)	2.00			... Borehole aborted at 2.00m depth (see Remarks)	
						End of Borehole					

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	100

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Ø50mm gas and groundwater monitoring pipe installed at 2.00m, slotted between 1.00m and 2.00m depth.
5. Borehole backfilled with pea shingle between 2.00m and 1.00m, and bentonite pellets between 1.00m and and 0.20m depth. Concrete with a stopcock cover installed from 0.20m to ground level.
6. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	JM	AN	OS	09/04/2021 12:49

AGS

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Borehole No

WS2

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	25/02/21	8.52	E 515656.41 N 170890.57	2.00m
	Date Completed 25/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
25/02/21		Dry	8.37		0.15	Soft, dark brown silty CLAY with frequent rootlets. (TOPSOIL)	0.00-0.15 0.10	B1 ES2		VOC 0.7ppm	
					(0.75)	Dark brown silty gravelly fine to coarse SAND with frequent roots. Gravel comprises subrounded to rounded fine to coarse flint, brick and ceramic fragments. (MADE GROUND) 0.35 ... with rare shell fragments and 1No leather fragment (<100mm)	0.30 0.30 0.60 0.60	ES3 B4 ES5 B6		VOC 0.5ppm VOC 0.4ppm	
			7.62		0.90						
25/02/21		Dry	7.04		(0.58) 1.48	Firm, orangish brown mottled light brown gravelly silty CLAY. Gravel comprises angular to subrounded fine to coarse flint and brick fragments. (MADE GROUND) 1.20 ... becoming slightly gravelly and sandy with occasional dark grey staining. Sand is fine to medium	1.00-1.20 1.00-1.20 1.20 1.20	ES7 B8 D9	N16	VOC 0.4ppm 2, 3 / 2, 2, 5, 7	
25/02/21	2.00	Dry	6.52		(0.52) 2.00	Medium dense to dense, oangish brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium flint. (KEMPTON PARK GRAVEL MEMBER) 1.60 - 1.70 ... becoming greyish brown and very gravelly	2.00		N25/ 100 mm	17, 8 /	
						End of Borehole	2.00			... Borehole aborted at 2.00m depth (see Remarks)	

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	100

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Ø50mm gas and groundwater monitoring pipe installed at 2.00m, slotted between 1.00m and 2.00m depth.
5. Borehole backfilled with pea shingle between 2.00m and 1.00m, and bentonite pellets between 1.00m and and 0.20m depth. Concrete with a stopcock cover installed from 0.20m to ground level.
6. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	DH/JM	AN	OS	09/04/2021 12:49

AGS

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Borehole No

WS3

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	26/02/21	8.78	E 515675.58 N 170888.52	2.00m
	Date Completed 26/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
26/02/21		Dry	8.68		0.10	Asphalt. (MADE GROUND)					
					(0.40)	Dark grey sandy GRAVEL with slight hydrocarbon odour. Gravel comprises angular to subrounded fine to coarse flint, brick and concrete fragments. Sand is fine to coarse. (MADE GROUND)	0.25 0.25	ES1 B2		VOC 12.6ppm	
			8.28		0.50		0.60 0.60	ES3 B4		VOC 11.5ppm	
					(0.30)	Dark greyish brown very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint. (MADE GROUND)	1.00 1.00	ES5 B6		VOC 13ppm VOC 12.7ppm	
			7.98		0.80		1.10	ES7			
26/02/21		Dry			(0.70)	Stiff, greyish brown slightly gravelly slightly sandy CLAY with frequent pockets of yellowish brown silt (<30mm) and dark grey silty fine sand (<25mm). Gravel is subangular to subrounded fine to medium flint. (ALLUVIUM)	1.20 1.20-1.65 1.20	D8 B9	N30	1, 3 / 4, 6, 10, 10	
			7.28		1.50	1.00 ... becoming orangish brown and sandy with frequent pockets of greenish grey clay (<30mm)					
					(0.50)	Medium dense to dense, greyish brown slightly clayey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse flint. (KEMPTON PARK GRAVEL MEMBER) 1.65 ... becoming yellowish brown 1.85 ... becoming reddish brown					
26/02/21	2.00	Dry	6.78		2.00	End of Borehole	2.00		N50/ 150 mm	12, 13 / 24, 26	
							2.00			... Borehole aborted at 2.00m depth (see Remarks)	

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	100

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Borehole backfilled with bentonite pellets upon completion.
5. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	JM	AN	OS	09/04/2021 12:49

AGS

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Borehole No

WS4

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	25/02/21	8.74	E 515667.17 N 170880.60	2.00m
	Date Completed 25/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
25/02/21		Dry	8.64		0.10	Asphalt.	0.10-0.20	ES1		VOC 0.8ppm	
						(MADE GROUND)	0.10-0.20	B2			
					(0.40)	Blackish grey sandy GRAVEL with slight hydrocarbon odour. Gravel comprises angular to subangular fine to coarse flint, brick, clinker and asphalt fragments. Sand is fine to coarse.	0.30	ES3		VOC 0.6ppm	
							0.30	B4			
			8.24		0.50	(MADE GROUND)	0.60	ES5		VOC 0.5ppm	
					(0.20)		0.60	B6			
			8.04		0.70	0.25 ... becoming brown and very sandy					
					(0.64)	Greyish brown silty gravelly fine to coarse SAND. Gravel comprises subangular to subrounded fine to coarse flint and brick fragments. (MADE GROUND)	1.00-1.20	ES7		VOC 0.4ppm	
							1.00-1.20	B8			
25/02/21		Dry					1.20		N17/ 225 mm	2, 4 / 5, 5, 7	
			7.40		1.34	Firm, orangish brown mottled light grey slightly gravelly sandy SILT. Gravel comprises angular to subrounded fine to coarse flint and brick fragments. Sand is fine to coarse. (MADE GROUND)	1.20-1.65	D9			
					(0.46)						
			6.94		1.80	Medium dense, yellowish brown silty gravelly fine to medium SAND. Gravel is angular to subrounded fine to coarse flint. (KEMPTON PARK GRAVEL MEMBER)					
25/02/21	2.00	Dry	6.74		(0.20) 2.00		2.00		N50/ 150 mm	16, 9 / 25, 25	
						Medium dense to dense, orangish brown slightly clayey sandy angular to rounded fine to coarse flint GRAVEL. Sand is fine to coarse. (KEMPTON PARK GRAVEL MEMBER)	2.00			... Borehole aborted at 2.00m depth (see Remarks)	
						End of Borehole					

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	100

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Borehole backfilled with bentonite pellets upon completion.
5. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue: FINAL	Driller: DN	Logger: DH	CHD: AN	APRV: OS	Log Print Date & Time: 09/04/2021 12:49	AGS

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Borehole No

WS5

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	26/02/21	9.01	E 515678.06 N 170872.74	2.00m
	Date Completed 26/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
26/02/21		Dry	8.95		0.06	Asphalt.					
			8.81		0.20	(MADE GROUND) Light grey CONCRETE.	0.25	ES1		VOC 115.8ppm	
						Dark brownish grey sandy GRAVEL with strong hydrocarbon odour. Gravel comprises angular to subrounded fine to coarse flint and concrete fragments. Sand is fine to coarse.	0.25 0.40	B2 ES3		VOC 40.8ppm	
					(0.55)		0.40	B4			
			8.26		0.75	(MADE GROUND)	0.70 0.70	ES5 B6		VOC 32.6ppm	
						0.20 - 0.22 ... with pockets of black tar substance 0.50 ... becoming greyish brown and clayey. Gravel comprises subangular to subrounded fine to coarse flint, brick and concrete fragments	1.00 1.00-1.20	ES7 B8		VOC 20.7ppm	
26/02/21		Dry			(0.95)		1.20 1.20-1.65	D9	N16	1, 2 / 2, 4, 5, 5	
						Orangish brown slightly gravelly sandy CLAY with occasional dark grey staining. Gravel comprises angular to rounded fine to coarse flint and brick fragments. Sand is fine to medium.	1.40-1.60	ES10		VOC 0.3ppm	
			7.31		1.70	(MADE GROUND)					
					(0.30)	Medium dense to dense, yellowish brown slightly silty slightly gravelly fine to medium SAND. Gravel is subangular to rounded fine to medium flint. (KEMPTON PARK GRAVEL MEMBER) 1.78 - 1.85 ... becoming gravelly					
26/02/21	2.00	Dry	7.01		2.00	End of Borehole	2.00		N50/ 135 mm	8, 17 / 23, 27	
							2.00			... Borehole aborted at 2.00m depth (see Remarks)	

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	90

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Borehole backfilled with bentonite pellets upon completion.
5. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	JM	AN	OS	09/04/2021 12:49

AGS

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Borehole No

WS6

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	25/02/21	8.91	E 515719.98 N 170872.86	2.00m
	Date Completed 25/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
25/02/21		Dry	8.81		0.10	Asphalt. (MADE GROUND)	0.10-0.20 0.10-0.20	ES1 B2		VOC 7.2ppm	
			8.56		(0.25) 0.35	Brown sandy GRAVEL with high flint, brick and concrete cobble content. Gravel comprises angular to subrounded fine to coarse flint, brick and concrete fragments. Sand is fine to coarse. (MADE GROUND)	0.30 0.30	ES3 B4		VOC 6.1ppm	
			8.11		(0.45) 0.80	Greyish brown slightly gravelly sandy silty CLAY with rare pockets of orangish brown silt (<15mm). Gravel comprises angular to subrounded fine to coarse flint and brick fragments. (MADE GROUND)	0.60 0.60	ES5 B6		VOC 4.1ppm	
25/02/21		Dry					0.90-1.00 0.90-1.00	ES7 B8		VOC 9.2ppm	
			7.01		(1.10) 1.90	Firm, orangish brown slightly gravelly sandy clayey SILT with frequent dark grey staining. Gravel is angular to subrounded fine to medium flint. (ALLUVIUM) 1.50 ... with occasional pockets of yellowish brown silty fine to medium sand (<25mm)	1.20 1.20 1.20-1.65	B10 D9	N9	1, 2 / 2, 2, 2, 3	
25/02/21	2.00	Dry	6.91		2.00	Very dense to dense, brown clayey sandy subangular to rounded fine to coarse flint GRAVEL. (KEMPTON PARK GRAVEL MEMBER)	2.00		N50/ 245 mm	4, 4 / 11, 14, 18, 7	
						End of Borehole	2.00			... Borehole aborted at 2.00m depth (see Remarks)	

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	75

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Ø50mm gas and groundwater monitoring pipe installed at 2.00m, slotted between 1.00m and 2.00m depth.
5. Borehole backfilled with pea shingle between 2.00m and 1.00m, and bentonite pellets between 1.00m and and 0.20m depth. Concrete with a stopcock cover installed from 0.20m to ground level.
6. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	JM	AN	OS	09/04/2021 12:49

AGS

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Borehole No

WS7

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	Date Completed 24/02/21	8.98	E 515697.50 N 170866.14	2.00m

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
24/02/21		Dry	8.88		0.10	Asphalt.	0.10-0.30	ES1		VOC 17.8ppm	
						(MADE GROUND)	0.10-0.30	B2			
					(0.30)	Dark grey sandy angular to subrounded fine to medium flint GRAVEL. Sand is fine to coarse.	0.30	ES3		VOC 6.5ppm	
			8.58		0.40	(MADE GROUND)	0.30	B4			
						0.20 ... becoming light brown and slightly clayey	0.60	ES5		VOC 6.1ppm	
					(0.50)		0.60	B6			
						Greyish brown slightly gravelly slightly sandy clayey SILT with low flint and brick cobble content and occasional roots. Gravel comprises angular to rounded fine to coarse flint, brick and concrete fragments.	0.90	ES7		VOC 6.8ppm	
			8.08		0.90		0.90	B8			
24/02/21		Dry				(MADE GROUND)	1.20		N10	1, 2 / 2, 2, 3, 3	
							1.20	B10			
					(0.85)	Firm, orangish brown mottled greenish grey slightly gravelly sandy clayey SILT with occasional pockets of reddish brown silty fine sand (<25mm), frequent roots and occasional dark grey staining. Gravel is angular to subangular fine to medium flint.	1.20-1.65	D9			
							1.40-1.70	ES11		VOC 7.7ppm	
			7.23		1.75	(ALLUVIUM)					
					(0.25)	1.40 ... with occasional pockets of greyish brown and yellowish brown fine sandy clay (<25mm)					
24/02/21	2.00	Dry	6.98		2.00		2.00		N50/ 240 mm	7, 8 / 10, 14, 22, 4	
						Very dense, brown slightly silty gravelly fine to medium SAND. Gravel is subangular to rounded fine to medium flint.	2.00			... Borehole aborted at 2.00m depth (see Remarks)	
						(KEMPTON PARK GRAVEL MEMBER)					
						1.80 - 1.90 ... becoming slightly gravelly					
						End of Borehole					

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	100

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Borehole backfilled with bentonite pellets upon completion.
5. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	DH/JM	AN	OS	09/04/2021 12:49

AGS

CONCEPT
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Borehole No

WS8

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	24/02/21	8.94	E 515704.96 N 170856.83	2.00m
	Date Completed 24/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
24/02/21		Dry	8.84		0.10	Asphalt. (MADE GROUND)	0.10-0.20 0.10-0.20	ES1 B2		VOC 4.9ppm	
					(0.50)	Dark brown slightly gravelly slightly sandy clayey SILT. Gravel comprises angular to rounded fine to coarse flint, brick and concrete fragments. Sand is fine to medium.	0.30-0.40 0.30-0.40	ES3 B4		VOC 5.4ppm	
			8.34		0.60	(MADE GROUND)	0.60-0.70 0.60-0.70	ES5 B6		VOC 7.9ppm	
					(0.40)	Greyish brown mottled orangish brown slightly gravelly slightly sandy silty CLAY with frequent dark grey staining.	0.90-1.00 0.90-1.00	ES7 B8		VOC 7.7ppm	
			7.94		1.00	Gravel is angular to subrounded fine to coarse flint. (ALLUVIUM)					
24/02/21		Dry				0.70 ... becoming orangish brown	1.20 1.20-1.30 1.20-1.65	B10 D9	N34	1, 2 / 2, 12, 10, 10	
					(0.55)	Stiff to very stiff, orangish brown slightly gravelly sandy clayey SILT with occasional pockets of reddish brown silty fine sand (<25mm), frequent dark grey staining and 1No flint cobble. Gravel is subangular to rounded fine to medium flint. (ALLUVIUM)					
			7.39		1.55						
					(0.25)						
			7.14		1.80						
24/02/21	2.00	Dry	6.94		(0.20) 2.00	Dense, brown silty sandy angular to subrounded fine to medium flint GRAVEL. Sand is fine to coarse. (KEMPTON PARK GRAVEL MEMBER)	2.00		N50/ 210 mm	9, 13 / 16, 16, 18	
						Very dense, orangish brown slightly gravelly silty fine to medium SAND. Gravel is subangular to rounded fine to coarse flint. (KEMPTON PARK GRAVEL MEMBER) 1.95 ... becoming gravelly	2.00			... Borehole aborted at 2.00m depth (see Remarks)	
						End of Borehole					

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	95

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Borehole backfilled with bentonite pellets upon completion.
5. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue: FINAL	Driller: DN	Logger: JM	CHD: AN	APRV: OS	Log Print Date & Time: 09/04/2021 12:49	AGS

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Borehole No

WS9

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	24/02/21	9.00	E 515711.76 N 170835.53	2.00m
	Date Completed 24/02/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
24/02/21		Dry	8.90		0.10	Paving slabs (0.04m) over light yellowish brown slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to medium flint. (MADE GROUND)	0.10 0.10	ES1 B2		VOC 11.6ppm	
					(0.55)	Dark brown gravelly sandy silty CLAY. Gravel comprises angular to subrounded fine to coarse flint, brick, concrete and ceramic fragments. (MADE GROUND)	0.40 0.40	ES3 B4		VOC 20.2ppm	
			8.35		0.65		0.60 0.60	ES5 B6		VOC 27.6ppm	
					(0.35)	Dark greyish brown mottled orangish brown slightly gravelly sandy silty CLAY with frequent dark grey staining. Gravel comprises angular to subrounded fine to coarse flint, brick and concrete fragments. Sand is fine to coarse. (MADE GROUND) 0.80 ... becoming orangish brown with frequent pockets of dark grey silt (<30mm)	0.90 0.90	ES7 B8		VOC 19.4ppm	
			8.00		1.00						
24/02/21		Dry			(0.65)		1.20 1.20-1.65	D9	N18	1, 1 / 1, 3, 7, 7	
							1.40-1.70	ES10		VOC 4.5ppm	
			7.35		1.65						
					(0.35)	Orangish brown slightly gravelly sandy clayey SILT with occasional dark grey staining. Gravel is angular to subrounded fine to coarse flint. Sand is fine to medium. (ALLUVIUM) 1.50 ... becoming gravelly					
24/02/21	2.00	Dry	7.00		2.00		2.00		N50/ 180 mm	12, 16 / 18, 20, 12	
							2.00			... Borehole aborted at 2.00m depth (see Remarks)	
						Very dense, brown silty sandy angular to subrounded fine to medium flint GRAVEL. Sand is fine to coarse. (KEMPTON PARK GRAVEL MEMBER)					
						End of Borehole					

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	100

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Borehole backfilled with bentonite pellets upon completion.
5. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	JM	AN	OS	09/04/2021 12:49

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Borehole No

WS10

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	Date Completed 24/02/21	9.09	E 515703.65 N 170828.35	2.00m

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Dynamic Sampling	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
24/02/21		Dry	8.99		0.10	Grass over dark brown slightly gravelly clayey fine to medium SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse flint. (MADE GROUND)	0.10-0.20 0.10	ES1 B2		VOC 5.4ppm	
					(0.65)	Dark brown gravelly sandy silty CLAY. Gravel comprises angular to subrounded fine to coarse flint, brick, concrete and ceramic fragments. (MADE GROUND)	0.30 0.30	ES3 B4		VOC 8.4ppm	
			8.34		0.75	0.30 ... with 1No glass fragment (<10mm)	0.60 0.60	ES5 B6		VOC 6.8ppm	
24/02/21		Dry			(1.05)	Firm to stiff, orangish brown slightly gravelly sandy clayey SILT with frequent dark grey staining and occasional roots. Gravel is subangular to subrounded fine to coarse flint. (ALLUVIUM) 1.40 ... with occasional pockets of greyish brown and yellowish brown fine sandy clay (<25mm)	0.90 0.90 1.20 1.20 1.20-1.65	ES7 B8 B10 D9	N15	VOC 6.7ppm 1, 3 / 2, 2, 3, 8	
			7.29		1.80						
24/02/21	2.00	Dry	7.09		(0.20) 2.00	Very dense, brown slightly silty gravelly fine to coarse SAND. Gravel is angular to rounded fine to medium flint. (KEMPTON PARK GRAVEL MEMBER) 1.90 ... becoming slightly gravelly. Sand becoming fine to medium	2.00 2.00		N50/ 165 mm	7, 18 / 21, 22, 7 ... Borehole aborted at 2.00m depth (see Remarks)	
						End of Borehole					

DYNAMIC SAMPLING RECOVERY

From	To	Diameter (mm)	Recovery (%)
1.20	2.00	87	75

GENERAL REMARKS

1. An inspection pit was hand excavated to 1.20m depth prior to boring commencing.
2. Ø110mm casing used from ground level to 2.00m depth.
3. Borehole aborted at 2.00 depth due to refusal.
4. Ø50mm gas and groundwater monitoring pipe installed at 2.00m, slotted between 1.00m and 2.00m depth.
5. Borehole backfilled with pea shingle between 2.00m and 1.00m, and bentonite pellets between 1.00m and and 0.20m depth. Concrete with a stopcock cover installed from 0.20m to ground level.
6. SPT Hammer: 0037

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	JM	AN	OS	09/04/2021 12:49

AGS

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwood Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref: 0037
Test Date: 12/02/2021
Report Date: 12/02/2021
File Name: 0037.spt
Test Operator: NPB

Instrumented Rod Data

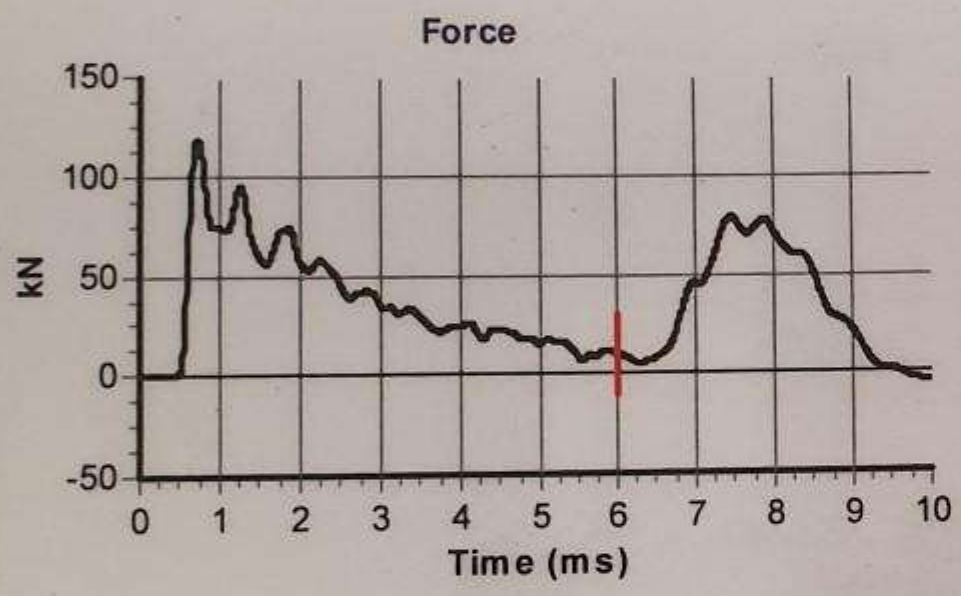
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.3
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 6458
Accelerometer No.2: 9607

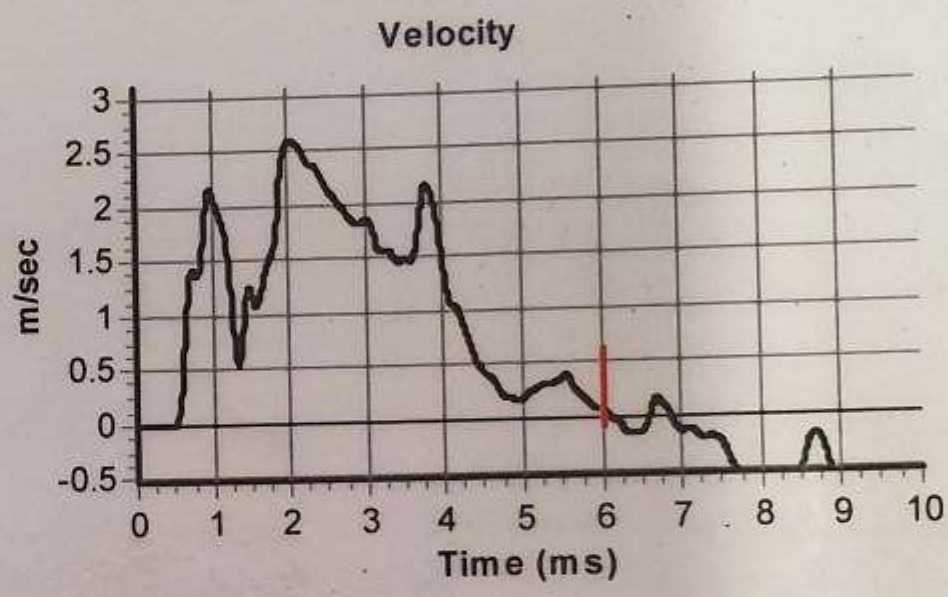
SPT Hammer Information

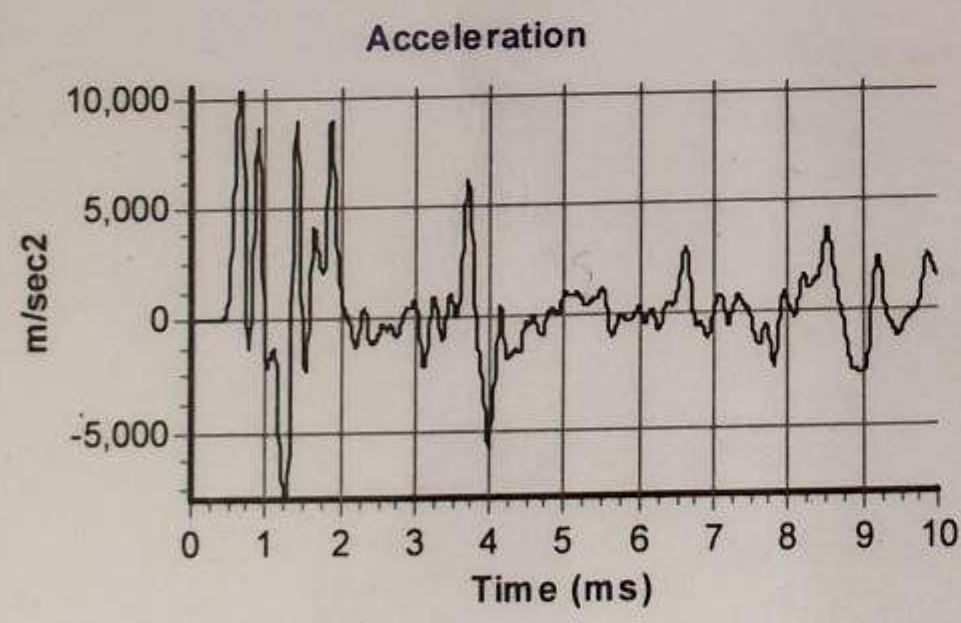
Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 14.5

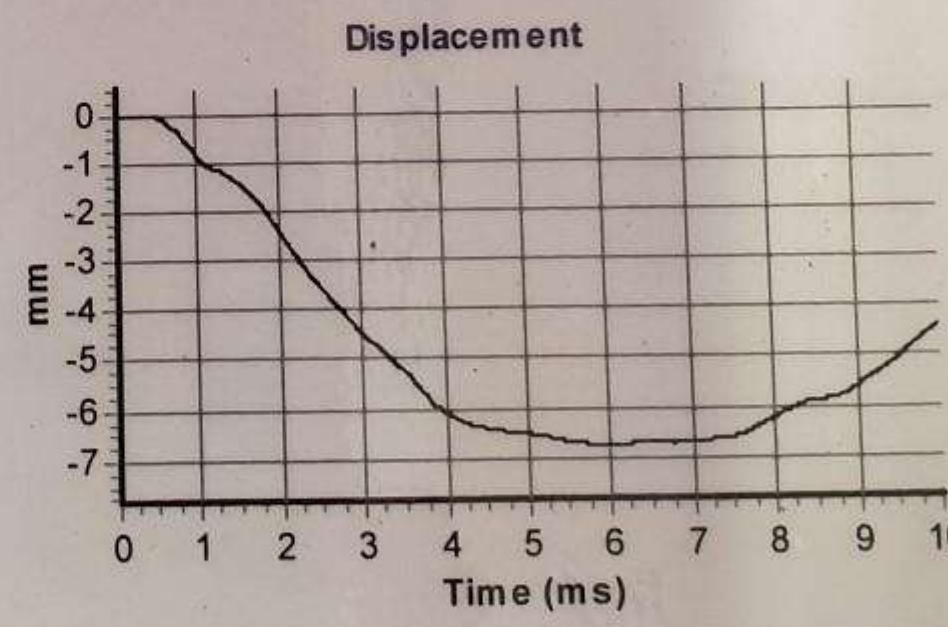
Comments / Location

CHARLWOODS









Calculations

Area of Rod A (mm2): 944
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 278

Energy Ratio E_r (%): 59

Signed: S Simmonds
Title: Field Operations Tech

The recommended calibration interval is 12 months

10. TRIAL TRENCH LOGS

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Trial Pit No

STP1

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	25/02/21	9.00	E 515682.35 N 170882.26	2.60m
	Date Completed 03/03/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Machine Excavated	1 of 1

Water	Level (mOD)	Legend	Depth (Thickness)	Stata Description	Depth	Type No	Test Result	Field Records
				STRATA	**SAMPLES & TESTS**			
	8.75		(0.25) 0.25	Asphalt (0.03m) over dark brown and dark grey sandy GRAVEL with a moderate hydrocarbon odour. Gravel is angular to subangular fine to coarse flint. Sand is fine to coarse. (MADE GROUND)	0.10 0.15	ES1		VOC 30.3ppm ... Concrete encountered on the NE side of the pit between 0.15m and 0.25m
	8.60		(0.15) 0.40	Greyish brown slightly silty sandy GRAVEL. Gravel comprises angular to subrounded fine to coarse flint, brick and concrete fragments. Sand is fine to coarse. (MADE GROUND)	0.25 0.25	ES2 B3		VOC 1ppm
	8.10		(0.50) 0.90	Brown slightly gravelly clayey silty fine to coarse SAND with occasional pockets of orangish brown clayey silt (<50mm) and shell fragments (<30mm). Gravel comprises angular to subrounded fine to coarse flint, brick, coal, glass, bone and ceramic fragments. (MADE GROUND)	0.70 0.70	ES4 B5		VOC 0.8ppm
	7.60		(0.50) 1.40	Firm, orangish brown mottled greyish brown slightly gravelly slightly sandy silty CLAY with occasional dark brown staining. Gravel comprises subangular to subrounded fine to coarse brick and glass fragments. (MADE GROUND)	1.30	B6		
	7.00		(0.60) 2.00	Yellowish brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to subrounded fin to coarse flint. (KEMPTON PARK GRAVEL MEMBER)	1.60	B7		
	6.40		(0.60) 2.60	Yellowish brown sandy subangular to rounded fine to coarse flint GRAVEL. Sand is fine to coarse. (KEMPTON PARK GRAVEL MEMBER)	2.30	B8		
				End of Trial Pit				

GENERAL REMARKS

1. Weather was cloudy.
2. Pit was dry and unstable.
3. Pit dimensions: 2.50m x 0.35m x 2.60m deep.
4. Ø50mm slottled standpipe was installed to 2.60m depth to facilitate infiltration testing with pea shingle backfill between 2.60m and 1.20m depth. Pipe removed after testing.
5. Pit was backfilled with pea shingle between 2.60m and 1.20m depth and soil arisings between 1.20m and ground level after testing.

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	DH	AN	OS	09/04/2021 12:48

AGS

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Trial Pit No

STP2

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	25/02/21	8.66	E 515664.87 N 170888.10	2.50m
	Date Completed 02/03/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Machine Excavated	1 of 1

Water	Level (mOD)	Legend	Depth (Thickness)	Stata Description	Depth	Type No	Test Result	Field Records
				STRATA	**SAMPLES & TESTS**			
	8.56		0.10	Brown sandy silty CLAY with frequent rootlets. (TOPSOIL)	0.00			
					0.10	ES1		... Asphalt encounted on the Eastern side of the pit between GL and 0.10m
			(0.20)	Dark brown and dark grey sandy GRAVEL with frequent rootlets and slight hydrocarbon odour. Gravel comprises angular to subrounded fine to coarse flint, brick and asphalt fragments. Sand is fine to coarse. (MADE GROUND)	0.10	B2		VOC 1.5ppm
	8.36		0.30	0.20 ... becoming orangish brown				
					0.40	ES3		VOC 2ppm
			(0.30)	Dark grey slightly gravelly sandy silty fine to coarse SAND with frequent orange and black staining. Gravel comprises angular to rounded fine to coarse flint and brick fragments. (MADE GROUND)	0.40	B4		
	8.06		0.60					
					0.70			VOC 0.8ppm
			(0.40)	Orangish brown clayey sandy GRAVEL with occasional roots. Gravel comprises subangular to subrounded fine to coarse flint, brick, glass and ceramic pipe fragments. Sand is fine to coarse. (MADE GROUND)	0.70	ES5		... 2No Ø150-200mm clay pipes infilled with clay and roots encountered running diagonally at 0.70m depth
					0.70	B6		
	7.66		1.00					
				Firm, orangish brown mottled light grey slightly gravelly sandy clayey SILT. Gravel is subangular to rounded fine to coarse flint. Sand is fine to coarse. (ALLUVIUM)	1.20	B7		
			(0.80)					
	6.86		1.80					
					1.80			... Pit collapsing at 1.80m depth
				Brownish orange sandy subangular to rounded fine to coarse flint GRAVEL. Sand is fine to coarse. (KEMPTON PARK GRAVEL MEMBER)	2.00	B8		
			(0.70)					
	6.16		2.50					
				End of Trial Pit	2.50	B9		

GENERAL REMARKS

1. Weather was cloudy.
2. Pit was dry and unstable.
3. Pit dimensions: 2.50m x 0.35m x 2.50m deep.
4. Ø50mm slottled standpipe was installed to 2.50m depth to facilitate infiltration testing with pea shingle backfill between 2.50m and 1.40m depth. Pipe removed after testing.
5. Pit was backfilled with pea shingle between 2.50m and 1.40m depth and soil arisings between 1.40m and ground level after testing.

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	DH	AN	OS	09/04/2021 12:48

AGS

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Trial Pit No

STP3

Project

Elleray Hall & North Lane Depot/East Car Park

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
20/3521	25/02/21	8.93	E 515700.13 N 170858.01	2.70m
	Date Completed 03/03/21			

Client	Method/ Plant Used	Sheet
Richmond & Wandsworth Council	Machine Excavated	1 of 1

Water	Level (mOD)	Legend	Depth (Thickness)	Stata Description	Depth	Type No	Test Result	Field Records
			(0.50)	Asphalt (0.08m) over dark brown and dark grey silty gravelly fine to coarse SAND with rare shell fragments (<2mm). Gravel comprises angular to subrounded fine to coarse flint, brick, glass and ceramic fragments. (MADE GROUND)	0.20 0.20	ES1 B2		VOC 0.6ppm
	8.43		0.50		0.50	ES3		VOC 0.5ppm
			(0.50)	Soft to firm, dark brown slightly gravelly slighty sandy silty CLAY with occasional pockets of brown fine to medium sand (<40mm). Gravel comprises angular to subrounded fine to coarse flint and brick fragments. (MADE GROUND)	0.50	B4		
	7.93		1.00		1.00-1.10 1.00-1.10	ES5 B6		VOC 0.6ppm
			(1.20)	Yellowish brown slightly gravelly silty fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint. (KEMPTON PARK GRAVEL MEMBER)	1.50	B7		
				1.50 ... with occasional pockets of light grey sandy clayey silt (<300mm)	2.00	B8		
	6.73		2.20	2.00 ... becoming slightly silty and gravelly				
			(0.50)	Yellowish brown very sandy subangular to rounded fine to coarse flint GRAVEL. Sand is fine to coarse. (KEMPTON PARK GRAVEL MEMBER)	2.50	B9		
	6.23		2.70					
				End of Trial Pit				

GENERAL REMARKS

1. Weather was cloudy.
2. Pit was dry and unstable.
3. Pit dimensions: 2.30m x 0.35m x 2.70m deep.
4. Ø50mm slottled standpipe was installed to 2.70m depth to facilitate infiltration testing with pea shingle backfill between 2.70m and 1.20m and gravelly sand arisings from 1.20m to 0.80m depth. Pipe removed after testing.
5. Pit was backfilled with pea shingle between 2.70m and 1.20m depth and soil arisings between 0.80m and ground level after testing.

Issue:	Driller:	Logger:	CHD:	APRV:	Log Print Date & Time:
FINAL	DN	DH	AN	OS	09/04/2021 12:48

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11. DYNAMIC CONE PENETROMETER (DCP) RESULTS

UK DCP V3.1

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.001	Surface Type:	Thin bituminous seal
Direction:	WS1	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	150	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	

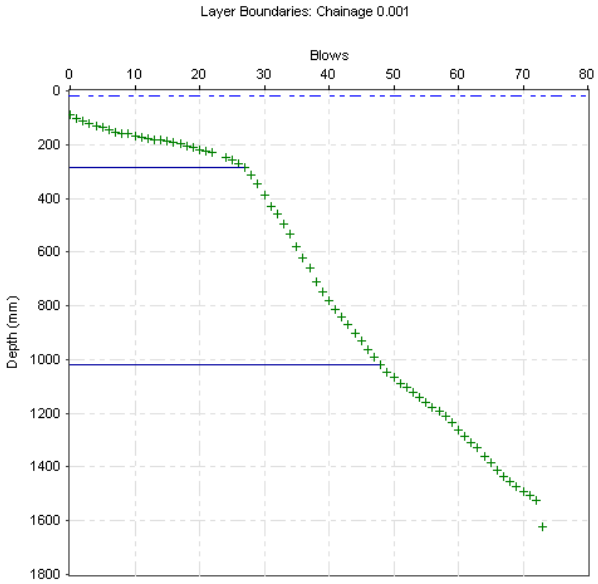
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	240	0.00	26	1	26	419	13.00
2	1	1	255	15.00	27	1	27	436	17.00
3	1	2	264	9.00	28	1	28	463	27.00
4	1	3	273	9.00	29	1	29	495	32.00
5	1	4	279	6.00	30	1	30	539	44.00
6	1	5	285	6.00	31	1	31	579	40.00
7	1	6	294	9.00	32	1	32	610	31.00
8	1	7	302	8.00	33	1	33	645	35.00
9	1	8	308	6.00	34	1	34	685	40.00
10	1	9	311	3.00	35	1	35	730	45.00
11	1	10	318	7.00	36	1	36	770	40.00
12	1	11	323	5.00	37	1	37	810	40.00
13	1	12	328	5.00	38	0	37	20	--
14	1	13	330	2.00	39	1	38	70	50.00
15	1	14	333	3.00	40	1	39	109	39.00
16	1	15	338	5.00	41	1	40	142	33.00
17	1	16	343	5.00	42	1	41	173	31.00
18	1	17	347	4.00	43	1	42	201	28.00
19	1	18	355	8.00	44	1	43	230	29.00
20	1	19	361	6.00	45	1	44	261	31.00
21	1	20	369	8.00	46	1	45	289	28.00
22	1	21	376	7.00	47	1	46	321	32.00
23	1	22	381	5.00	48	1	47	352	31.00
24	2	24	396	7.50	49	1	48	381	29.00
25	1	25	406	10.00	50	1	49	405	24.00
51	1	50	428	23.00					
52	1	51	449	21.00					
53	1	52	465	16.00					
54	1	53	484	19.00					
55	1	54	502	18.00					
56	1	55	520	18.00					
57	1	56	536	16.00					
58	1	57	551	15.00					
59	1	58	571	20.00					
60	1	59	595	24.00					
61	1	60	620	25.00					
62	1	61	645	25.00					
63	1	62	669	24.00					
64	1	63	690	21.00					
65	1	64	720	30.00					
66	1	65	746	26.00					
67	1	66	774	28.00					
68	1	67	797	23.00					
69	1	68	816	19.00					
70	1	69	835	19.00					
71	1	70	851	16.00					
72	1	71	867	16.00					
73	1	72	883	16.00					
74	1	73	983	100.00					

Point 38 Extension Rod Added

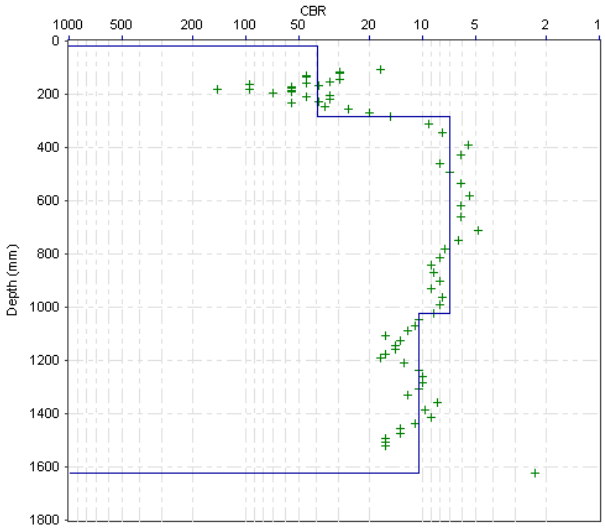
DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.001	Surface Type:	Thin bituminous seal
Direction:	WS1	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	150	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	6.92	39	266	286
2	35.00	7	735	1021
3	24.08	10	602	1623

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.002	Surface Type:	Thin bituminous seal
Direction:	WS2	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	0	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	

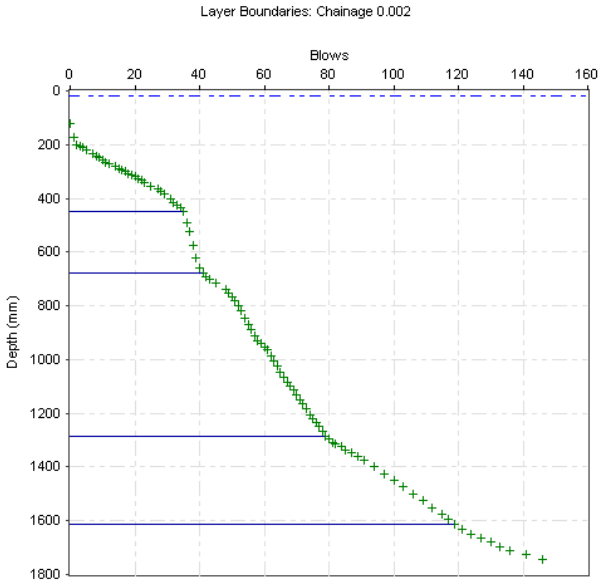
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	120	0.00	26	1	29	385	10.00
2	1	1	175	55.00	27	2	31	400	7.50
3	1	2	200	25.00	28	1	32	415	15.00
4	1	3	205	5.00	29	1	33	425	10.00
5	1	4	210	5.00	30	1	34	435	10.00
6	1	5	220	10.00	31	1	35	450	15.00
7	2	7	235	7.50	32	1	36	490	40.00
8	1	8	245	10.00	33	1	37	525	35.00
9	1	9	250	5.00	34	1	38	575	50.00
10	1	10	255	5.00	35	1	39	620	45.00
11	1	11	265	10.00	36	1	40	660	40.00
12	1	12	270	5.00	37	1	41	680	20.00
13	2	14	280	5.00	38	1	42	690	10.00
14	1	15	290	10.00	39	1	43	700	10.00
15	1	16	295	5.00	40	2	45	715	7.50
16	1	17	300	5.00	41	3	48	740	8.33
17	1	18	310	10.00	42	1	49	755	15.00
18	1	19	315	5.00	43	1	50	765	10.00
19	1	20	320	5.00	44	1	51	780	15.00
20	1	21	325	5.00	45	1	52	800	20.00
21	1	22	330	5.00	46	1	53	820	20.00
22	1	23	340	10.00	47	1	54	845	25.00
23	2	25	355	7.50	48	1	55	870	25.00
24	2	27	365	5.00	49	0	55	65	--
25	1	28	375	10.00	50	1	56	85	20.00
51	1	57	105	20.00	76	1	82	510	5.00
52	1	58	125	20.00	77	2	84	520	5.00
53	1	59	135	10.00	78	1	85	530	10.00
54	1	60	150	15.00	79	2	87	540	5.00
55	1	61	160	10.00	80	2	89	555	7.50
56	1	62	180	20.00	81	2	91	570	7.50
57	1	63	200	20.00	82	3	94	595	8.33
58	1	64	220	20.00	83	3	97	620	8.33
59	1	65	240	20.00	84	3	100	645	8.33
60	1	66	260	20.00	85	3	103	670	8.33
61	1	67	280	20.00	86	3	106	695	8.33
62	1	68	295	15.00	87	3	109	720	8.33
63	1	69	310	15.00	88	3	112	745	8.33
64	1	70	325	15.00	89	3	115	770	8.33
65	1	71	345	20.00	90	2	117	790	10.00
66	1	72	360	15.00	91	2	119	810	10.00
67	1	73	380	20.00	92	2	121	825	7.50
68	1	74	400	20.00	93	3	124	845	6.67
69	1	75	415	15.00	94	3	127	860	5.00
70	1	76	430	15.00	95	3	130	875	5.00
71	1	77	445	15.00	96	3	133	890	5.00
72	1	78	460	15.00	97	3	136	905	5.00
73	1	79	480	20.00	98	5	141	920	3.00
74	1	80	490	10.00	99	5	146	940	4.00
75	1	81	505	15.00					

Point 49 Extension Rod Added

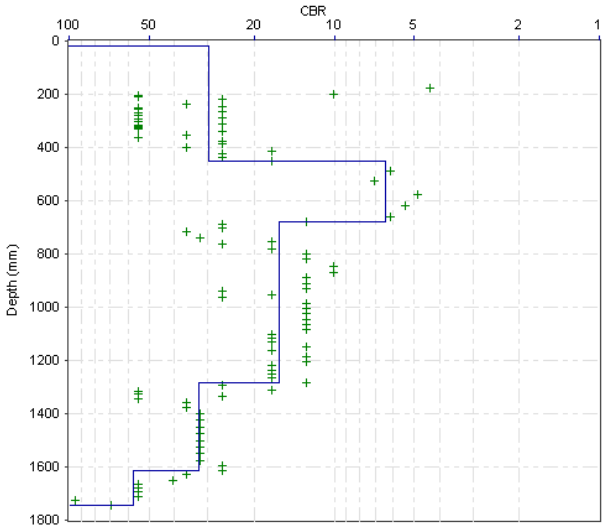
DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.002	Surface Type:	Thin bituminous seal
Direction:	WS2	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	0	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	8.95	30	430	450
2	38.33	6	230	680
3	15.92	16	605	1285
4	8.25	32	330	1615
5	4.81	57	130	1745

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.003	Surface Type:	Thin bituminous seal
Direction:	WS3	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	200	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	

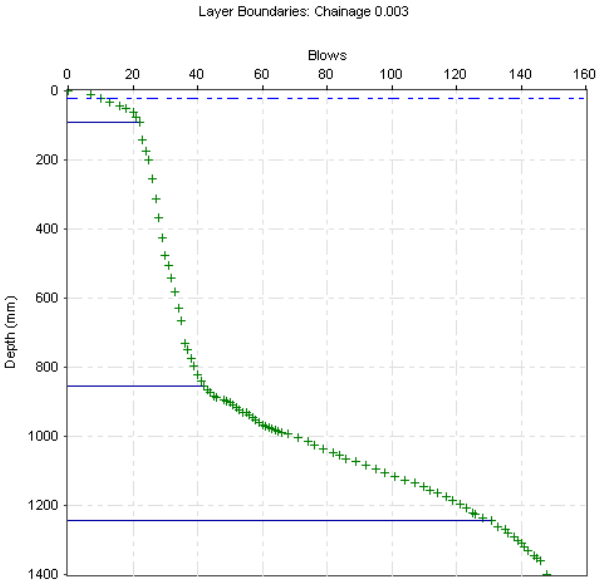
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	200	0.00	26	1	38	130	25.00
2	7	7	210	1.43	27	1	39	150	20.00
3	3	10	220	3.33	28	1	40	175	25.00
4	3	13	234	4.67	29	1	41	196	21.00
5	3	16	245	3.67	30	1	42	210	14.00
6	2	18	251	3.00	31	1	43	221	11.00
7	2	20	262	5.50	32	1	44	229	8.00
8	1	21	275	13.00	33	1	45	237	8.00
9	1	22	291	16.00	34	1	46	244	7.00
10	1	23	340	49.00	35	2	48	249	2.50
11	1	24	376	36.00	36	1	49	253	4.00
12	1	25	400	24.00	37	1	50	257	4.00
13	1	26	453	53.00	38	1	51	265	8.00
14	1	27	512	59.00	39	1	52	272	7.00
15	1	28	569	57.00	40	1	53	280	8.00
16	1	29	625	56.00	41	1	54	287	7.00
17	1	30	675	50.00	42	1	55	287	0.00
18	1	31	705	30.00	43	1	56	292	5.00
19	1	32	740	35.00	44	1	57	300	8.00
20	1	33	783	43.00	45	1	58	309	9.00
21	1	34	830	47.00	46	1	59	316	7.00
22	1	35	865	35.00	47	1	60	322	6.00
23	0	35	20	--	48	1	61	326	4.00
24	1	36	85	65.00	49	1	62	329	3.00
25	1	37	105	20.00	50	1	63	332	3.00
51	1	64	336	4.00	76	2	125	575	6.00
52	1	65	340	4.00	77	1	126	580	5.00
53	1	66	344	4.00	78	2	128	590	5.00
54	2	68	349	2.50	79	3	131	600	3.33
55	3	71	360	3.67	80	2	133	615	7.50
56	3	74	370	3.33	81	2	135	625	5.00
57	2	76	380	5.00	82	1	136	635	10.00
58	3	79	390	3.33	83	2	138	647	6.00
59	3	82	401	3.67	84	1	139	655	8.00
60	2	84	411	5.00	85	1	140	665	10.00
61	2	86	419	4.00	86	1	141	675	10.00
62	3	89	429	3.33	87	1	142	685	10.00
63	3	92	440	3.67	88	2	144	700	7.50
64	3	95	450	3.33	89	1	145	709	9.00
65	3	98	460	3.33	90	1	146	715	6.00
66	3	101	470	3.33	91	2	148	755	20.00
67	3	104	481	3.67					
68	3	107	490	3.00					
69	3	110	500	3.33					
70	2	112	510	5.00					
71	2	114	519	4.50					
72	3	117	531	4.00					
73	2	119	542	5.50					
74	2	121	552	5.00					
75	2	123	563	5.50					

Remarks: Start at 260mm
Point 23 Extension Rod Added

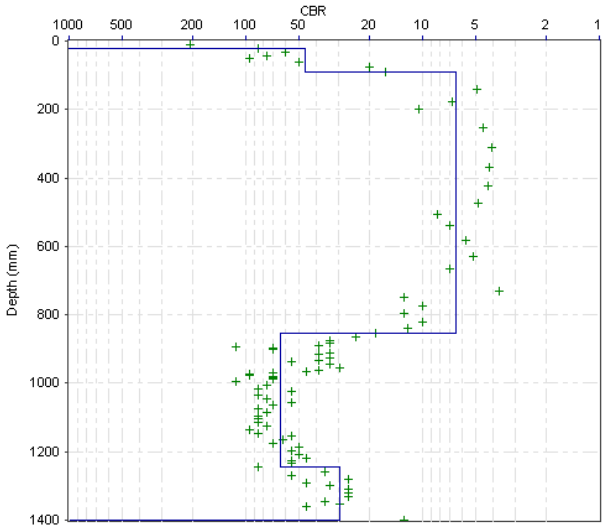
DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.003	Surface Type:	Thin bituminous seal
Direction:	WS3	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	200	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	5.92	46	71	91
2	38.20	6	764	855
3	4.38	63	390	1245
4	9.12	29	155	1400

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.004	Surface Type:	Thin bituminous seal
Direction:	WS4	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	180	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	

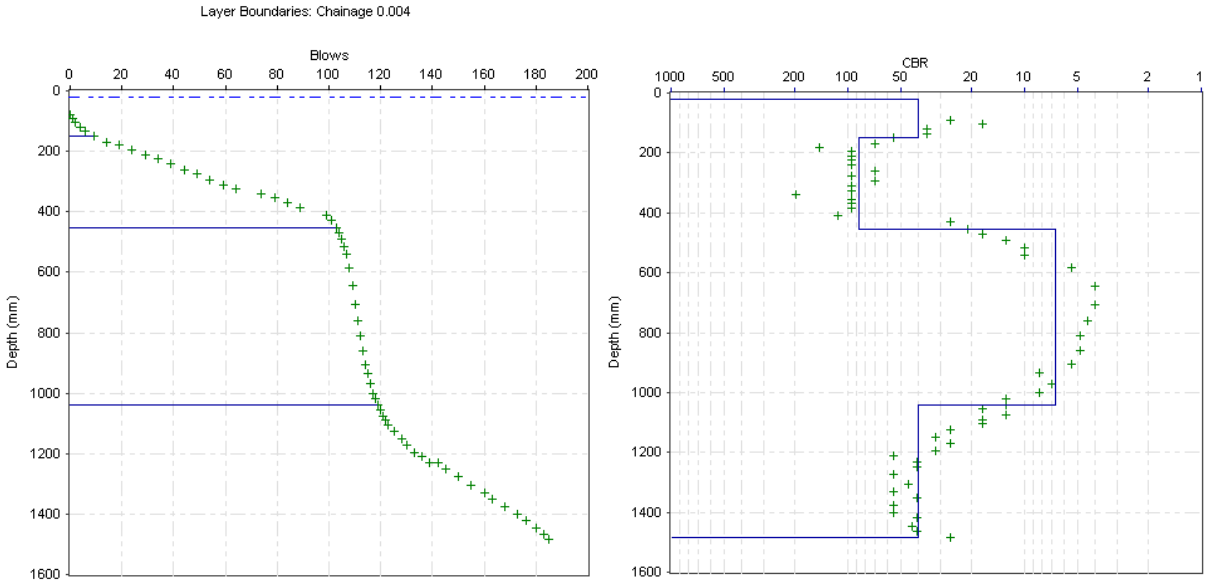
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	260	0.00	26	1	105	670	20.00
2	1	1	270	10.00	27	1	106	695	25.00
3	1	2	285	15.00	28	1	107	720	25.00
4	2	4	300	7.50	29	1	108	765	45.00
5	2	6	315	7.50	30	1	109	825	60.00
6	3	9	330	5.00	31	0	109	30	--
7	5	14	350	4.00	32	1	110	90	60.00
8	5	19	360	2.00	33	1	111	145	55.00
9	5	24	375	3.00	34	1	112	195	50.00
10	5	29	390	3.00	35	1	113	245	50.00
11	5	34	405	3.00	36	1	114	290	45.00
12	5	39	420	3.00	37	1	115	320	30.00
13	5	44	440	4.00	38	1	116	355	35.00
14	5	49	455	3.00	39	1	117	385	30.00
15	5	54	475	4.00	40	1	118	405	20.00
16	5	59	490	3.00	41	1	119	425	20.00
17	5	64	505	3.00	42	1	120	440	15.00
18	10	74	520	1.50	43	1	121	460	20.00
19	5	79	535	3.00	44	1	122	475	15.00
20	5	84	550	3.00	45	1	123	490	15.00
21	5	89	565	3.00	46	2	125	510	10.00
22	10	99	590	2.50	47	3	128	535	8.33
23	2	101	610	10.00	48	2	130	555	10.00
24	2	103	635	12.50	49	3	133	580	8.33
25	1	104	650	15.00	50	3	136	595	5.00
51	3	139	615	6.67					
52	3	142	615	0.00					
53	3	145	635	6.67					
54	5	150	660	5.00					
55	5	155	690	6.00					
56	5	160	715	5.00					
57	3	163	735	6.67					
58	5	168	760	5.00					
59	5	173	785	5.00					
60	3	176	805	6.67					
61	4	180	830	6.25					
62	3	183	850	6.67					
63	2	185	870	10.00					

Point 31 Extension Rod Added

DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.004	Surface Type:	Thin bituminous seal
Direction:	WS4	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	180	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	6.82	40	130	150
2	3.24	87	305	455
3	36.56	7	585	1040
4	6.74	40	445	1485

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.005	Surface Type:	Thin bituminous seal
Direction:	WS5	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	200	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	

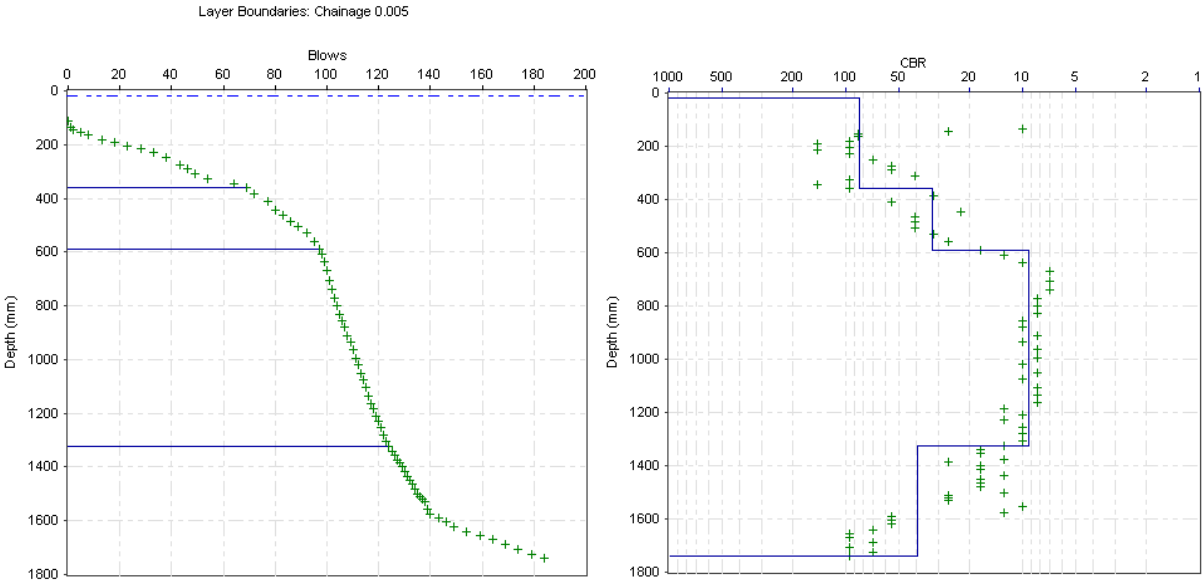
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	310	0.00	26	2	97	790	15.00
2	1	1	335	25.00	27	1	98	810	20.00
3	1	2	345	10.00	28	1	99	835	25.00
4	3	5	355	3.33	29	1	100	870	35.00
5	3	8	365	3.33	30	0	100	65	--
6	5	13	380	3.00	31	1	101	100	35.00
7	5	18	390	2.00	32	1	102	135	35.00
8	5	23	405	3.00	33	1	103	165	30.00
9	5	28	415	2.00	34	1	104	195	30.00
10	5	33	430	3.00	35	1	105	225	30.00
11	5	38	450	4.00	36	1	106	250	25.00
12	5	43	475	5.00	37	1	107	275	25.00
13	3	46	490	5.00	38	1	108	305	30.00
14	3	49	510	6.67	39	1	109	330	25.00
15	5	54	525	3.00	40	1	110	360	30.00
16	10	64	545	2.00	41	1	111	390	30.00
17	5	69	560	3.00	42	1	112	415	25.00
18	3	72	585	8.33	43	1	113	445	30.00
19	5	77	610	5.00	44	1	114	470	25.00
20	3	80	645	11.67	45	1	115	500	30.00
21	3	83	665	6.67	46	1	116	530	30.00
22	3	86	685	6.67	47	1	117	560	30.00
23	3	89	705	6.67	48	1	118	580	20.00
24	3	92	730	8.33	49	1	119	605	25.00
25	3	95	760	10.00	50	1	120	625	20.00
51	1	121	650	25.00	76	5	164	1065	3.00
52	1	122	675	25.00	77	5	169	1085	4.00
53	1	123	700	25.00	78	5	174	1100	3.00
54	1	124	720	20.00	79	5	179	1120	4.00
55	1	125	735	15.00	80	5	184	1135	3.00
56	1	126	750	15.00					
57	1	127	770	20.00					
58	1	128	780	10.00					
59	1	129	795	15.00					
60	1	130	810	15.00					
61	1	131	830	20.00					
62	1	132	845	15.00					
63	1	133	860	15.00					
64	1	134	875	15.00					
65	1	135	895	20.00					
66	1	136	905	10.00					
67	1	137	915	10.00					
68	1	138	925	10.00					
69	1	139	950	25.00					
70	1	140	970	20.00					
71	3	143	985	5.00					
72	3	146	1000	5.00					
73	3	149	1015	5.00					
74	5	154	1035	4.00					
75	5	159	1050	3.00					

Remarks: Start at 220mm
Point 30 Extension Rod Added

DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.005	Surface Type:	Thin bituminous seal
Direction:	WS5	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	200	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	3.37	84	340	360
2	8.21	33	230	590
3	27.22	9	735	1325
4	6.92	39	415	1740

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.006	Surface Type:	Thin bituminous seal
Direction:	WS6	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	160	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	

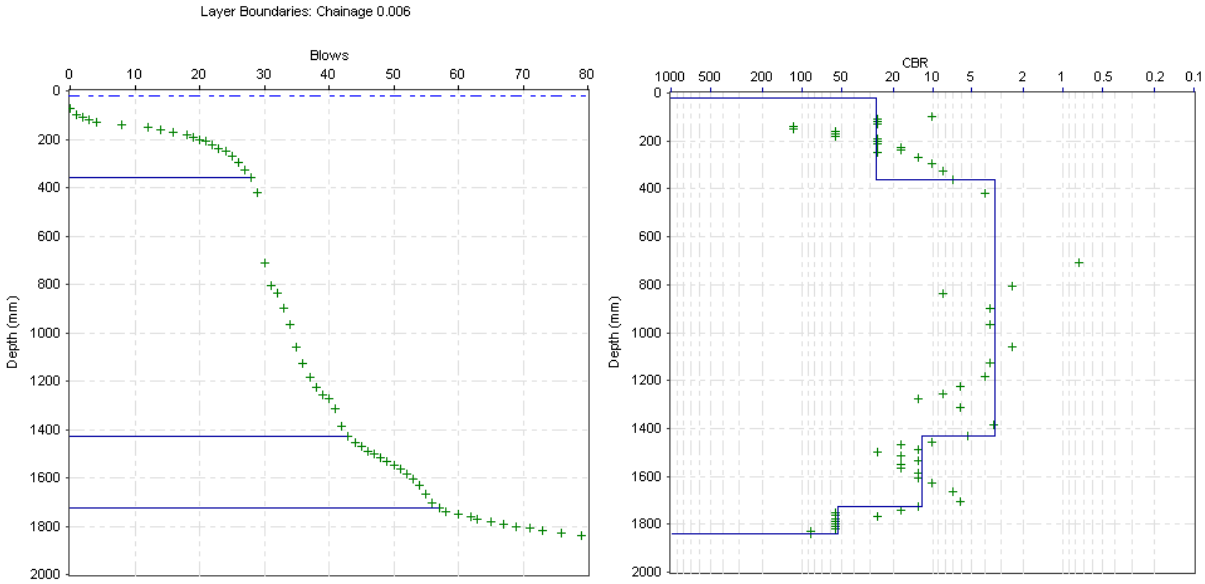
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	235	0.00	26	1	33	275	65.00
2	1	1	260	25.00	27	1	34	340	65.00
3	1	2	270	10.00	28	1	35	435	95.00
4	1	3	280	10.00	29	1	36	500	65.00
5	1	4	290	10.00	30	1	37	560	60.00
6	4	8	300	2.50	31	1	38	600	40.00
7	4	12	310	2.50	32	1	39	630	30.00
8	2	14	320	5.00	33	1	40	650	20.00
9	2	16	330	5.00	34	1	41	690	40.00
10	2	18	340	5.00	35	1	42	760	70.00
11	1	19	350	10.00	36	1	43	805	45.00
12	1	20	360	10.00	37	1	44	830	25.00
13	1	21	370	10.00	38	1	45	845	15.00
14	1	22	385	15.00	39	1	46	865	20.00
15	1	23	400	15.00	40	1	47	875	10.00
16	1	24	410	10.00	41	1	48	890	15.00
17	1	25	430	20.00	42	1	49	910	20.00
18	1	26	455	25.00	43	1	50	925	15.00
19	1	27	485	30.00	44	1	51	940	15.00
20	1	28	520	35.00	45	1	52	960	20.00
21	1	29	580	60.00	46	1	53	980	20.00
22	1	30	870	290.00	47	1	54	1005	25.00
23	0	30	85	--	48	1	55	1040	35.00
24	1	31	180	95.00	49	1	56	1080	40.00
25	1	32	210	30.00	50	1	57	1100	20.00
51	1	58	1115	15.00					
52	2	60	1125	5.00					
53	2	62	1135	5.00					
54	1	63	1145	10.00					
55	2	65	1155	5.00					
56	2	67	1165	5.00					
57	2	69	1175	5.00					
58	2	71	1185	5.00					
59	2	73	1195	5.00					
60	3	76	1205	3.33					
61	3	79	1215	3.33					

Point 23 Extension Rod Added

DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.006	Surface Type:	Thin bituminous seal
Direction:	WS6	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	160	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	9.74	27	340	360
2	71.33	3	1070	1430
3	21.07	12	295	1725
4	5.23	53	115	1840

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.007	Surface Type:	Thin bituminous seal
Direction:	WS7	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	200	Thickness (mm):	
Test Date:	02/03/2021	Strength Coeff.:	

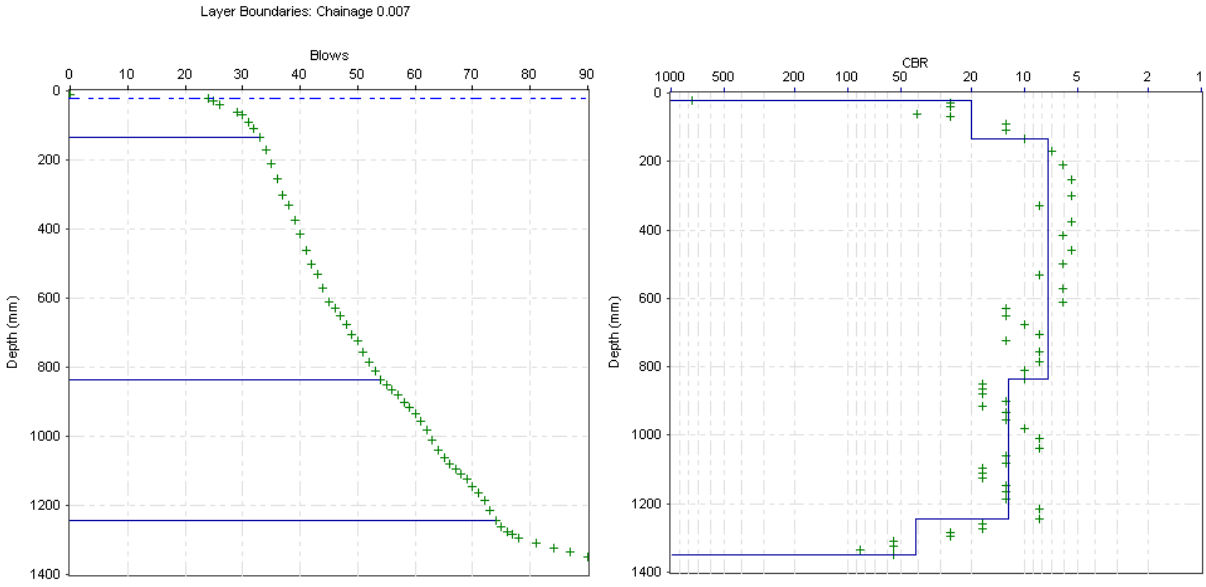
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	210	0.00	26	1	49	110	30.00
2	24	24	220	0.42	27	1	50	130	20.00
3	1	25	230	10.00	28	1	51	160	30.00
4	1	26	240	10.00	29	1	52	190	30.00
5	3	29	260	6.67	30	1	53	215	25.00
6	1	30	270	10.00	31	1	54	240	25.00
7	1	31	290	20.00	32	1	55	255	15.00
8	1	32	310	20.00	33	1	56	270	15.00
9	1	33	335	25.00	34	1	57	285	15.00
10	1	34	370	35.00	35	1	58	305	20.00
11	1	35	410	40.00	36	1	59	320	15.00
12	1	36	455	45.00	37	1	60	340	20.00
13	1	37	500	45.00	38	1	61	360	20.00
14	1	38	530	30.00	39	1	62	385	25.00
15	1	39	575	45.00	40	1	63	415	30.00
16	1	40	615	40.00	41	1	64	445	30.00
17	1	41	660	45.00	42	1	65	465	20.00
18	1	42	700	40.00	43	1	66	485	20.00
19	1	43	730	30.00	44	1	67	500	15.00
20	1	44	770	40.00	45	1	68	515	15.00
21	1	45	810	40.00	46	1	69	530	15.00
22	0	45	15	--	47	1	70	550	20.00
23	1	46	35	20.00	48	1	71	570	20.00
24	1	47	55	20.00	49	1	72	590	20.00
25	1	48	80	25.00	50	1	73	620	30.00
51	1	74	650	30.00					
52	1	75	665	15.00					
53	1	76	680	15.00					
54	1	77	690	10.00					
55	1	78	700	10.00					
56	3	81	715	5.00					
57	3	84	730	5.00					
58	3	87	740	3.33					
59	3	90	755	5.00					

Remarks: Start at 310mm
Point 22 Extension Rod Added

DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.007	Surface Type:	Thin bituminous seal
Direction:	WS7	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	200	Thickness (mm):	
Test Date:	02/03/2021	Strength Coeff.:	



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	13.13	20	115	135
2	33.33	7	700	835
3	20.50	12	410	1245
4	6.56	41	105	1350

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.008	Surface Type:	Thin bituminous seal
Direction:	WS8	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	145	Thickness (mm):	
Test Date:	01/03/2021	Strength Coeff.:	

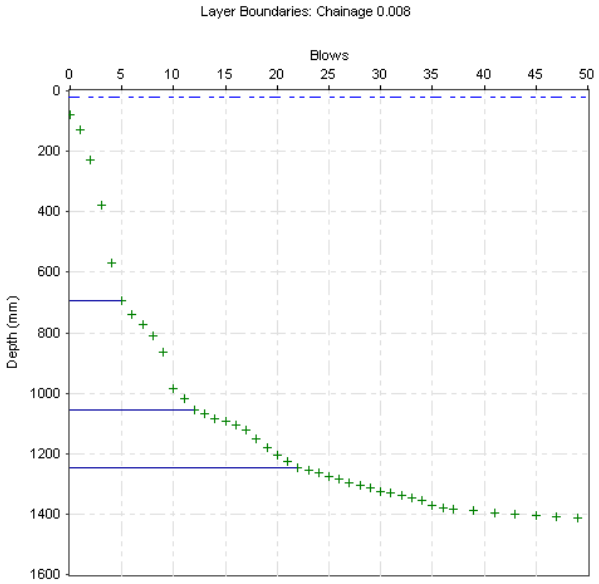
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	225	0.00	26	1	24	285	10.00
2	1	1	275	50.00	27	1	25	295	10.00
3	1	2	375	100.00	28	1	26	305	10.00
4	1	3	525	150.00	29	1	27	315	10.00
5	1	4	715	190.00	30	1	28	325	10.00
6	1	5	840	125.00	31	1	29	335	10.00
7	1	6	885	45.00	32	1	30	345	10.00
8	1	7	920	35.00	33	1	31	350	5.00
9	1	8	955	35.00	34	1	32	360	10.00
10	1	9	1010	55.00	35	1	33	365	5.00
11	1	10	1130	120.00	36	1	34	375	10.00
12	1	11	1165	35.00	37	1	35	390	15.00
13	0	11	40	--	38	1	36	400	10.00
14	1	12	75	35.00	39	1	37	405	5.00
15	1	13	90	15.00	40	2	39	410	2.50
16	1	14	105	15.00	41	2	41	415	2.50
17	1	15	115	10.00	42	2	43	420	2.50
18	1	16	125	10.00	43	2	45	425	2.50
19	1	17	140	15.00	44	2	47	430	2.50
20	1	18	170	30.00	45	2	49	435	2.50
21	1	19	200	30.00					
22	1	20	225	25.00					
23	1	21	245	20.00					
24	1	22	265	20.00					
25	1	23	275	10.00					

Point 13 Extension Rod Added

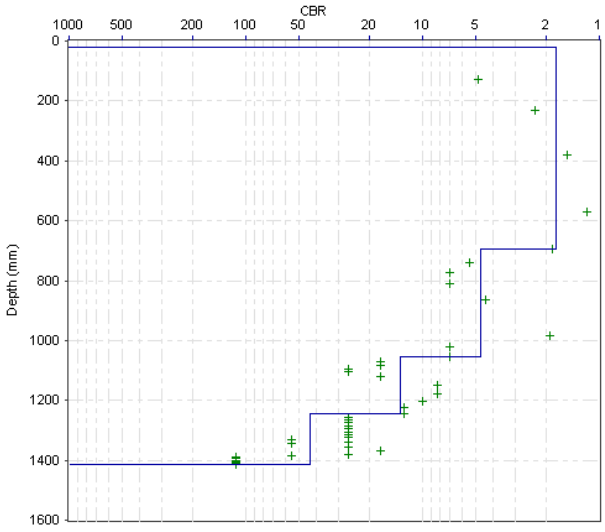
DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.008	Surface Type:	Thin bituminous seal
Direction:	WS8	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	145	Thickness (mm):	
Test Date:	01/03/2021	Strength Coeff.:	



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	129.35	2	675	695
2	51.43	5	360	1055
3	19.00	13	190	1245
4	6.30	43	170	1415

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.009	Surface Type:	Thin bituminous seal
Direction:	WS9	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	150	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	

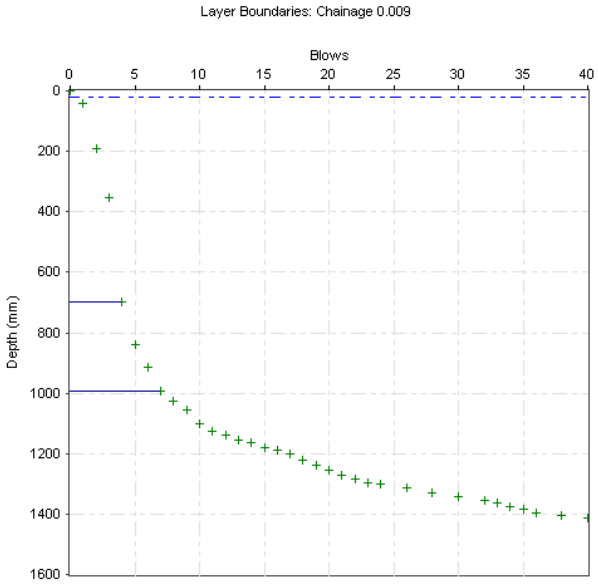
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	150	0.00	26	1	24	100	5.00
2	1	1	190	40.00	27	2	26	113	6.50
3	1	2	340	150.00	28	2	28	129	8.00
4	1	3	505	165.00	29	2	30	142	6.50
5	1	4	850	345.00	30	2	32	156	7.00
6	1	5	990	140.00	31	1	33	165	9.00
7	1	6	1065	75.00	32	1	34	175	10.00
8	1	7	1142	77.00	33	1	35	185	10.00
9	1	8	1175	33.00	34	1	36	195	10.00
10	1	9	1205	30.00	35	2	38	205	5.00
11	1	10	1250	45.00	36	2	40	215	5.00
12	1	11	1275	25.00					
13	1	12	1290	15.00					
14	1	13	1305	15.00					
15	1	14	1315	10.00					
16	1	15	1330	15.00					
17	1	16	1340	10.00					
18	1	17	1350	10.00					
19	1	18	1370	20.00					
20	1	19	1390	20.00					
21	0	19	40	--					
22	1	20	55	15.00					
23	1	21	70	15.00					
24	1	22	85	15.00					
25	1	23	95	10.00					

Point 21 Extension Rod Added

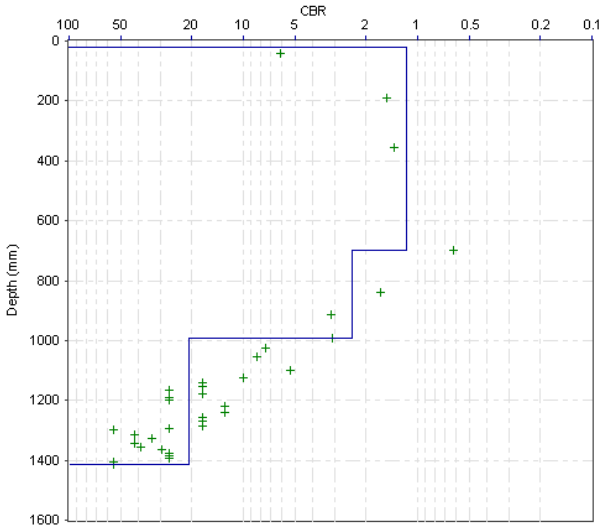
DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.009	Surface Type:	Thin bituminous seal
Direction:	WS9	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	150	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	194.29	1	680	700
2	97.33	2	292	992
3	12.82	20	423	1415

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.010	Surface Type:	Thin bituminous seal
Direction:	WS10	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	0	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	

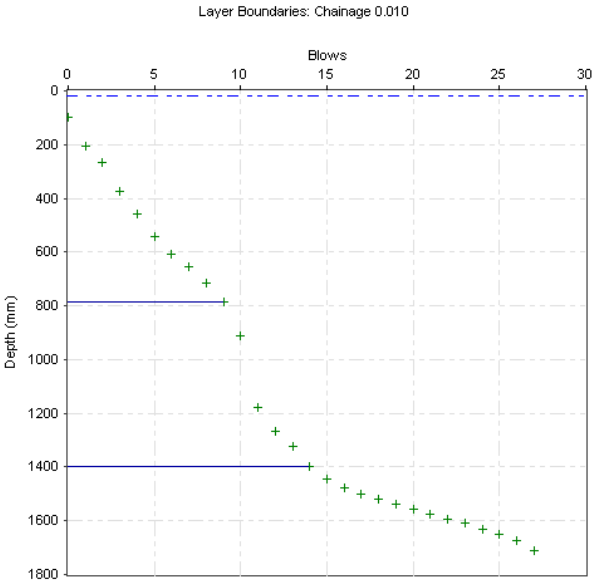
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	100	0.00	26	1	24	830	20.00
2	1	1	207	107.00	27	1	25	850	20.00
3	1	2	265	58.00	28	1	26	875	25.00
4	1	3	372	107.00	29	1	27	910	35.00
5	1	4	456	84.00					
6	1	5	541	85.00					
7	1	6	610	69.00					
8	1	7	655	45.00					
9	1	8	715	60.00					
10	1	9	786	71.00					
11	1	10	910	124.00					
12	0	10	110	--					
13	1	11	380	270.00					
14	1	12	465	85.00					
15	1	13	525	60.00					
16	1	14	600	75.00					
17	1	15	645	45.00					
18	1	16	676	31.00					
19	1	17	699	23.00					
20	1	18	718	19.00					
21	1	19	740	22.00					
22	1	20	755	15.00					
23	1	21	775	20.00					
24	1	22	795	20.00					
25	1	23	810	15.00					

Point 12 Extension Rod Added

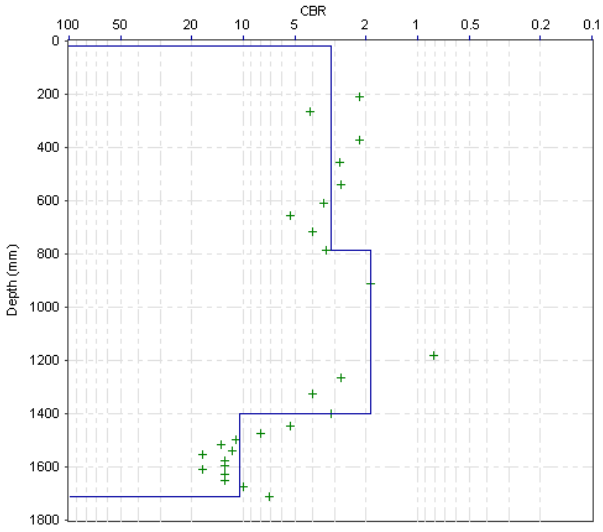
DCP Layer Strength Analysis Report

Project Name: 203521 - Elleray Hall & North Lane Depot-East Car Park

Chainage (km):	0.010	Surface Type:	Thin bituminous seal
Direction:	WS10	Thickness (mm):	20
Location/Offset:	Carriageway	Strength Coeff.:	0.20
Cone Angle:	60 degrees	Base Type:	
Zero Error (mm):	0	Thickness (mm):	
Test Date:	24/02/2021	Strength Coeff.:	



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	75.57	3	766	786
2	122.80	2	614	1400
3	23.85	11	310	1710

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

12. SOAKAWAY TEST RESULTS

CONCEPT
Unit 8 Warple Mews, Warple Way, London W3 0RF
Tel: 0208 811 2880, Fax: 0208 811 2881
Email: si@conceptconsultants.co.uk

CONCEPT SITE INVESTIGATIONS

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

Date: **26/02/2021**

Soakaway Design

BRE Digest 365 (September 1991 incl. revisions, 2003, 2007 and 2016)

Trial Pit No.: **STP1**

Date Excavated: 25/02/2021

Date Backfilled: 03/03/2021

Pit Dimensions:

Length (m)	2.50
Width (m)	0.35
Depth (m)	2.60

Level:

Soil Infiltration Rate:

$$f = \frac{V_{p\,75-25}}{a_{p\,50} * t_{p\,75-25}}$$

	Test 1		Test 2		Test 3	
Effective depth	1.81	m	1.77	m	1.70	m
V_{p} *75-25*	0.523	m^3	0.511	m^3	0.491	m^3
a_p50	6.034	m^2	5.920	m^2	5.370	m^2
t_{p} *75-25*	10.90	min	17.03	min	19.72	min
Result (*f*)	**1.32E-04**	**m/sec**	**8.45E-05**	**m/sec**	**7.73E-05**	**m/sec**

REMARKS:

Weather: Cloudy

Installation Construction: 50mm pipe installed to base of pit, with pipe protruding 0.30m above ground level. D Pit backfield with pea shingle to 1.20m depth

Notes: It is assumed that voids in gravel are 33% of total volume

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

Date: **26/02/2021** **Test No.: 1**

Standing Water Level (m) Dry

Date	Time (h:mm:ss)	Minutes	Depth to Water (mbgl)	Depth to Water (mOD)
26/02/2021	0:00:00	0.00	0.79	
26/02/2021	0:00:30	0.50	0.87	
26/02/2021	0:01:00	1.00	0.95	
26/02/2021	0:01:30	1.50	1.03	
26/02/2021	0:02:00	2.00	1.11	
26/02/2021	0:02:30	2.50	1.25	
26/02/2021	0:03:00	3.00	1.39	
26/02/2021	0:03:30	3.50	1.50	
26/02/2021	0:04:00	4.00	1.59	
26/02/2021	0:04:30	4.50	1.67	
26/02/2021	0:05:00	5.00	1.74	
26/02/2021	0:06:00	6.00	1.85	
26/02/2021	0:07:00	7.00	1.94	
26/02/2021	0:09:00	9.00	2.04	
26/02/2021	0:10:00	10.00	2.08	
26/02/2021	0:15:00	15.00	2.18	
26/02/2021	0:20:00	20.00	2.27	
26/02/2021	0:25:00	25.00	2.33	
26/02/2021	0:30:00	30.00	2.38	
26/02/2021	0:35:00	35.00	2.43	
26/02/2021	0:40:00	40.00	2.46	
26/02/2021	0:45:00	45.00	2.48	
26/02/2021	0:50:00	50.00	2.51	
26/02/2021	0:55:00	55.00	2.53	
26/02/2021	1:00:00	60.00	2.55	

REMARKS:
1) All measurements taken from he top of standpipe at 0.30m above ground level.
2) Pit filled with water above top of gravel.

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

Date: **26/02/2021** **Test No.: 2**

Standing Water Level (m) Dry

Date	Time (h:mm:ss)	Minutes	Depth to Water (mbgl)	Depth to Water (mOD)
26/02/2021	0:00:00	0.00	0.83	
26/02/2021	0:00:30	0.50	0.91	
26/02/2021	0:01:00	1.00	0.98	
26/02/2021	0:01:30	1.50	1.04	
26/02/2021	0:02:00	2.00	1.09	
26/02/2021	0:02:30	2.50	1.20	
26/02/2021	0:03:00	3.00	1.31	
26/02/2021	0:03:30	3.50	1.40	
26/02/2021	0:04:00	4.00	1.47	
26/02/2021	0:04:30	4.50	1.54	
26/02/2021	0:05:00	5.00	1.59	
26/02/2021	0:06:00	6.00	1.67	
26/02/2021	0:07:00	7.00	1.74	
26/02/2021	0:09:00	9.00	1.83	
26/02/2021	0:10:00	10.00	1.88	
26/02/2021	0:15:00	15.00	2.07	
26/02/2021	0:20:00	20.00	2.16	
26/02/2021	0:25:00	25.00	2.23	
26/02/2021	0:30:00	30.00	2.29	
26/02/2021	0:35:00	35.00	2.34	
26/02/2021	0:40:00	40.00	2.38	
26/02/2021	0:45:00	45.00	2.42	
26/02/2021	0:50:00	50.00	2.45	
26/02/2021	0:55:00	55.00	2.48	
26/02/2021	1:00:00	60.00	2.50	

REMARKS:
1) All measurements taken from the top of standpipe at 0.30m above ground level.
2) Pit filled with water above top of gravel.

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

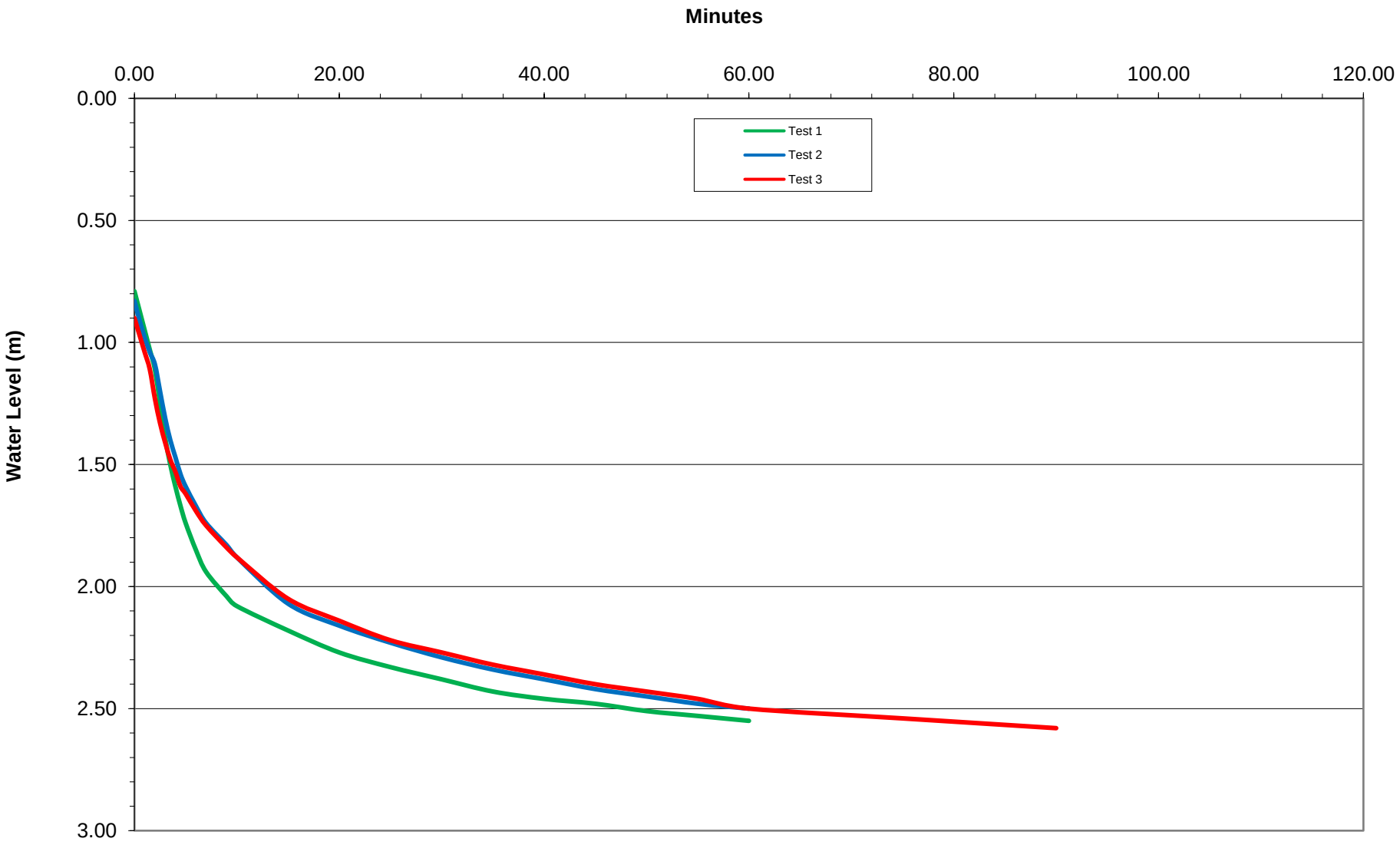
Date: **26/02/2021** **Test No.: 3**

Standing Water Level (m) Dry

Date	Time (h:mm:ss)	Minutes	Depth to Water (mbgl)	Depth to Water (mOD)
26/02/2021	0:00:00	0.00	0.90	
26/02/2021	0:00:30	0.50	0.97	
26/02/2021	0:01:00	1.00	1.04	
26/02/2021	0:01:30	1.50	1.11	
26/02/2021	0:02:00	2.00	1.23	
26/02/2021	0:02:30	2.50	1.33	
26/02/2021	0:03:00	3.00	1.41	
26/02/2021	0:03:30	3.50	1.48	
26/02/2021	0:04:00	4.00	1.53	
26/02/2021	0:04:30	4.50	1.59	
26/02/2021	0:05:00	5.00	1.62	
26/02/2021	0:06:00	6.00	1.69	
26/02/2021	0:07:00	7.00	1.75	
26/02/2021	0:09:00	9.00	1.84	
26/02/2021	0:10:00	10.00	1.88	
26/02/2021	0:15:00	15.00	2.05	
26/02/2021	0:20:00	20.00	2.14	
26/02/2021	0:25:00	25.00	2.22	
26/02/2021	0:30:00	30.00	2.27	
26/02/2021	0:35:00	35.00	2.32	
26/02/2021	0:40:00	40.00	2.36	
26/02/2021	0:45:00	45.00	2.40	
26/02/2021	0:50:00	50.00	2.43	
26/02/2021	0:55:00	55.00	2.46	
26/02/2021	1:00:00	60.00	2.50	
26/02/2021	1:15:00	75.00	2.54	
26/02/2021	1:30:00	90.00	2.58	

REMARKS:
1) All measurements taken from the top of standpipe at 0.30m above ground level.

STP1 Soakaway



CONCEPT
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CONCEPT SITE INVESTIGATIONS

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

Date: **26/02/2021**

Soakaway Design

BRE Digest 365 (September 1991 incl. revisions, 2003, 2007 and 2016)

Trial Pit No.: **STP2**

Date Excavated: 25/02/2021

Date Backfilled: 02/03/2021

Pit Dimensions:

Length (m)	2.50
Width (m)	0.35
Depth (m)	2.60

Level:

Soil Infiltration Rate:

$$f = \frac{V_{p\,75-25}}{a_{p\,50} * t_{p\,75-25}}$$

	Test 1		Test 2	
Effective depth	0.83	m	0.62	m
V_{p} *75-25*	0.240	m^3	0.179	m^3
a_p50	4.352	m^2	3.953	m^2
t_{p} *75-25*	137.04	min	106.50	min
Result (*f*)	**6.70E-06**	**m/sec**	**7.09E-06**	**m/sec**

REMARKS:

Weather: Cloudy

Installation Construction: 50mm pipe installed to base of pit, with pipe protruding 0.40m above ground level. Pit backfield with pea shingle to 1.20m depth

Notes: Soakaway did not reach 75% of effective storage depth.
Infiltration rate calculated for the fall of water level from 75% to 25% of actual maximium water depth achieved in the test. Gravel assumed to occupy 66% of volume.

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

Date: **26/02/2021** **Test No.: 1**

Standing Water Level (m) Dry

Date	Time (h:mm:ss)	Minutes	Depth to Water (mbgl)	Depth to Water (mOD)
26/02/2021	0:00:00	0.00	1.38	
26/02/2021	0:00:30	0.50	1.39	
26/02/2021	0:01:00	1.00	1.39	
26/02/2021	0:01:30	1.50	1.40	
26/02/2021	0:02:00	2.00	1.41	
26/02/2021	0:02:30	2.50	1.42	
26/02/2021	0:03:00	3.00	1.43	
26/02/2021	0:03:30	3.50	1.43	
26/02/2021	0:04:00	4.00	1.44	
26/02/2021	0:04:30	4.50	1.44	
26/02/2021	0:05:00	5.00	1.45	
26/02/2021	0:06:00	6.00	1.46	
26/02/2021	0:07:00	7.00	1.47	
26/02/2021	0:08:00	8.00	1.48	
26/02/2021	0:09:00	9.00	1.49	
26/02/2021	0:10:00	10.00	1.50	
26/02/2021	0:15:00	15.00	1.53	
26/02/2021	0:20:00	20.00	1.56	
26/02/2021	0:25:00	25.00	1.59	
26/02/2021	0:30:00	30.00	1.61	
26/02/2021	0:40:00	40.00	1.64	
26/02/2021	0:50:00	50.00	1.69	
26/02/2021	1:00:00	60.00	1.72	
26/02/2021	1:15:00	75.00	1.75	
26/02/2021	1:30:00	90.00	1.79	
26/02/2021	1:45:00	105.00	1.85	
26/02/2021	2:00:00	120.00	1.91	
26/02/2021	2:30:00	150.00	2.00	
26/02/2021	3:30:00	210.00	2.11	
26/02/2021	5:10:00	310.00	2.21	

REMARKS:
1) All measurements taken from the top of standpipe at 0.40m above ground level.
2) Water level filled the hole to approximately 0.40m above pea shingle.
3) Test 2 started on the 26/02/2021 and completed on the 01/03/2021. Results recorded by diver. Base of diver at 2.83m below the top of standpipe.

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

Date: **26/02/2021** **Test No.: 3**

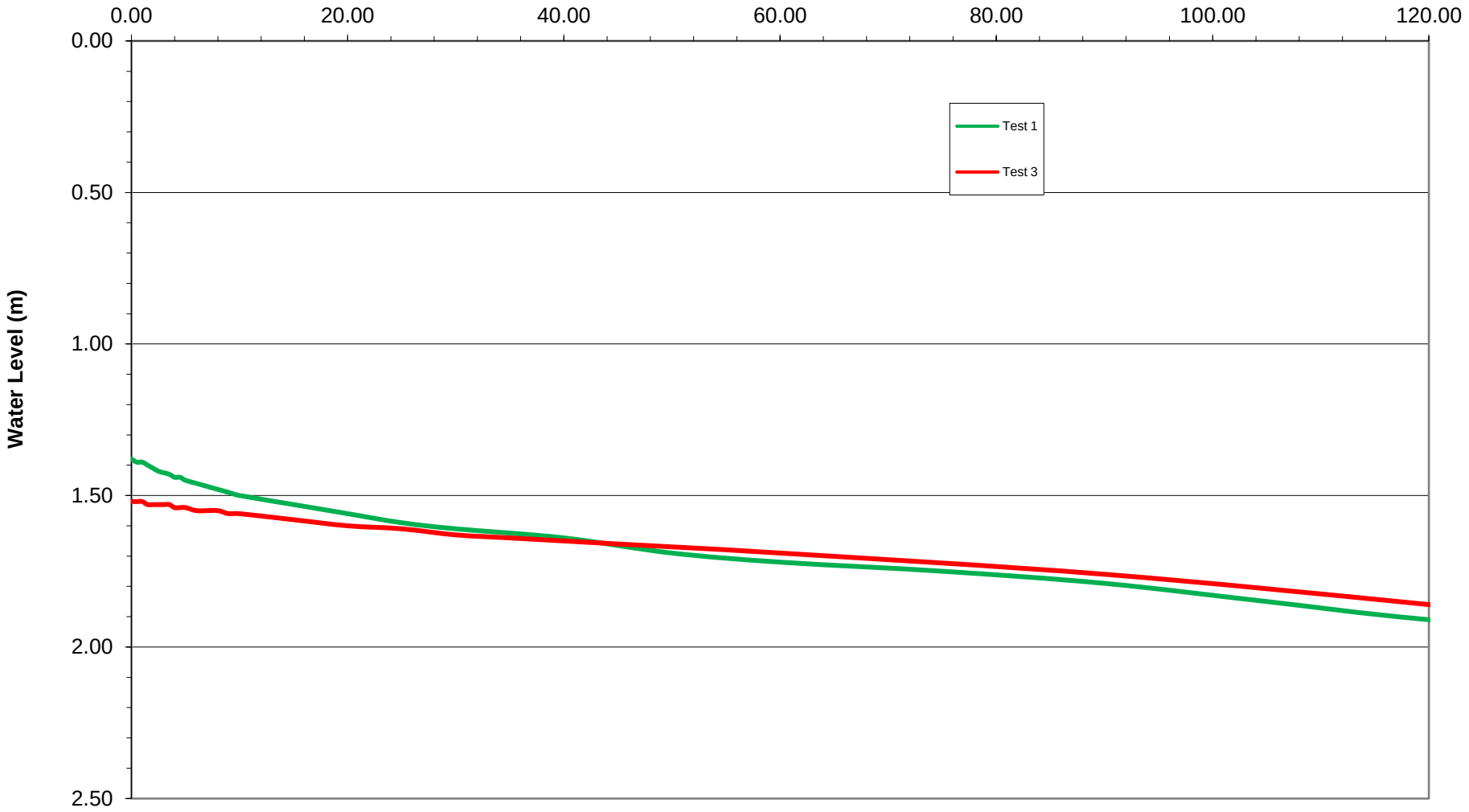
Standing Water Level (m) Dry

Date	Time (h:mm:ss)	Minutes	Depth to Water (mbgl)	Depth to Water (mOD)
26/02/2021	0:00:00	0.00	1.52	
26/02/2021	0:00:30	0.50	1.52	
26/02/2021	0:01:00	1.00	1.52	
26/02/2021	0:01:30	1.50	1.53	
26/02/2021	0:02:00	2.00	1.53	
26/02/2021	0:02:30	2.50	1.53	
26/02/2021	0:03:00	3.00	1.53	
26/02/2021	0:03:30	3.50	1.53	
26/02/2021	0:04:00	4.00	1.54	
26/02/2021	0:04:30	4.50	1.54	
26/02/2021	0:05:00	5.00	1.54	
26/02/2021	0:06:00	6.00	1.55	
26/02/2021	0:07:00	7.00	1.55	
26/02/2021	0:08:00	8.00	1.55	
26/02/2021	0:09:00	9.00	1.56	
26/02/2021	0:10:00	10.00	1.56	
26/02/2021	0:15:00	15.00	1.58	
26/02/2021	0:20:00	20.00	1.60	
26/02/2021	0:25:00	25.00	1.61	
26/02/2021	0:30:00	30.00	1.63	
26/02/2021	0:35:00	35.00	1.64	
26/02/2021	0:40:00	40.00	1.65	
26/02/2021	0:45:00	45.00	1.66	
26/02/2021	1:00:00	60.00	1.69	
26/02/2021	1:30:00	90.00	1.76	
26/02/2021	2:00:00	120.00	1.86	
26/02/2021	2:30:00	150.00	1.97	
26/02/2021	3:00:00	180.00	2.02	
26/02/2021	3:30:00	210.00	2.07	
26/02/2021	4:00:00	240.00	2.10	
26/02/2021	4:30:00	270.00	2.14	

REMARKS:
1) All measurements taken from the top of standpipe at 0.40m above ground level.

CONCEPT SITE INVESTIGATIONS

STP2 Soakaway



CONCEPT SITE INVESTIGATIONS

C•NCEPT
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Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

Date: **26/02/2021**

Soakaway Design

BRE Digest 365 (September 1991 incl. revisions, 2003, 2007 and 2016)

Trial Pit No.: **STP3**

Date Excavated: 25/02/2021

Date Backfilled: 03/03/2021

Pit Dimensions:

Length (m)	2.30
Width (m)	0.35
Depth (m)	2.70

Level:

Soil Infiltration Rate:

$$f = \frac{V_{p\,75-25}}{a_{p\,50} * t_{p\,75-25}}$$

	Test 1		Test 2		Test 3	
Effective depth	1.44	m	1.47	m	1.16	m
$V_{p\,75\text{-}25}$	0.383	m^3	0.391	m^3	0.308	m^3
a_p50	4.621	m^2	4.701	m^2	3.879	m^2
$t_{p\,75\text{-}25}$	25.83	min	31.29	min	15.83	min
Result (*f*)	**5.34E-05**	**m/sec**	**4.42E-05**	**m/sec**	**8.36E-05**	**m/sec**

REMARKS:

Weather: Cloudy

Installation Construction: 50mm pipe installed to base of pit, with pipe protruding 0.35m above ground level. Pit backfield with pea shingle to 1.20m depth

Notes: Volume of water in the hole reduced by 66% to account for gravel.

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

Date: **26/02/2021** **Test No.: 1**

Standing Water Level (m) Dry

Date	Time (h:mm:ss)	Minutes	Depth to Water (mbgl)	Depth to Water (mOD)
26/02/2021	0:00:00	0.00	1.26	
26/02/2021	0:00:30	0.50	1.32	
26/02/2021	0:01:00	1.00	1.39	
26/02/2021	0:01:30	1.50	1.44	
26/02/2021	0:02:00	2.00	1.48	
26/02/2021	0:02:30	2.50	1.51	
26/02/2021	0:03:00	3.00	1.55	
26/02/2021	0:03:30	3.50	1.58	
26/02/2021	0:04:00	4.00	1.61	
26/02/2021	0:04:30	4.50	1.64	
26/02/2021	0:05:00	5.00	1.67	
26/02/2021	0:05:30	5.50	1.70	
26/02/2021	0:06:00	6.00	1.72	
26/02/2021	0:06:30	6.50	1.75	
26/02/2021	0:07:00	7.00	1.77	
26/02/2021	0:07:30	7.50	1.80	
26/02/2021	0:08:00	8.00	1.82	
26/02/2021	0:08:30	8.50	1.84	
26/02/2021	0:09:00	9.00	1.86	
26/02/2021	0:09:30	9.50	1.88	
26/02/2021	0:10:00	10.00	1.90	
26/02/2021	0:11:00	11.00	1.94	
26/02/2021	0:12:00	12.00	1.98	
26/02/2021	0:13:00	13.00	2.01	
26/02/2021	0:14:00	14.00	2.05	
26/02/2021	0:15:00	15.00	2.08	
26/02/2021	0:16:00	16.00	2.10	
26/02/2021	0:17:00	17.00	2.13	
26/02/2021	0:18:00	18.00	2.15	
26/02/2021	0:19:00	19.00	2.17	
26/02/2021	0:20:00	20.00	2.19	
26/02/2021	0:22:00	22.00	2.23	
26/02/2021	0:24:00	24.00	2.26	
26/02/2021	0:26:00	26.00	2.29	
26/02/2021	0:28:00	28.00	2.32	
26/02/2021	0:30:00	30.00	2.34	
26/02/2021	0:35:00	35.00	2.39	
26/02/2021	0:40:00	40.00	2.43	
26/02/2021	0:45:00	45.00	2.45	
26/02/2021	0:50:00	50.00	2.47	

REMARKS:

1) All measurements taken from the top of standpipe at 0.35m above ground level.
2) Water level filled to the top of pea shingle at approximately 1.20m.

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

Job No.: **20/3521**

Date: **26/02/2021** **Test No.: 2**

Standing Water Level (m) Dry

Date	Time (h:mm:ss)	Minutes	Depth to Water (mbgl)	Depth to Water (mOD)
26/02/2021	0:00:00	0.00	1.23	
26/02/2021	0:00:30	0.50	1.28	
26/02/2021	0:01:00	1.00	1.34	
26/02/2021	0:01:30	1.50	1.39	
26/02/2021	0:02:00	2.00	1.44	
26/02/2021	0:02:30	2.50	1.47	
26/02/2021	0:03:00	3.00	1.50	
26/02/2021	0:03:30	3.50	1.52	
26/02/2021	0:04:00	4.00	1.55	
26/02/2021	0:04:30	4.50	1.57	
26/02/2021	0:05:00	5.00	1.60	
26/02/2021	0:05:30	5.50	1.62	
26/02/2021	0:06:00	6.00	1.64	
26/02/2021	0:06:30	6.50	1.66	
26/02/2021	0:07:00	7.00	1.68	
26/02/2021	0:07:30	7.50	1.70	
26/02/2021	0:08:00	8.00	1.72	
26/02/2021	0:08:30	8.50	1.75	
26/02/2021	0:09:00	9.00	1.77	
26/02/2021	0:09:30	9.50	1.78	
26/02/2021	0:10:00	10.00	1.80	
26/02/2021	0:11:00	11.00	1.84	
26/02/2021	0:12:00	12.00	1.87	
26/02/2021	0:13:00	13.00	1.90	
26/02/2021	0:14:00	14.00	1.93	
26/02/2021	0:15:00	15.00	1.96	
26/02/2021	0:16:00	16.00	1.96	
26/02/2021	0:17:00	17.00	2.02	
26/02/2021	0:18:00	18.00	2.05	
26/02/2021	0:19:00	19.00	2.07	
26/02/2021	0:20:00	20.00	2.10	
26/02/2021	0:22:00	22.00	2.14	
26/02/2021	0:24:00	24.00	2.18	
26/02/2021	0:26:00	26.00	2.22	
26/02/2021	0:28:00	28.00	2.24	
26/02/2021	0:30:00	30.00	2.26	
26/02/2021	0:35:00	35.00	2.32	
26/02/2021	0:40:00	40.00	2.37	
26/02/2021	0:45:00	45.00	2.40	
26/02/2021	0:50:00	50.00	2.43	

REMARKS:

1) All measurements taken from the top of standpipe at 0.35m above ground level.
2) Water level filled to the top of pea shingle at approximately 1.20m.

Site Name: **Elleray Hall & North Lane Depot/East Car Park**

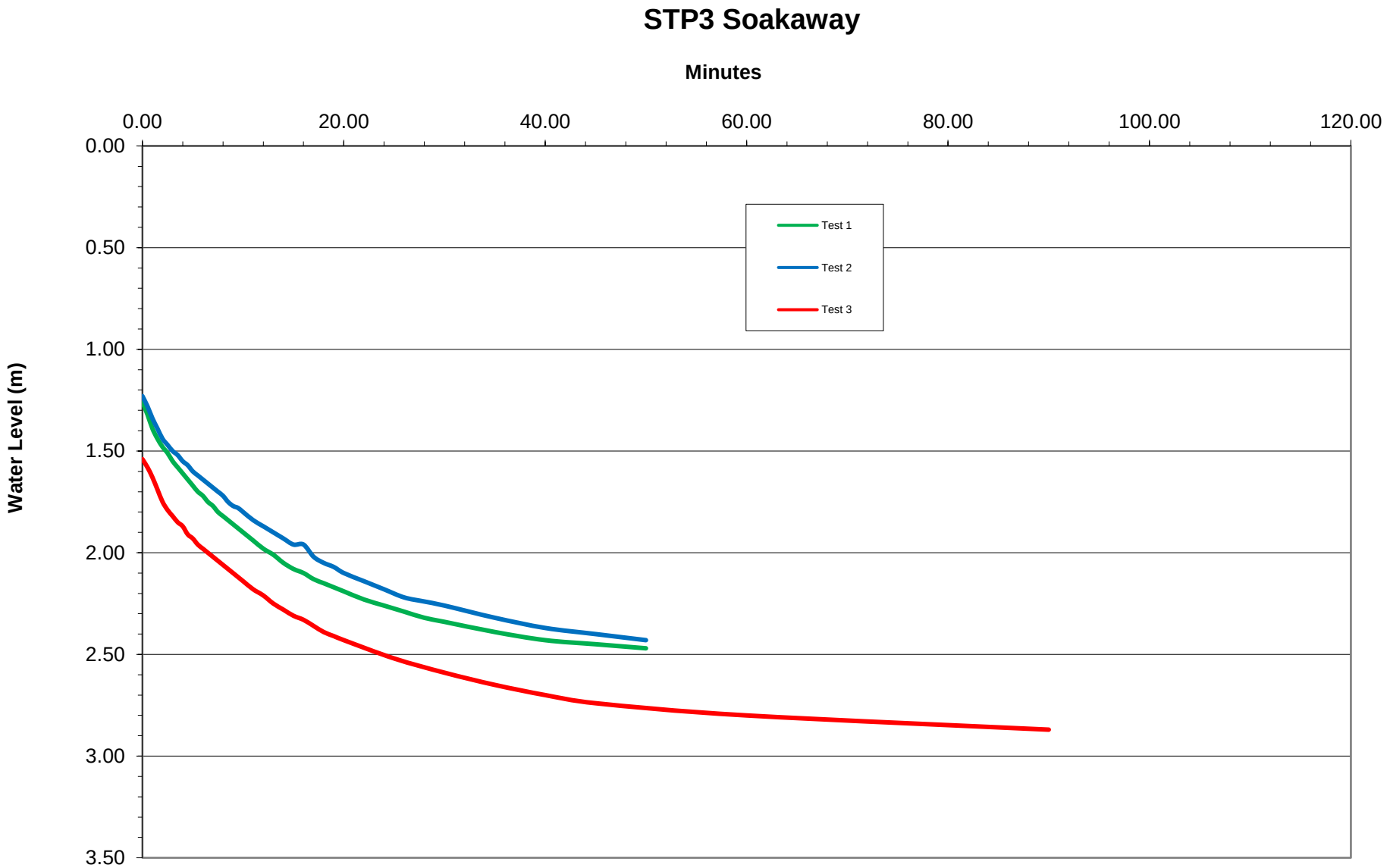
Job No.: **20/3521**

Date: **01/03/2021** **Test No.: 3**

Standing Water Level (m) Dry

Date	Time (h:mm:ss)	Minutes	Depth to Water (mbgl)	Depth to Water (mOD)
26/02/2021	0:00:00	0.00	1.54	
26/02/2021	0:00:30	0.50	1.58	
26/02/2021	0:01:00	1.00	1.63	
26/02/2021	0:01:30	1.50	1.69	
26/02/2021	0:02:00	2.00	1.75	
26/02/2021	0:02:30	2.50	1.79	
26/02/2021	0:03:00	3.00	1.82	
26/02/2021	0:03:30	3.50	1.85	
26/02/2021	0:04:00	4.00	1.87	
26/02/2021	0:04:30	4.50	1.91	
26/02/2021	0:05:00	5.00	1.93	
26/02/2021	0:05:30	5.50	1.96	
26/02/2021	0:06:00	6.00	1.98	
26/02/2021	0:06:30	6.50	2.00	
26/02/2021	0:07:00	7.00	2.02	
26/02/2021	0:07:30	7.50	2.04	
26/02/2021	0:08:00	8.00	2.06	
26/02/2021	0:08:30	8.50	2.08	
26/02/2021	0:09:00	9.00	2.10	
26/02/2021	0:09:30	9.50	2.12	
26/02/2021	0:10:00	10.00	2.14	
26/02/2021	0:11:00	11.00	2.18	
26/02/2021	0:12:00	12.00	2.21	
26/02/2021	0:13:00	13.00	2.25	
26/02/2021	0:14:00	14.00	2.28	
26/02/2021	0:15:00	15.00	2.31	
26/02/2021	0:16:00	16.00	2.33	
26/02/2021	0:17:00	17.00	2.36	
26/02/2021	0:18:00	18.00	2.39	
26/02/2021	0:19:00	19.00	2.41	
26/02/2021	0:20:00	20.00	2.43	
26/02/2021	0:25:00	25.00	2.52	
26/02/2021	0:30:00	30.00	2.59	
26/02/2021	0:35:00	35.00	2.65	
26/02/2021	0:40:00	40.00	2.70	
26/02/2021	0:45:00	45.00	2.74	
26/02/2021	1:00:00	60.00	2.80	
26/02/2021	1:30:00	90.00	2.87	

REMARKS:
1) All measurements taken from below top of standpipe at 0.35m above ground level.


STP3 Soakaway
Minutes
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Water Level (m)
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
Test 1
Test 2
Test 3

13. INSTRUMENTATION MONITORING RESULTS

Borehole	Depth of Installation (mbgl)	Date of Installation	Type	Top (mbgl)	Bottom (mbgl)	Date & Time	Water Level (mbgl)	Water Level (mOD)	Remarks
BH1	6.30	26/02/2021	GMP	1.00	6.30	25/02/2021	4.00	4.85	
	6.30	26/02/2021	GMP	1.00	6.30	03/03/2021	4.05	4.80	
	6.30	26/02/2021	GMP	1.00	6.30	10/03/2021 09:35:00	No Access		Car parked
	6.30	26/02/2021	GMP	1.00	6.30	17/03/2021 09:32:00	4.06	4.79	
	6.30	26/02/2021	GMP	1.00	6.30	24/03/2021 10:10:00	No Access		Car parked
	6.30	26/02/2021	GMP	1.00	6.30	09/06/2021 12:27:00	4.15	4.70	
BH2	6.60	24/02/2021	GMP	1.00	6.60	23/02/2021	4.30	4.66	
	6.60	24/02/2021	GMP	1.00	6.60	03/03/2021	4.14	4.82	
	6.60	24/02/2021	GMP	1.00	6.60	10/03/2021 08:30:00	4.15	4.81	
	6.60	24/02/2021	GMP	1.00	6.60	17/03/2021 10:16:00	4.15	4.81	
	6.60	24/02/2021	GMP	1.00	6.60	24/03/2021 10:00:00	4.16	4.80	
	6.60	24/02/2021	GMP	1.00	6.60	09/06/2021 14:32:00	4.24	4.72	
WS1	2.00	26/02/2021	GMP	1.00	2.00	03/03/2021	Dry		
	2.00	26/02/2021	GMP	1.00	2.00	10/03/2021 09:40:00	Dry		
	2.00	26/02/2021	GMP	1.00	2.00	17/03/2021 09:38:00	Dry		
	2.00	26/02/2021	GMP	1.00	2.00	24/03/2021 10:20:00	Dry		
	2.00	26/02/2021	GMP	1.00	2.00	09/06/2021 13:20:00	Dry		
WS2	2.00	25/02/2021	GMP	1.00	2.00	03/03/2021	Dry		
	2.00	25/02/2021	GMP	1.00	2.00	10/03/2021 09:55:00	Dry		
	2.00	25/02/2021	GMP	1.00	2.00	17/03/2021 10:00:00	Dry		
	2.00	25/02/2021	GMP	1.00	2.00	24/03/2021 10:15:00	Dry		
	2.00	25/02/2021	GMP	1.00	2.00	09/06/2021 13:45:00	Dry		
WS6	2.00	25/02/2021	GMP	1.00	2.00	03/03/2021	Dry		
	2.00	25/02/2021	GMP	1.00	2.00	10/03/2021 09:00:00	Dry		
	2.00	25/02/2021	GMP	1.00	2.00	17/03/2021 10:20:00	Dry		
	2.00	25/02/2021	GMP	1.00	2.00	24/03/2021 09:50:00	Dry		
	2.00	25/02/2021	GMP	1.00	2.00	09/06/2021 14:20:00	Dry		
WS10	2.00	24/02/2021	GMP	1.00	2.00	03/03/2021	Dry		
	2.00	24/02/2021	GMP	1.00	2.00	10/03/2021 09:25:00	Dry		
	2.00	24/02/2021	GMP	1.00	2.00	17/03/2021 10:38:00	Dry		
	2.00	24/02/2021	GMP	1.00	2.00	24/03/2021 09:40:00	Dry		
	2.00	24/02/2021	GMP	1.00	2.00	09/06/2021 14:05:00	Dry		

KEY
GMP - Gas monitoring point
GWMP - Groundwater monitoring point
SPIE - Standpipe piezometer
EPIE - Electronic Piezometer
SP - Standpipe

CONCEPT
Warple Mews, 8 Warple Way
W3 0RF
Telephone: 020 8811 2880_Fax: 020 8811 2881
E-mail: si@conceptconsultants.co.uk

GROUNDWATER MONITORING

Job No: 20/3521

Project: Elleray Hall & North Lane Depot/East Car Park

Client: Richmond & Wandsworth Council

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	10/03/2021	**Job Number:**	20/3521	**Time:**	08:10

METEOROLOGICAL AND SITE INFORMATION									
State of ground:		Dry		Moist		Wet			**Delete As Required**
Wind:		Calm		Light		Moderate		Strong	Ground Level
Cloud cover:		None		Slight		Cloudy		Overcast	Basement Level
Precipitation		None		Slight		Moderate		Heavy	
Barometric pressure (mb) Before:					Temperature (°)				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		

BH (No.)	BH1	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
					0							No access
Depth to GW: (m)					15							
					30							
					45							
					60							
					75							
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK							
					15							
					30							
					45							
					60							
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

dP: Differential Pressure

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	10/03/2021	**Job Number:**	20/3521	**Time:**	08:10

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:		Calm		Light	X	Moderate		Strong		Ground Level
Cloud cover:		None		Slight	X	Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1010				Temperature (°)		7			

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	BH2	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1010	0.0	0.0	**0**	0.0	0.0	0.2	19.2	0.0	0.0	
Depth to GW: (m)	4.15				**15**	0.0	0.0	0.4	19.9	0.0	0.0	
					30	0.0	0.0	0.4	19.6	0.0	0.0	
					45	0.0	0.0	0.4	19.5	0.0	0.0	
					60	0.0	0.0	0.4	19.5	0.0	0.0	
					75	0.0	0.0	0.4	19.5	0.0	0.0	Constant readings
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	0.4						
					15	0.3						
					30	0.2						
					45	0.2						
					60	0.1						
					75	0.1						
					90	0.1						
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	10/03/2021	**Job Number:**	20/3521	**Time:**	09:30

METEOROLOGICAL AND SITE INFORMATION										
State of ground:		Dry	X	Moist		Wet				**Delete As Required**
Wind:		Calm	X	Light		Moderate		Strong		Ground Level
Cloud cover:		None		Slight		Cloudy	X	Overcast		
Precipitation		None	X	Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1009				Temperature (°)		7			

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS1	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1009	0.0	0.0	**0**	0.0	0.0	0.5	18.8	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	0.8	18.9	0.0	0.0	
					30	0.0	0.0	0.9	18.3	0.0	0.0	
					45	0.0	0.0	0.9	18.2	0.0	0.0	
					60	0.0	0.0	0.9	18.2	0.0	0.0	
					75	0.0	0.0	0.9	18.2	0.0	0.0	Constant readings
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK							
					15	0.6						
					30	0.5						
					45	0.5						
					60	0.4						
					75	0.4						
					90	0.4						
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	10/03/2021	**Job Number:**	20/3521	**Time:**	09:45

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:		Calm	X	Light		Moderate		Strong		Ground Level
Cloud cover:	X	None		Slight		Cloudy		Overcast		
Precipitation		None	X	Slight		Moderate		Heavy		
Barometric pressure (mb) Before:					Temperature (°)		7			

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS2	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1009	0.0	0.0	**0**	0.0	0.0	0.8	8.5	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	4.5	16.2	0.0	0.0	
					30	0.0	0.0	4.6	15.1	0.0	0.0	
					45	0.0	0.0	4.7	14.9	0.0	0.0	
					60	0.0	0.0	4.7	14.8	0.0	0.0	
					75	0.0	0.0	4.7	14.8	0.0	0.0	
					90	0.0	0.0	4.7	14.7	0.0	0.0	
					105	0.0	0.0	4.7	14.7	0.0	0.0	
					120	0.0	0.0	4.7	14.7	0.0	0.0	Constant readings
					135							
					150							
						PID(ppm)						
					PEAK	0.4						
					15	0.2						
					30	0.2						
					45	0.2						
					60	0.2						
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	10/03/2021	**Job Number:**	20/3521	**Time:**	09:00

METEOROLOGICAL AND SITE INFORMATION										
State of ground:		Dry	X	Moist		Wet				**Delete As Required**
Wind:		Calm	X	Light		Moderate		Strong		Ground Level
Cloud cover:		None		Slight		Cloudy	X	Overcast		
Precipitation		None	X	Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1010				Temperature (°)		7			

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS6	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1010	0.0	0.0	**0**	0.0	0.0	0.3	19.2	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	0.0	19.9	0.0	0.0	
					30	0.0	0.0	0.0	19.7	0.0	0.0	
					45	0.0	0.0	0.0	19.6	0.0	0.0	
					60	0.0	0.0	0.0	19.5	0.0	0.0	
					75	0.0	0.0	0.0	19.5	0.0	0.0	
					90	0.0	0.0	0.0	19.5	0.0	0.0	Constant readings
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	2.0						
					15	1.3						
					30	1.1						
					45	1.0						
					60	1.8						
					75	1.9						
					90	2.0						
					105	2.0						
					120	2.0						

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	10/03/2021	**Job Number:**	20/3521	**Time:**	09:15

METEOROLOGICAL AND SITE INFORMATION										
State of ground:		Dry	X	Moist		Wet				**Delete As Required**
Wind:		Calm	X	Light		Moderate		Strong		Ground Level
Cloud cover:		None		Slight		Cloudy	X	Overcast		
Precipitation		None	X	Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1010				Temperature (°)		7			

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS10	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1010	0.0	0.0	**0**	0.0	0.0	0.0	19.2	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	0.5	19.3	0.0	0.0	
					30	0.0	0.0	0.5	18.6	0.0	0.0	
					45	0.0	0.0	0.5	18.5	0.0	0.0	
					60	0.0	0.0	0.5	18.5	0.0	0.0	
					75	0.0	0.0	0.5	18.4	0.0	0.0	
					90	0.0	0.0	0.5	18.4	0.0	0.0	
					105	0.0	0.0	0.5	18.4	0.0	0.0	Constant readings
					120							
					135							
					150							
						PID(ppm)						
					PEAK	0.9						
					15	0.9						
					30	0.9						
					45	0.9						
					60	0.9						
					75	0.9						
					90	0.9						
					105	0.9						
					120	0.9						

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	17/03/2021	**Job Number:**	20/3521	**Time:**	09:25

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1032				Temperature (°)	8				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	BH1	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1032	0.0	0.0	**0**	0.0	0.0	0.6	18.7	0.0	0.0	
Depth to GW: (m)	4.06				**15**	0.0	0.0	4.1	15.5	0.0	0.0	
					30	0.0	0.0	4.3	14.0	0.0	0.0	
					45	0.0	0.0	4.4	13.6	0.0	0.0	
					60	0.0	0.0	4.4	13.5	0.0	0.0	
					75	0.0	0.0	4.5	13.4	0.0	0.0	
					90	0.0	0.0	4.5	13.3	0.0	0.0	
					105	0.0	0.0	4.5	13.2	0.0	0.0	
					120	0.0	0.0	4.5	13.2	0.0	0.0	
					135	0.0	0.0	4.6	13.1	0.0	0.0	
					150	0.0	0.0	4.6	13.0	0.0	0.0	Constant readings
						PID(ppm)						
					PEAK							
					15	1.0						
					30	1.1						
					45	1.1						
					60	1.1						
					75	1.1						
					90	1.1						
					105	1.1						
					120	1.1						

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	17/03/2021	**Job Number:**	20/3521	**Time:**	10:08

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1032				Temperature (°)	8				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	BH2	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1032	0.0	0.0	**0**	0.0	0.0	4.1	17.1	0.0	0.0	
Depth to GW: (m)	4.15				**15**	0.0	0.0	0.7	18.2	0.0	0.0	
					30	0.0	0.0	0.6	19.0	0.0	0.0	
					45	0.0	0.0	0.6	19.1	0.0	0.0	
					60	0.0	0.0	0.6	19.1	0.0	0.0	
					75	0.0	0.0	0.6	19.1	0.0	0.0	Constant readings
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	0.4						
					15	0.3						
					30	0.3						
					45	0.2						
					60	0.2						
					75	0.2						
					90	0.2						
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	17/03/2021	**Job Number:**	20/3521	**Time:**	10:30

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1033				Temperature (°)	8				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		X
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		

Tick Instrument used

BH (No.)	WS1	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1033	0.0	0.0	**0**	0.0	0.0	0.1	19.8	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	1.2	17.7	0.0	0.0	
					30	0.0	0.0	1.3	17.2	0.0	0.0	
					45	0.0	0.0	1.4	17.2	0.0	0.0	
					60	0.0	0.0	1.4	17.0	0.0	0.0	
					75	0.0	0.0	1.4	16.9	0.0	0.0	
					90	0.0	0.0	1.4	17.1	0.0	0.0	
					105	0.0	0.0	1.4	17.1	0.0	0.0	
					120	0.0	0.0	1.4	17.1	0.0	0.0	Constant readings
					135							
					150							
						PID(ppm)						
					PEAK							
					15	0.4						
					30	0.5						
					45	0.5						
					60	0.5						
					75	0.5						
					90	0.5						
					105	0.5						
					120	0.5						

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	17/03/2021	**Job Number:**	20/3521	**Time:**	09:50

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation	X			Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1033				Temperature (°)	8				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		X
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		

Tick Instrument used

BH (No.)	WS2	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1033	0.0	0.0	**0**	0.0	0.0	1.3	18.4	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	5.4	14.7	0.0	0.0	
					30	0.0	0.0	5.7	14.4	0.0	0.0	
					45	0.0	0.0	5.8	14.4	0.0	0.0	
					60	0.0	0.0	5.8	14.4	0.0	0.0	
					75	0.0	0.0	5.8	14.1	0.0	0.0	
					90	0.0	0.0	5.8	14.1	0.0	0.0	
					105	0.0	0.0	5.8	14.2	0.0	0.0	
					120	0.0	0.0	5.8	14.3	0.0	0.0	
					135	0.0	0.0	5.8	14.3	0.0	0.0	
					150	0.0	0.0	5.8	14.3	0.0	0.0	Constant readings
						PID(ppm)						
					PEAK	1.0						
					15	1.0						
					30	0.4						
					45	0.3						
					60	0.3						
					75	0.3						
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	17/03/2021	**Job Number:**	20/3521	**Time:**	10:10

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1033				Temperature (°)	8				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		X
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		

Tick Instrument used

BH (No.)	WS6	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1033	0.0	0.0	**0**	0.0	0.0	5.3	17.0	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	0.2	19.3	0.0	0.0	
					30	0.0	0.0	0.1	19.9	0.0	0.0	
					45	0.0	0.0	0.1	19.9	0.0	0.0	
					60	0.0	0.0	0.0	20.0	0.0	0.0	
					75	0.0	0.0	0.0	20.2	0.0	0.0	
					90	0.0	0.0	0.0	20.2	0.0	0.0	
					105	0.0	0.0	0.0	20.2	0.0	0.0	Constant readings
					120							
					135							
					150							
						PID(ppm)						
					PEAK	1.3						
					15	1.0						
					30	1.1						
					45	1.2						
					60	1.2						
					75	1.2						
					90	1.3						
					105	1.3						
					120	1.3						

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JM+JI
Date:	17/03/2021	**Job Number:**	20/3521	**Time:**	10:30

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:		None		Slight	X	Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1032				Temperature (°)		8			

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS10	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1032	0.0	0.0	**0**	0.0	0.0	0.7	19.7	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	0.6	19.2	0.0	0.0	
					30	0.0	0.0	0.6	19.1	0.0	0.0	
					45	0.0	0.0	0.6	19.1	0.0	0.0	
					60	0.0	0.0	0.6	19.1	0.0	0.0	Constant readings
					75							
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	1.7						
					15	0.6						
					30	0.6						
					45	0.6						
					60	0.6						
					75	0.6						
					90	0.6						
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI & JM
Date:	24/03/2021	**Job Number:**	20/3521	**Time:**	10:20

METEOROLOGICAL AND SITE INFORMATION									
State of ground:		Dry		Moist		Wet			**Delete As Required**
Wind:		Calm		Light		Moderate		Strong	Ground Level
Cloud cover:		None		Slight		Cloudy		Overcast	
Precipitation		None		Slight		Moderate		Heavy	
Barometric pressure (mb) Before:					Temperature (°)				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		

BH (No.)	BH1	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
					0							No Access
Depth to GW: (m)					15							
					30							
					45							
					60							
					75							
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK							
					15							
					30							
					45							
					60							
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI & JM
Date:	24/03/2021	**Job Number:**	20/3521	**Time:**	10:00

METEOROLOGICAL AND SITE INFORMATION											
State of ground:	X	Dry		Moist		Wet					**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong			Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast			
Precipitation	X	None		Slight		Moderate		Heavy			
Barometric pressure (mb) Before:	1020				Temperature (°)	10					

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	BH2	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1020	0.0	0.0	**0**	0.0	0.0	0.0	19.2	0.0	0.0	
Depth to GW: (m)	4.16				**15**	0.0	0.0	0.9	19.2	0.0	0.0	
					30	0.0	0.0	0.9	18.7	0.0	0.0	
					45	0.0	0.0	0.9	18.6	0.0	0.0	
					60	0.0	0.0	0.9	18.6	0.0	0.0	
					75	0.0	0.0	0.9	18.6	0.0	0.0	Constant readings
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	0.3						
					15	0.2						
					30	0.2						
					45	0.2						
					60	0.2						
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI & JM
Date:	24/03/2021	**Job Number:**	20/3521	**Time:**	10:15

METEOROLOGICAL AND SITE INFORMATION											
State of ground:	X	Dry		Moist		Wet					**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong			Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast			
Precipitation	X	None		Slight		Moderate		Heavy			
Barometric pressure (mb) Before:	1020				Temperature (°)	10					

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS1	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1020	-1.0	-0.3	**0**	0.0	0.0	5.2	15.6	0.0	0.0	
Depth to GW: (m)	DRY		0.0	0.0	**15**	0.0	0.0	1.0	17.2	0.0	0.0	
			0.0	0.0	**30**	0.0	0.0	0.9	17.6	0.0	0.0	
					45	0.0	0.0	0.8	17.9	0.0	0.0	
					60	0.0	0.0	0.8	18.0	0.0	0.0	
					75	0.0	0.0	0.7	18.1	0.0	0.0	
					90	0.0	0.0	0.8	18.0	0.0	0.0	
					105	0.0	0.0	0.8	18.0	0.0	0.0	
					120	0.0	0.0	0.8	18.0	0.0	0.0	Constant readings
					135							
					150							
						PID(ppm)						
					PEAK	0.6						
					15	0.2						
					30	0.2						
					45	0.2						
					60	0.2						
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI & JM
Date:	24/03/2021	**Job Number:**	20/3521	**Time:**	10:05

METEOROLOGICAL AND SITE INFORMATION

State of ground:	X	Dry		Moist		Wet					**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong			Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast			
Precipitation	X	None		Slight		Moderate		Heavy			
Barometric pressure (mb) Before:	1020				Temperature (°)	10					

INSTRUMENTATION USED

Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS2	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1020	0.0	0.0	**0**	0.0	0.0	0.0	19.9	0.0	0.0	
Depth to GW: (m)	DRY				**15**	0.0	0.0	4.8	16.6	0.0	0.0	
					30	0.0	0.0	5.6	14.8	0.0	0.0	
					45	0.0	0.0	5.7	14.5	0.0	0.0	
					60	0.0	0.0	5.7	14.4	0.0	0.0	
					75	0.0	0.0	5.7	14.4	0.0	0.0	
					90	0.0	0.0	5.7	14.3	0.0	0.0	
					105	0.0	0.0	5.7	14.3	0.0	0.0	
					120	0.0	0.0	5.7	14.3	0.0	0.0	Constant readings
					135							
					150							
						PID(ppm)						
					PEAK	0.5						
					15	0.2						
					30	0.2						
					45	0.2						
					60	0.2						
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI & JM
Date:	24/03/2021	**Job Number:**	20/3521	**Time:**	09:45

METEOROLOGICAL AND SITE INFORMATION											
State of ground:	X	Dry		Moist		Wet					**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong			Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast			
Precipitation	X	None		Slight		Moderate		Heavy			
Barometric pressure (mb) Before:	1020				Temperature (°)		10				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS6	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1020	0.0	0.0	**0**	0.0	0.0	0.8	18.8	0.0	0.0	
Depth to GW: (m)	DRY				**15**	0.0	0.0	0.0	19.7	0.0	0.0	
					30	0.0	0.0	0.0	19.6	0.0	0.0	
					45	0.0	0.0	0.0	19.6	0.0	0.0	
					60	0.0	0.0	0.0	19.6	0.0	0.0	
					75	0.0	0.0	0.0	19.6	0.0	0.0	Constant readings
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	0.9						
					15	0.8						
					30	0.9						
					45	0.9						
					60	0.9						
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI & JM
Date:	24/03/2021	**Job Number:**	20/3521	**Time:**	09:30

METEOROLOGICAL AND SITE INFORMATION										
State of ground:		Dry	X	Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1020				Temperature (°)	10				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS10	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1020	0.0	0.0	**0**	0.0	0.0	0.4	19.1	0.0	0.0	
Depth to GW: (m)	DRY				**15**	0.0	0.0	0.8	19.3	0.0	0.0	
					30	0.0	0.0	0.8	18.9	0.0	0.0	
					45	0.0	0.0	0.8	18.8	0.0	0.0	
					60	0.0	0.0	0.8	18.8	0.0	0.0	
					75	0.0	0.0	0.8	18.7	0.0	0.0	
					90	0.0	0.0	0.8	18.7	0.0	0.0	
					105	0.0	0.0	0.8	18.7	0.0	0.0	Constant readings
					120							
					135							
					150							
						PID(ppm)						
					PEAK	0.7						
					15	0.5						
					30	0.5						
					45	0.4						
					60	0.4						
					75	0.4						
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI
Date:	09/06/2021	**Job Number:**	20/3521	**Time:**	12:18

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:	X	None		Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1024				Temperature (°)	23				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	BH1	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1024	0.0	0.0	**0**	0.0	0.0	0.0	19.3	0.0	0.0	
Depth to GW: (m)	4.15				**15**	0.0	0.0	0.0	19.5	0.0	0.0	
					30	0.0	0.0	0.0	19.6	0.0	0.0	
					45	0.0	0.0	0.0	19.6	0.0	0.0	
					60	0.0	0.0	0.0	19.6	0.0	0.0	
					75	0.0	0.0	0.0	19.6	0.0	0.0	Constant readings
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	1.7						
					15	0.5						
					30	0.1						
					45	0.0						
					60	0.0						
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure
dP: Differential Pressure

NR: Not Recorded

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI
Date:	09/06/2021	**Job Number:**	20/3521	**Time:**	14:25

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:	X	None		Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1018				Temperature (°)	24				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	BH2	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1018	0.0	0.0	**0**	0.0	0.0	0.0	20.1	0.0	0.0	
Depth to GW: (m)	4.24				**15**	0.0	0.0	0.0	20.1	0.0	0.0	
					30	0.0	0.0	0.0	20.1	0.0	0.0	
					45	0.0	0.0	0.0	20.1	0.0	0.0	
					60	0.0	0.0	0.0	20.1	0.0	0.0	Constant readings
					75							
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	2.7						
					15	0.8						
					30	0.6						
					45	0.6						
					60	0.6						
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure
dP: Differential Pressure

NR: Not Recorded

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI
Date:	09/06/2021	**Job Number:**	20/3521	**Time:**	13:08

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:	X	None		Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1026				Temperature (°)	24				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS1	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1026	0.0	0.0	**0**	0.0	0.0	0.0	19.0	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	0.0	19.6	0.0	0.0	
					30	0.0	0.0	0.0	19.8	0.0	0.0	
					45	0.0	0.0	0.0	19.8	0.0	0.0	
					60	0.0	0.0	0.0	19.8	0.0	0.0	
					75	0.0	0.0	0.0	19.8	0.0	0.0	Constant readings
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	4.3						
					15	1.5						
					30	1.3						
					45	1.2						
					60	1.2						
					75	1.2						
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI
Date:	09/06/2021	**Job Number:**	20/3521	**Time:**	13:35

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:	X	None		Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1020				Temperature (°)	24				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS2	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1021	1.0	0.1	**0**	0.0	0.0	0.0	19.6	0.0	0.0	
Depth to GW: (m)	Dry		0.0	0.0	**15**	0.0	0.0	0.0	19.7	0.0	0.0	
					30	0.0	0.0	0.0	19.8	0.0	0.0	
					45	0.0	0.0	0.0	19.8	0.0	0.0	
					60	0.0	0.0	0.0	19.7	0.0	0.0	
					75	0.0	0.0	0.0	19.7	0.0	0.0	
					90	0.0	0.0	0.0	19.7	0.0	0.0	Constant readings
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	2.8						
					15	0.6						
					30	0.6						
					45	0.5						
					60	0.5						
					75	0.5						
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI
Date:	09/06/2021	**Job Number:**	20/3521	**Time:**	14:10

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:	X	None		Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1020				Temperature (°)	24				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS6	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1020	0.0	0.0	**0**	0.0	0.0	0.0	20.1	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	0.0	20.1	0.0	0.0	
					30	0.0	0.0	0.0	20.1	0.0	0.0	
					45	0.0	0.0	0.0	20.1	0.0	0.0	
					60	0.0	0.0	0.0	20.1	0.0	0.0	Constant readings
					75							
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	4.6						
					15	1.3						
					30	1.3						
					45	1.3						
					60	1.3						
					75							
					90							
					105							
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

Gas Monitoring Results

JOB DETAILS					
Location:	Elleray Hall			**Engineer:**	JI
Date:	09/06/2021	**Job Number:**	20/3521	**Time:**	13:55

METEOROLOGICAL AND SITE INFORMATION										
State of ground:	X	Dry		Moist		Wet				**Delete As Required**
Wind:	X	Calm		Light		Moderate		Strong		Ground Level
Cloud cover:	X	None		Slight		Cloudy		Overcast		
Precipitation	X	None		Slight		Moderate		Heavy		
Barometric pressure (mb) Before:	1021				Temperature (°)	24				

INSTRUMENTATION USED			
Gas concentration:	#1 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;		Tick Instrument used
	#2 Gas Data GFM 436, Accuracy: CH4 ±0.3% (0 to 5%), ±3.0% (at 30%), ±3.0% (at 100%); CO2 ±0.3% (0 to 5%), ±3.0% (at 40%); O2 ±0.2%;	X	

BH (No.)	WS10	aP After (mb)	dp (Pa)	Flow rate (l/h)	Time (s)	CH_4 (%)	LEL (%)	CO_2 (%)	O_2 (%)	H_2S(ppm)	CO (ppm)	Comments
		1021	0.0	0.0	**0**	0.0	0.0	0.0	20.0	0.0	0.0	
Depth to GW: (m)	Dry				**15**	0.0	0.0	0.0	20.1	0.0	0.0	
					30	0.0	0.0	0.0	20.2	0.0	0.0	
					45	0.0	0.0	0.0	20.2	0.0	0.0	
					60	0.0	0.0	0.0	20.2	0.0	0.0	
					75	0.0	0.0	0.0	20.2	0.0	0.0	Constant readings
					90							
					105							
					120							
					135							
					150							
						PID(ppm)						
					PEAK	3.9						
					15	0.6						
					30	0.4						
					45	0.3						
					60	0.3						
					75	0.2						
					90	0.2						
					105	0.2						
					120							

KEY

aP: Atmospheric Pressure NR: Not Recorded

dP: Differential Pressure

Note: Where 0.0 is shown on the results indicates value lower than the detection limit of the instrument.

CONCEPT

GROUNDWATER - IN SITU ANALYSIS & SAMPLING

Site:	**Elleray Hall**
Job No.:	**20/3521**
Date:	**09/06/2021**
Technician:	**JI**
Sampling method:	*Low Flow (peristaltic)*

BH No.	Base of well (mbgl)	Top of slotted (mbgl)	Depth to GW (mbgl)
BH1	6.30	1.00	4.15

Purge Volume (L)	Time	Temp (°C)	DO (mg/L)	SPC (mS/cm)	pH	pH (mV)	Redox Potential (mV)	Sample Detail (Colour/Odour/ Turbidity)
1.0	12:35	20.4	6.50	0.79	7.23	-42.8	175.9	Clear
2.0	12:39	19.9	6.55	0.79	7.25	-43.4	178.1	Clear
3.0	12:42	19.8	6.57	0.79	7.27	-44.6	176.4	Clear
4.0	12:45	19.8	6.56	0.79	7.25	-43.7	173.3	Clear

CONCEPT

GROUNDWATER - IN SITU ANALYSIS & SAMPLING

Site:	**Elleray Hall**
Job No.:	**20/3521**
Date:	**17/03/2021**
Technician:	**JI + JM**
Sampling method:	*Low Flow (peristaltic)*

BH No.	Base of well (mbgl)	Top of slotted (mbgl)	Depth to GW (mbgl)
BH2	6.60	1.00	4.15

Purge Volume (L)	Time	Temp (°C)	DO (mg/L)	SPC (mS/cm)	pH	pH (mV)	Redox Potential (mV)	Sample Detail (Colour/Odour/ Turbidity)
1.0	10:31	12.0	5.66	0.95	7.03	-21.0	192.5	Slightly brown
2.0	10:33	12.0	5.58	0.95	7.01	-19.6	194.1	Slightly brown
3.5	10:36	12.0	5.48	0.95	6.98	-18.4	196.9	Slightly brown
4.5	10:39	12.0	5.48	0.95	6.97	-17.9	198.4	Slightly brown

TEST DATE AND CONDITIONS		
Date	11/08/2020	
Atmospheric Pressure	997	mB
Ambient Temperature	21.6	°C
Environics Serial No.	5089	

GAS DATA LTD
Unit 4, Fairfield Court
Seven Stars Estate
Wheler Rd
Coventry
CV3 4LJ
Tel 02476303311 Fax 02476307711

GFM436 Final Inspection & Calibration Check Certificate

Customer	Concept Site Investigations
Certificate Number	121930
Order Number	326344

Serial Number	13240
Software Version	G436-00.0027/0010

Recalibration DUE Date
11/08/21

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	400	Accept > 200 cc/min	Pump Flow @ -200mB	250	Accept > 200 cc/min
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
	CH_4		CO_2		O_2	
Sensor	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %
	59.8	60	40	40	20.9	20.9
	Accept ±1.0		Accept ±1.0		Accept ±0.5	
	4.9	5	5	5	6	6
	Accept ±0.3		Accept ±0.3		Accept ±0.3	
Zero Reading 100% N2	0	0	0	0	0	0
	Accept ±0.0		Accept ±0.0		Accept ±0.1	

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings *(ppm)*			
			Zero Reading		Instrument Gas Reading	
Gas Type	Range *(ppm)*					
H2S	5000	1500	0	Accept ±0.0	1500	Accept ±5.0
CO	2000	1000	0	Accept ±0.0	1000	Accept ±5.0
Hexane	2.0%	2.0%	0	Accept ±0.0	1.99	Accept ±10.0

Cross Gas Effects									
Applied Gas (ppm)		Instrument Readings (ppm)							
Gas Type	Concentration	Toxic 1:	H2S	Toxic 2:	CO	Toxic 3:	HEX		
H2S	1500	1500		0		0			
CO	1000	40		1000		0			
Hexane	2.0%	0		0		1.99			

Pressure Checks			
Atmospheric Pressure [AP] (mB)			
Current Atmospheric Pressure (mB)		Instrument Atmospheric Pressure Reading (mB)	
AP Open Ports		997	Accept ±2.0
AP Port (Internal)	+800 mB	800	Accept ±5.0
	+1200mb	1200	Accept ±5.0

Flow Checks					
Borehole Flow			Differential Pressure		
Applied Reading (l/h)	Instrument Reading (l/h)		Applied Pressure (Pa)	Instrument Reading (Pa)	
-30	-30.1	Accept ±3.0	-328	-330	Accept ±50
-3	-3	Accept ±1.0	-15	-15	Accept ±6.0
0	0	Accept ±0.0	0	0	Accept ±0.5
3	3	Accept ±0.5	16	16	Accept ±3.0
30	30	Accept ±3.0	328	328	Accept ±50
60	60	Accept ±6.0	971	968	Accept ±130
90	90.7	Accept ±9.0	1894	1933	Accept ±250

Temperature Checks		
Calibration Temperature Applied Temperature °C	Instrument Temperature Reading °C	
-10	-10	Accept ±2.0
0	0	Accept ±1.0
30	30	Accept ±1.0
60	60	Accept ±1.0
100	100	Accept ±1.0

Technician:	Date Tested:
Jack Rutland	12/08/2020

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015. Certificate NQA 8374. Valid until 21/03/2022

TEST DATE AND CONDITIONS	
Date	03/03/21
Atmospheric Pressure	1013mB
Ambient Temp	24.7°C
Environics Serial No.	2518

GAS DATA LTD
Pegasus House
Seven Stars Estate
Wheler Rd
Coventry
CV3 4LB
Tel 02476303311 Fax 02476307711

GFM436-3 FINAL INSPECTION & CALIBRATION CHECK CERTIFICATE

INSTRUMENT DETAILS	
Serial No	Customer
12224	Concept Site Investigations

INSTRUMENT CHECKS			
Keyboard	✓	Pump Flow	500cc/min
Display Contrast	✓	Pump Flow @ -200mB	300cc/min
Clock Set / Running	✓	S/W Version	G436.0027/0011
Labels Fitted	✓	Recalibration Date	03/03/22

GAS CHECKS							
Calibration Gas		Instrument Gas Channels Read					
Gas Type	Applied Conc.	CH4 (%)	tol. (% vol.)	CO2 (%)	tol. (% vol.)	O2 (%)	tol. (% vol.)
N2	100%	0.0	0.0	0.0	0.0	0.0	+/-0.1
CH4	5%	4.9	+/-0.3	0.0	0.0	0.0	+/-0.1
	60%	59.7	+/-3.0	0.0	0.0	0.0	+/-0.1
CO2	5%	0.0	0.0	5.0	+/-0.3	0.0	+/-0.1
	40%	0.0	0.0	40.2	+/-3.0	0.0	+/-0.1
O2	20.9%	0.0	0.0	0.1	+0.1	20.8	+/-0.5

OPTIONAL GAS CHECKS								
Calibration Gas		Instrument Gas Channels Read						
Gas Type	Applied Conc.	Label	H2S	CO			Hexane	tol. (% vol.)
		Range	5000ppm	2000ppm			2.00%	
N2	100%		0	0			0	0.0
H2S	1500ppm		1500	0				+/- 5.0
CO	1000ppm		70	998				+/- 5.0
Hexane	2.00%						1.966	+/- 10.0

PRESSURE CHECKS							
Calibration Pressure		Instrument Pressure Channels Read					
Pressure @	Applied Pressure	Atmospheric [Ap] (mB)	tol. (mB)				
All Ports	Current Atmospheric	1012	+/-2.0				
Ap Port (Internal)	+800mB(a)	802	+/-5.0				
	+1200mB(a)	1197	+/-5.0				

TEST DATE AND CONDITIONS	
Date	03/03/21
Atmospheric Pressure	1013mB
Ambient Temp	24.7°C
Environics Serial No.	2518

GAS DATA LTD
Pegasus House
Seven Stars Estate
Wheler Rd
Coventry
CV3 4LB
Tel 02476303311 Fax 02476307711

GFM436-3 FINAL INSPECTION & CALIBRATION CHECK CERTIFICATE

FLOW CHECKS					
Calibration Flow		Instrument Flow Channels Read			
Applied Flow (l/hour)	Applied Pressure (Pa)	Flow [Flow] (l/hour)	tol. (l/hour)	Differential Pressure [Dp] (Pa)	tol. (Pa)
-30.0	-305	-28.6	+/-3.0	-319	+/-50
-3.0	-10	-2.7	+/-1.0	-10	+/-6
0.0	0	0.0	0.0	0	0.0
+3.0	9	3.1	+/-0.5	11	+/-3
+30.0	283	29.7	+/-3.0	287	+/-50
+60.0	840	60.1	+/-6.0	847	+/-130
+90.0	1642	90.1	+/-9.0	1676	+/-250

TEMPERATURE CHECK		
Calibration Temperature	Instrument Temperature Channel Read	
Applied Equivalent Temperature (°C)	Temperature [Temp] (°C)	tol. (°C)
-10.0	-10.5	+/- 2.0
0.0	0.0	+/- 1.0
30.0	30.0	+/- 1.0
60.0	60.0	+/- 1.0
100.0	99.5	+/- 1.0

Notes:

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015. Certificate NQA 8374. Valid until 22/03/2019

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CERTIFICATE OF CALIBRATION
Phocheck Tiger

CALIBRATION CERTIFICATE NO:

ISSUED BY:	SHAWCITY LIMITED
DATE:	09.09.20
APPROVED SIGNATORY:	
NAME:	Matt Jordison
CUSTOMER:	Concept Engineering Consultants
INSTRUMENT:	Tiger
SERIAL NUMBER:	T-107908
CALIBRATION METHOD:	CM03
AMBIENT CONDITIONS:	20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

CALIBRATION RESULTS

GAS	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	WO241578-1	100 ppm	100 ppm
Isobutylene	WO229476-2	1000 ppm	1000 ppm

COMMENTS:
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is ±2 %
The results indicate that the instrument conforms to the applicable parts of the published specification.

Tel: 01793 780622
www.shawcity.co.uk
Instrument House, 91-92 Shrivenham Hundred Business Park
Watchfield, Oxfordshire, SN6 8TY
Fax: 01793 784466
service@shawcity.co.uk

14. GEOTECHNICAL LABORATORY TEST RESULTS

CONCEPT SITE INVESTIGATIONS

Site Name:	Elleray Hall & North Lane Depot/East Car Park	**Job No.:**	20/3521
Client:	Richmond & Wandsworth Council	**Date Reported:**	08/04/2021

Summary Test Report

Determination of Moisture Content and Liquid and Plastic Limits by 4 Point Cone Method

Borehole No.	Sample Type	Sample No.	Depth m	Description	Natural Moisture Content %	Passing 425 µm sieve %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Remarks
BH1	B	6	0.60	Dark brown gravelly very clayey SAND. Gravel comprises fine to coarse flint and concrete	24	61	30	18	12	
BH1	B	10	1.20	Brown clayey silty gravelly SAND. Gravel is fine to coarse flint	10	62	30	19	11	
BH1	D	24	7.70	Greyish brown slightly micaceous silty CLAY	27	100	68	26	42	
BH1	UT	53	19.50	Very stiff, extremely closely fissured dark brown slightly sandy slightly micaceous silty CLAY with rare partings (<1mm) of silty sand and white flecks		100	69	25	44	

BS 1377: Part 2: Clause 4.3 & 4.4: 1990 Determination of the liquid limit by the cone penetrometer method

BS 1377: Part 2: Clause 5: 1990 Determination of the plastic limit and plasticity index

BS 1377: Part 2: Clause 3.2: 1990 Determination of the moisture content by the oven drying method

Remarks: The results reported relate only to the items tested or sampled.

4503

Date - samples received:	09/03/2021		
Date - sample testing commenced :	29/03/2021	Checked / Approved by:	LG
Date - sample testing completed :	06/04/2021	Date Approved:	08/04/2021

Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)

CONCEPT
Unit D, Herald Way, Coventry CV3 2RQ
Tel: 02477087673
Email:coventrylab@conceptconsultants.co.uk

CONCEPT SITE INVESTIGATIONS

Site Name:	Elleray Hall & North Lane Depot/East Car Park	**Job No.:**	20/3521
Client:	Richmond & Wandsworth Council	**Date Reported:**	08/04/2021

Summary Test Report

Determination of Moisture Content and Liquid and Plastic Limits by 4 Point Cone Method

Borehole No.	Sample Type	Sample No.	Depth m	Description	Natural Moisture Content %	Passing 425 µm sieve %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Remarks
BH2	B	6	0.90	Orangish brown sandy slightly gravelly silty CLAY. Gravel is fine to medium flint	18	85	24	12	12	
BH2	D	10	1.50	Orangish brown slightly gravelly slightly sandy SILT. Gravel is fine and medium flint	16	83	25	15	10	
BH2	D	24	7.95	Greysih brown slightly micaceous silty CLAY	27	100	72	26	46	
BH2	D	40	14.20	Greyish brown slightly micaceous silty CLAY	25	100	77	28	49	
BH2	D	52	19.20	Dark brown slightly micaceous silty CLAY with rare pockets of grey silty sand	24	100	73	26	47	

BS 1377: Part 2: Clause 4.3 & 4.4: 1990 Determination of the liquid limit by the cone penetrometer method

BS 1377: Part 2: Clause 5: 1990 Determination of the plastic limit and plasticity index

BS 1377: Part 2: Clause 3.2: 1990 Determination of the moisture content by the oven drying method

4503

Remarks: The results reported relate only to the items tested or sampled.

Date - samples received:	09/03/2021		
Date - sample testing commenced :	29/03/2021	Checked / Approved by:	LG
Date - sample testing completed :	06/04/2021	Date Approved:	08/04/2021
Approved Signatories:	L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)		

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Tel: 02477087673
Email:coventrylab@conceptconsultants.co.uk

CONCEPT SITE INVESTIGATIONS

Site Name:	Elleray Hall & North Lane Depot/East Car Park	**Job No.:**	20/3521
Client:	Richmond & Wandsworth Council	**Date Reported:**	08/04/2021

Summary Test Report

Determination of Moisture Content and Liquid and Plastic Limits by 4 Point Cone Method

Borehole No.	Sample Type	Sample No.	Depth m	Description	Natural Moisture Content %	Passing 425 µm sieve %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Remarks
STP1	B	5	0.70	Dark brown clayey silty slightly gravelly SAND. Gravel comprises fine to medium flint and brick fragments	17	68	23	12	11	
STP2	B	7	1.20	Orangish brown mottled brownish grey slightly gravelly sandy silty CLAY. Gravel is fine to medium flint	20	80	36	20	16	
STP3	B	7	1.50	Yellowish brown very sandy slightly gravelly silty CLAY. Gravel is fine to coarse flint	13	77	34	14	20	
WS1	D	9	1.20	Yellowish brown slightly sandy slightly gravelly clayey SILT. Gravel comprises fine to medium flint	19	58	40	29	11	
WS2	B	8	1.00	Orangish brown slightly sandy slightly gravelly silty CLAY. Gravel comprises fine to coarse flint, brick and concrete fragments	13	60	32	17	15	
WS3	B	6	1.00	Greyish brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium flint	22	75	28	20	8	
WS5	B	8	1.00	Orangish brown slightly sandy slightly gravelly silty CLAY .Gravel is fine to medium flint	21	46	30	19	11	
WS6	D	9	1.20	Orangish brown sandy slightly gravelly silty CLAY. Gravel is fine to medium flint	14	61	39	15	24	

BS 1377: Part 2: Clause 4.3 & 4.4: 1990 Determination of the liquid limit by the cone penetrometer method

BS 1377: Part 2: Clause 5: 1990 Determination of the plastic limit and plasticity index

BS 1377: Part 2: Clause 3.2: 1990 Determination of the moisture content by the oven drying method

4503

Remarks: The results reported relate only to the items tested or sampled.

Date - samples received:	09/03/2021		
Date - sample testing commenced :	31/03/2021	Checked / Approved by:	LG
Date - sample testing completed :	06/04/2021	Date Approved:	08/04/2021

Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)

CONCEPT
Unit D, Herald Way, Coventry CV3 2RQ
Tel: 02477087673
Email:coventrylab@conceptconsultants.co.uk

CONCEPT SITE INVESTIGATIONS

Site Name:	Elleray Hall & North Lane Depot/East Car Park	**Job No.:**	20/3521
Client:	Richmond & Wandsworth Council	**Date Reported:**	08/04/2021

Summary Test Report

Determination of Moisture Content and Liquid and Plastic Limits by 4 Point Cone Method

Borehole No.	Sample Type	Sample No.	Depth m	Description	Natural Moisture Content %	Passing 425 µm sieve %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Remarks
WS8	B	4	0.30	Dark brown slightly sandy gravelly silty CLAY. Gravel comprises fine to coarse flint, brick and concrete fragments	21	45	28	16	12	
WS9	B	4	0.40	Dark brown slightly sandy gravelly silty CLAY. Gravel comprises fine to medium flint, brick and concrete fragments	20	44	38	26	12	
WS10	D	9	1.20	Orangish brown sandy slightly gravelly silty CLAY. Gravel is fine to coarse flint	13	70	27	16	11	

BS 1377: Part 2: Clause 4.3 & 4.4: 1990 Determination of the liquid limit by the cone penetrometer method

BS 1377: Part 2: Clause 5: 1990 Determination of the plastic limit and plasticity index

BS 1377: Part 2: Clause 3.2: 1990 Determination of the moisture content by the oven drying method

4503

Remarks: The results reported relate only to the items tested or sampled.

Date - samples received:	09/03/2021		
Date - sample testing commenced :	31/03/2021	Checked / Approved by:	LG
Date - sample testing completed :	06/04/2021	Date Approved:	08/04/2021

Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)

CONCEPT
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CONCEPT SITE INVESTIGATIONS

PARTICLE SIZE DISTRIBUTION

TEST REPORT

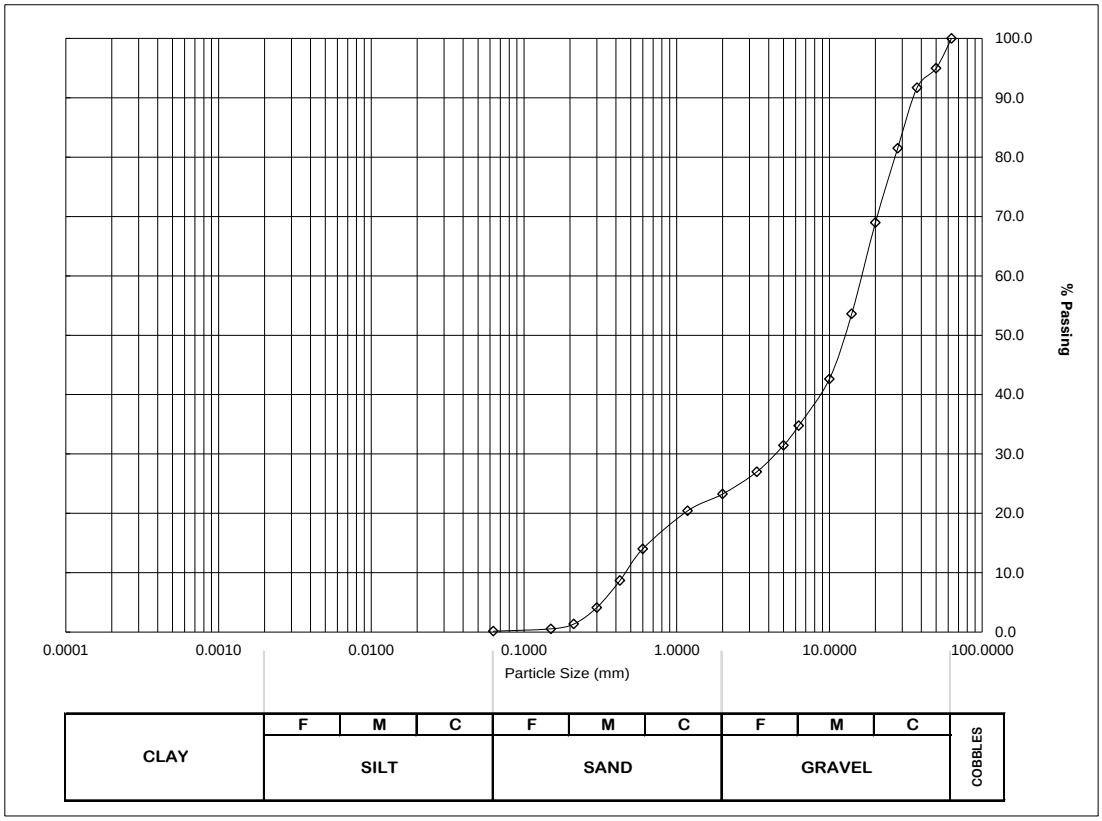
Site Name:	**Elleray Hall & North Lane Depot/East Car Park**					**Job Number:**	**20/3521**
Client:	**Richmond & Wandsworth Council**					**Date Reported:**	**08/04/2021**
Borehole No:	**BH1**	**Sample Type/No.**	**B**	**16**	**Top Depth: 4.00 m**	**Bottom Depth:**	**4.45 m**

Soil Description:

Brown very sandy fine to coarse flint GRAVEL

BS Test Sieves	
Size (mm)	% Passing
75.000	100
63.000	100
50.000	95
37.500	92
28.000	82
20.000	69
14.000	54
10.000	43
6.300	35
5.000	31
3.350	27
2.000	23
1.180	20
0.600	14
0.425	9
0.300	4
0.212	1
0.150	1
0.063	0

Sedimentation (*if applicable)	
Size (mm)	% Passing
0.020	
0.006	
0.002	



Method/type:	Dry Sieving

BS 1377: Part 2: Clause 9.3: 1990 Determination of particle size distribution - dry sieving method.

Particle Proportions %	
Cobbles	
Gravel	76.7
Sand	23.1
Silt and Clay	0.1

4503

Remarks:

The results reported relate only to the items tested or sampled.

Date - samples received:	09/03/2021		
Date - sample testing commenced :	31/03/2021	Checked / Approved by:	LG
Date - sample testing completed :	01/04/2021	Date Approved:	08/04/2021

Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)

CONCEPT
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Email: lab@conceptconsultants.co.uk

CONCEPT SITE INVESTIGATIONS

PARTICLE SIZE DISTRIBUTION

TEST REPORT

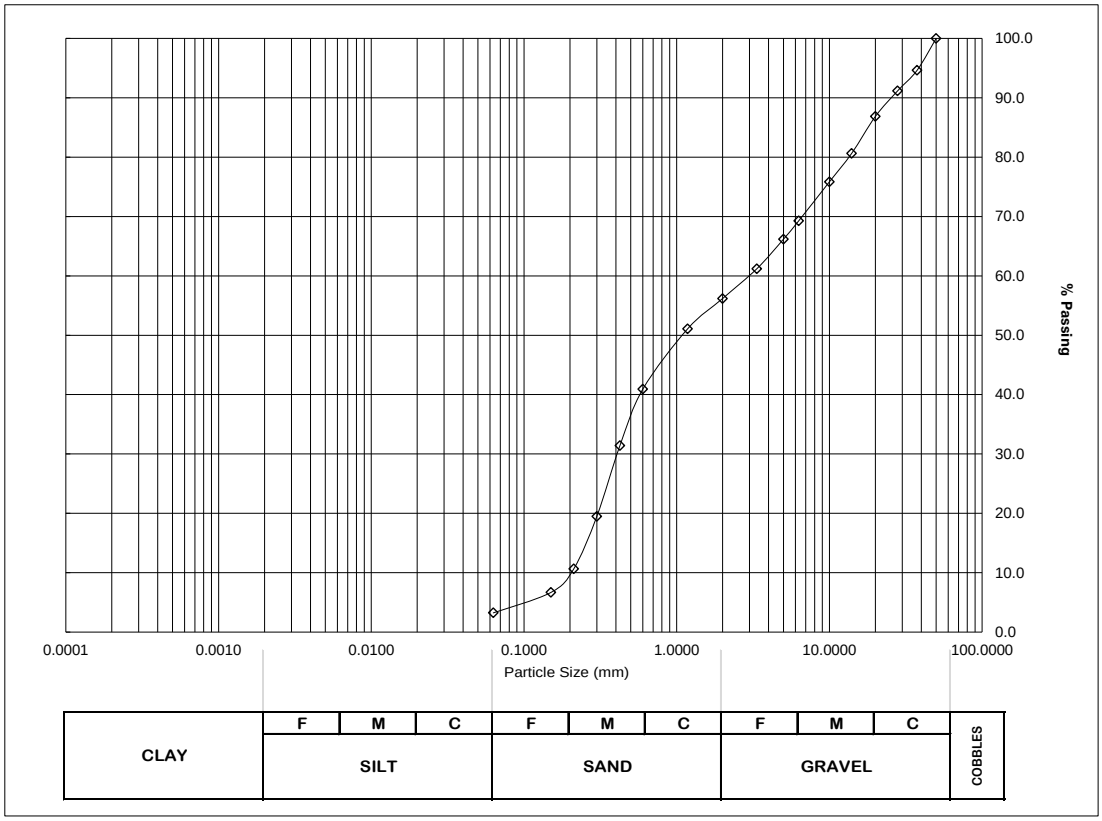
Site Name:	**Elleray Hall & North Lane Depot/East Car Park**					**Job Number:**	**20/3521**
Client:	**Richmond & Wandsworth Council**					**Date Reported:**	**08/04/2021**
Borehole No:	**BH2**	**Sample Type/No.**	**B**	**13**	**Top Depth: 2.50 m**	**Bottom Depth:**	**m**

Soil Description:

Brown slightly clayey very gravelly SAND. Gravel is fine to coarse flint

BS Test Sieves	
Size (mm)	% Passing
75.000	100
63.000	100
50.000	100
37.500	95
28.000	91
20.000	87
14.000	81
10.000	76
6.300	69
5.000	66
3.350	61
2.000	56
1.180	51
0.600	41
0.425	31
0.300	19
0.212	11
0.150	7
0.063	3

Sedimentation (*if applicable)	
Size (mm)	% Passing
0.020	
0.006	
0.002	



Method/type:	Wet Sieving

BS 1377: Part 2: Clause 9.2: 1990 Determination of particle size distribution - wet sieving method.

Particle Proportions %	
Cobbles	
Gravel	43.8
Sand	53.0
Silt and Clay	3.2

4503

Remarks:

The results reported relate only to the items tested or sampled.

Date - samples received:	09/03/2021		
Date - sample testing commenced :	31/03/2021	Checked / Approved by:	LG
Date - sample testing completed :	01/04/2021	Date Approved:	08/04/2021

Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)

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CONCEPT SITE INVESTIGATIONS

PARTICLE SIZE DISTRIBUTION

TEST REPORT

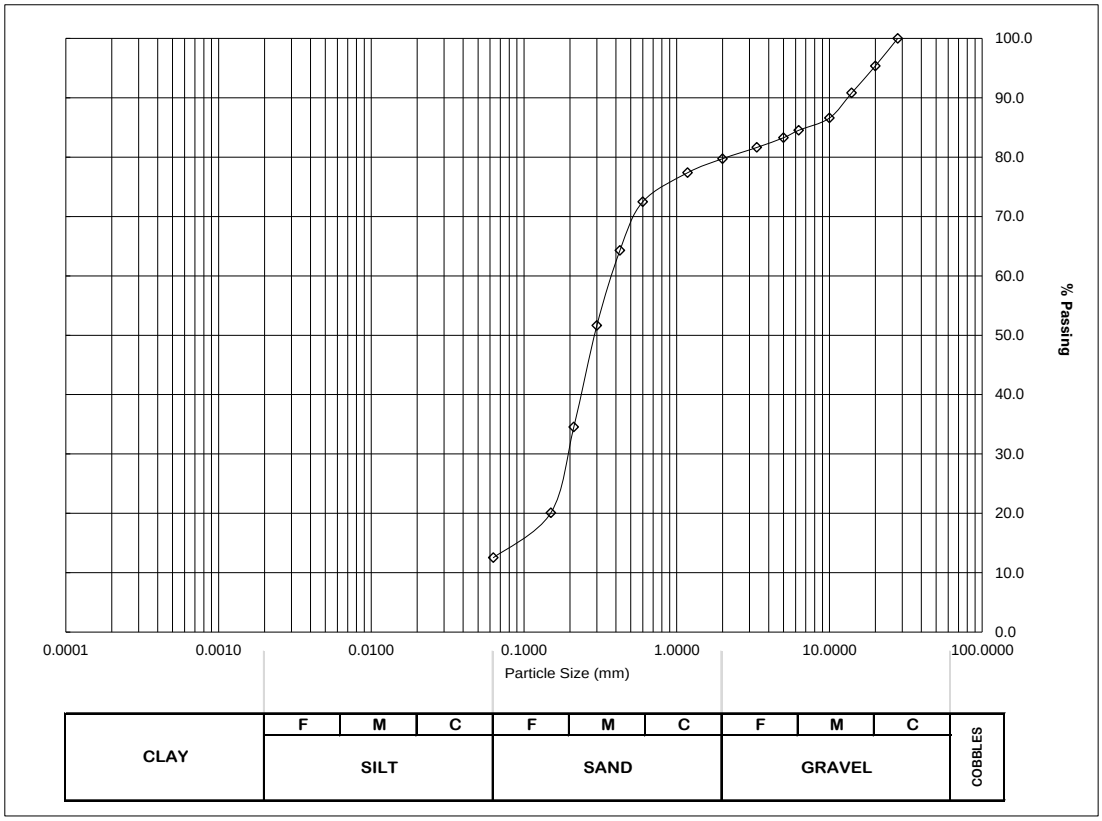
Site Name:	**Elleray Hall & North Lane Depot/East Car Park**					**Job Number:**	**20/3521**
Client:	**Richmond & Wandsworth Council**					**Date Reported:**	**08/04/2021**
Borehole No:	**STP1**	**Sample Type/No.**	**B**	**7**	**Top Depth:** **1.60 m**	**Bottom Depth:**	**m**

Soil Description:

Orangish brown very gravelly silty SAND with occasional pockets of sandy clay. Gravel comprises fine to coarse flint and sandstone

BS Test Sieves	
Size (mm)	% Passing
75.000	100
63.000	100
50.000	100
37.500	100
28.000	100
20.000	95
14.000	91
10.000	87
6.300	85
5.000	83
3.350	82
2.000	80
1.180	77
0.600	72
0.425	64
0.300	52
0.212	35
0.150	20
0.063	13

Sedimentation (*if applicable)	
Size (mm)	% Passing
0.020	
0.006	
0.002	



Method/type:	Wet Sieving

BS 1377: Part 2: Clause 9.2: 1990 Determination of particle size distribution - wet sieving method.

Particle Proportions %	
Cobbles	
Gravel	20.3
Sand	67.2
Silt and Clay	12.5

4503

Remarks:

The results reported relate only to the items tested or sampled.

Date - samples received:	09/03/2021		
Date - sample testing commenced :	01/04/2021	Checked / Approved by:	LG
Date - sample testing completed :	07/04/2021	Date Approved:	08/04/2021

Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)

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CONCEPT SITE INVESTIGATIONS

PARTICLE SIZE DISTRIBUTION

TEST REPORT

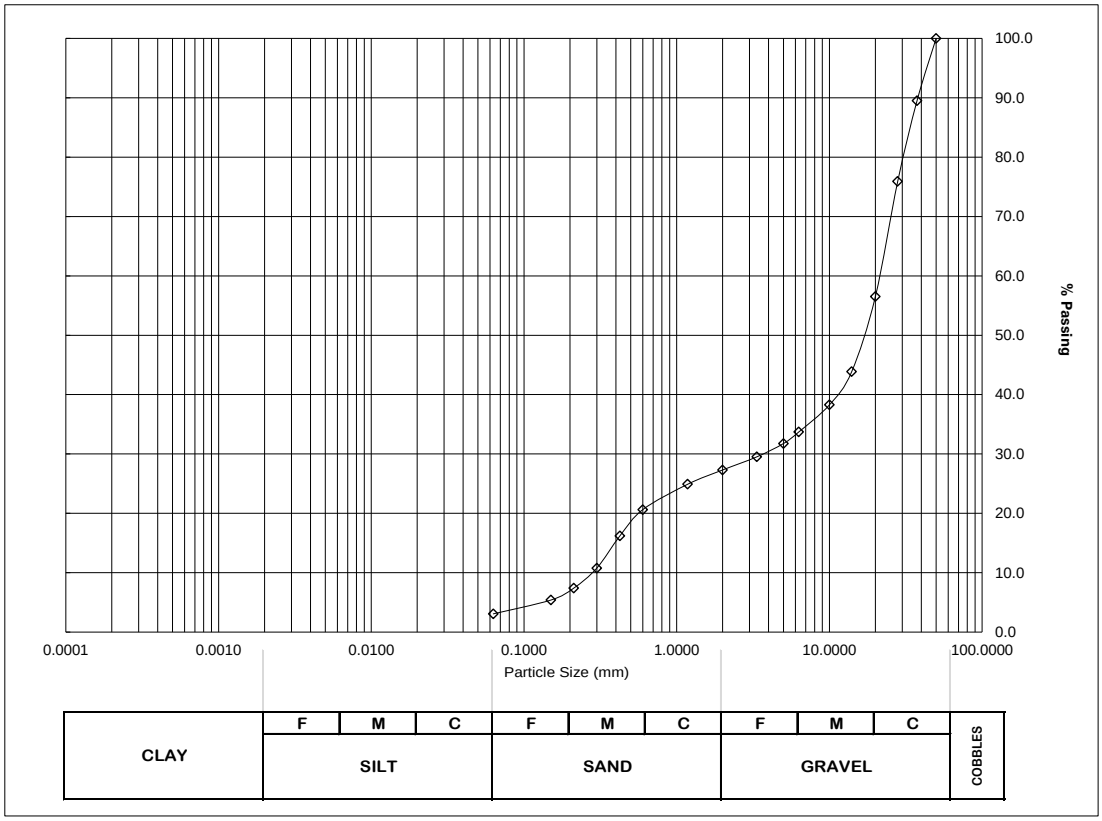
Site Name:	**Elleray Hall & North Lane Depot/East Car Park**					**Job Number:**	**20/3521**
Client:	**Richmond & Wandsworth Council**					**Date Reported:**	**08/04/2021**
Borehole No:	**STP3**	**Sample Type/No.**	**B**	**9**	**Top Depth: 2.50 m**	**Bottom Depth:**	**m**

Soil Description:

Orangish brown slightly clayey very sandy fine to coarse flint GRAVEL

BS Test Sieves	
Size (mm)	% Passing
75.000	100
63.000	100
50.000	100
37.500	90
28.000	76
20.000	56
14.000	44
10.000	38
6.300	34
5.000	32
3.350	30
2.000	27
1.180	25
0.600	21
0.425	16
0.300	11
0.212	7
0.150	5
0.063	3

Sedimentation (*if applicable)	
Size (mm)	% Passing
0.020	
0.006	
0.002	



Method/type:	Wet Sieving

BS 1377: Part 2: Clause 9.2: 1990 Determination of particle size distribution - wet sieving method.

Particle Proportions %	
Cobbles	
Gravel	72.7
Sand	24.2
Silt and Clay	3.1

4503

Remarks:

The results reported relate only to the items tested or sampled.

Date - samples received:	09/03/2021		
Date - sample testing commenced :	01/04/2021	Checked / Approved by:	LG
Date - sample testing completed :	07/04/2021	Date Approved:	08/04/2021

Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)

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Email: info@chemtest.com

Final Report

Report No.:	21-08106-1
Initial Date of Issue:	19-Mar-2021
Client	Concept Consultants
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ
Contact(s):	Kasia Mazerant Lab
Project	20/3521
Quotation No.:	Q21-22809
Order No.:	L2462
No. of Samples:	10
Turnaround (Wkdays):	5
Date Approved:	19-Mar-2021
Approved By:	
Details:	Glynn Harvey, Technical Manager

Date Received:	15-Mar-2021
Date Instructed:	15-Mar-2021
Results Due:	19-Mar-2021

Results - Soil

Project: 20/3521

Client: Concept Consultants												
Quotation No.: Q21-22809			**Chemtest Job No.:**		21-08106	21-08106	21-08106	21-08106	21-08106	21-08106	21-08106	21-08106	21-08106
			Chemtest Sample ID.:		1159838	1159839	1159840	1159841	1159842	1159843	1159844	1159845	1159846
			Client Sample ID.:		17	28	41	53	9	14	23	30	46
			Sample Location:		BH1	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH2
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.70	9.45	14.00	19.50	1.20	3.20	7.50	10.20	16.50
			Bottom Depth (m):				14.45	19.95			7.95		16.95
			Date Sampled:		10-Mar-2021	10-Mar-2021	10-Mar-2021	10-Mar-2021	10-Mar-2021	10-Mar-2021	10-Mar-2021	10-Mar-2021	10-Mar-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Moisture	N	2030	%	0.020	13	18	18	18	14	10	23	22	18
pH	U	2010		4.0	9.0	8.8	8.7	8.8	8.7	9.0	8.7	8.7	8.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.038	0.076	0.11	< 0.010	< 0.010	0.038	0.088	0.052

Results - Soil

Project: 20/3521

Client: Concept Consultants			**Chemtest Job No.:**		21-08106
Quotation No.: Q21-22809			**Chemtest Sample ID.:**		1159847
			Client Sample ID.:		53
			Sample Location:		BH2
			Sample Type:		SOIL
			Top Depth (m):		19.50
			Bottom Depth (m):		20.00
			Date Sampled:		10-Mar-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	18
pH	U	2010		4.0	8.8
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.26

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	21-08014-2		
Initial Date of Issue:	19-Mar-2021	**Date of Re-Issue:**	30-Mar-2021
Client	Concept Consultants		
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ		
Contact(s):	Kasia Mazerant Lab Lynn Griffin		
Project	20/3521		
Quotation No.:	Q21-22809	**Date Received:**	15-Mar-2021
Order No.:	L2463	**Date Instructed:**	15-Mar-2021
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	19-Mar-2021
Date Approved:	19-Mar-2021		

Approved By:

Details:

Results - Soil

Project: 20/3521

Client: Concept Consultants				**Chemtest Job No.:**	21-08014	21-08014	21-08014	21-08014	21-08014	21-08014
Quotation No.: Q21-22809				**Chemtest Sample ID.:**	1159289	1159290	1159291	1159292	1159293	1159294
				Client Sample ID.:	7	7	8	8	6	8
				Sample Location:	STP1	STP2	STP2	WS1	WS3	WS10
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.60	1.20	2.0	1.00	1.00	0.90
				Bottom Depth (m):				1.10		
				Date Sampled:	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Moisture	N	2030	%	0.020	15	22	14	18	18	17
pH	U	2010		4.0	8.5	8.4	8.8	8.3	8.4	7.6
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.025	< 0.010	< 0.010	< 0.010	0.034	< 0.010

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES

Report Information

Key

U	UKAS accredited
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N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
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U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
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The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

CONCEPT SITE INVESTIGATIONS

Summary Test Report - Undrained Triaxial Compression (Single-Stage)

BS 1377 : Part 7: 1990 Clause 8

Date Reported: 08/04/2021

Job No.: 20/3521

Site Location: Elleray Hall & North Lane Depot/East Car Park

Client: Richmond & Wandsworth Council

BH No.	Sample Type	Sample No	Depth top (m)	Description	Cell pressure kN/m2	Strain at failure %	Bulk Density Mg/m3	Dry Density Mg/m3	NMC %	Max Dev. Stress kPa	Shear Strength kPa	Mode of failure/Comments
BH1	UT	22	7.00	Very stiff, very closely fissured greyish brown slightly micaceous silty CLAY	140	9.0	1.99	1.55	28	180	90	Brittle with slight plastic deformation
BH1	UT	33	11.00	Very stiff, very closely fissured greyish brown slightly micaceous silty CLAY with rare white flecks	220	6.8	1.99	1.55	29	211	106	Brittle
BH1	UT	43	15.00	Very stiff, extremely closely fissuredgreyish brown slightly micaceous silty CLAY	300	2.8	1.98	1.53	29	234	117	Brittle
BH1	UT	53	19.50	Very stiff, extremely closely fissured dark brown slightly sandy slightly micaceous silty CLAY with rare partings (<1mm) of silty sand and white flecks	390	3.5	2.05	1.65	24	645	323	Brittle

Remarks: The results reported relate only to the items tested or sampled.

Date - samples received: 09/03/2021

Date - sample testing commenced: 29/03/2021

Checked/Approved by: LG

Date - sample testing completed: 31/03/2021

Date Approved: 08/04/2021

Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)

CONCEPT
47-49 Brunel Road, London W3 7XR
Tel: 02087401553
Email: Lab@conceptconsultants.co.uk

AGS

UKAS TESTING
4503

CONCEPT SITE INVESTIGATIONS

Summary Test Report - Undrained Triaxial Compression (Single-Stage)

BS 1377 : Part 7: 1990 Clause 8

Date Reported: 08/04/2021

Job No.: 20/3521

Site Location: Elleray Hall & North Lane Depot/East Car Park

Client: Richmond & Wandsworth Council

BH No.	Sample Type	Sample No	Depth top (m)	Description	Cell pressure kN/m2	Strain at failure %	Bulk Density Mg/m3	Dry Density Mg/m3	NMC %	Max Dev. Stress kPa	Shear Strength kPa	Mode of failure/Comments
BH2	UT	28	9.50	Very stiff, extremely closely fissured greyish brown slightly micaceous silty CLAY	190	7.7	1.99	1.54	29	214	107	Brittle
BH2	UT	33	11.50	Very stiff, very closely fissured greyish brown slightly micaceous silty CLAY and rare pockets of shell fragments	230	5.3	1.99	1.57	27	316	158	Brittle
BH2	UT	43	15.50	Very stiff, very closely fissured dark greyish brown slightly micaceous silty CLAY	310	2.9	2.01	1.57	27	280	140	Brittle
BH2	UT	48	17.50	Very stiff, very closely fissured dark greyish brown slightly micaceous silty CLAY with rare pockets of grey silty sand	360	2.6	2.04	1.64	25	407	204	Brittle

Remarks: The results reported relate only to the items tested or sampled.

Date - samples received: 09/03/2021

Date - sample testing commenced: 29/03/2021

Checked/Approved by: LG

Date - sample testing completed: 31/03/2021

Date Approved: 08/04/2021

Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)

CONCEPT
47-49 Brunel Road, London W3 7XR
Tel: 02087401553
Email: Lab@conceptconsultants.co.uk

4503

15. CHEMICAL LABORATORY TEST RESULTS

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-05672-1
Initial Date of Issue:	08-Mar-2021
Client	Concept Consultants
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ
Contact(s):	Ana Gonzalez Chris Hustler Kasia Mazerant
Project	20/3521 Elleray Hall
Quotation No.:	Q21-23032
Order No.:	CL2727
No. of Samples:	2
Turnaround (Wkdays):	5
Date Approved:	08-Mar-2021
Approved By:	
Details:	Glynn Harvey, Technical Manager

Date Received:	24-Feb-2021
Date Instructed:	01-Mar-2021
Results Due:	05-Mar-2021

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05672	21-05672
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1147935	1147936
			Sample Location:		WS1	WS1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.60
			Bottom Depth (m):			0.70
			Date Sampled:		22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected	
ACM Detection Stage	U	2192		N/A	-	
Moisture	N	2030	%	0.020	13	13
Soil Colour	N	2040		N/A	Black	Black
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay
pH	M	2010		4.0	8.4	8.3
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.7	1.8
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.060	0.060
Cyanide (Total)	M	2300	mg/kg	0.50	0.90	8.4
Sulphate (Total)	M	2430	%	0.010	0.29	0.35
Arsenic	M	2450	mg/kg	1.0	24	23
Cadmium	M	2450	mg/kg	0.10	0.36	0.38
Chromium	M	2450	mg/kg	1.0	22	28
Copper	M	2450	mg/kg	0.50	56	92
Mercury	M	2450	mg/kg	0.10	0.64	0.62
Nickel	M	2450	mg/kg	0.50	22	24
Lead	M	2450	mg/kg	0.50	300	370
Selenium	M	2450	mg/kg	0.20	0.26	0.34
Zinc	M	2450	mg/kg	0.50	160	430
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	19	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	25	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	41	4.5
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	130	17
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	51	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	270	22
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	21	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	180	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	870	27

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05672	21-05672
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1147935	1147936
			Sample Location:		WS1	WS1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.60
			Bottom Depth (m):			0.70
			Date Sampled:		22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	2600	97
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	300	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	4000	120
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	4200	150
Naphthalene	M	2700	mg/kg	0.10	2.5	0.41
Acenaphthylene	M	2700	mg/kg	0.10	17	1.0
Acenaphthene	M	2700	mg/kg	0.10	11	0.83
Fluorene	M	2700	mg/kg	0.10	28	1.9
Phenanthrene	M	2700	mg/kg	0.10	170	9.9
Anthracene	M	2700	mg/kg	0.10	55	3.1
Fluoranthene	M	2700	mg/kg	0.10	200	13
Pyrene	M	2700	mg/kg	0.10	190	12
Benzo[a]anthracene	M	2700	mg/kg	0.10	92	5.6
Chrysene	M	2700	mg/kg	0.10	79	5.1
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	96	6.4
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	38	2.9
Benzo[a]pyrene	M	2700	mg/kg	0.10	83	5.5
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	64	3.5
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	14	1.1
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	51	2.9
Total Of 16 PAH's	M	2700	mg/kg	2.0	1200	75
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	mg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05672	21-05672
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1147935	1147936
			Sample Location:		WS1	WS1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.60
			Bottom Depth (m):			0.70
			Date Sampled:		22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Trichloroethene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05672	21-05672
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1147935	1147936
			Sample Location:		WS1	WS1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.60
			Bottom Depth (m):			0.70
			Date Sampled:		22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0
Total Phenols	M	2920	mg/kg	0.30	0.48	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-05674-1
Initial Date of Issue:	05-Mar-2021
Client	Concept Consultants
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ
Contact(s):	Ana Gonzalez Chris Hustler Kasia Mazerant
Project	20/3521 Elleray Road
Quotation No.:	Q21-23032
Order No.:	CL2727
No. of Samples:	2
Turnaround (Wkdays):	5
Date Approved:	05-Mar-2021
Approved By:	
Details:	Glynn Harvey, Technical Manager

Date Received:	24-Feb-2021
Date Instructed:	01-Mar-2021
Results Due:	05-Mar-2021

Results - Soil

Project: 20/3521 Elleray Road

Client: Concept Consultants			**Chemtest Job No.:**		21-05674	21-05674
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1147940	1147942
			Sample Location:		WS2	WS2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	1.00
			Bottom Depth (m):			1.20
			Date Sampled:		22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-
Moisture	N	2030	%	0.020	14	13
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand
pH	M	2010		4.0	8.4	8.5
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.1	0.83
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.011	0.035
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Sulphate (Total)	M	2430	%	0.010	0.11	0.042
Arsenic	M	2450	mg/kg	1.0	30	22
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	25	25
Copper	M	2450	mg/kg	0.50	2000	53
Mercury	M	2450	mg/kg	0.10	1.7	0.26
Nickel	M	2450	mg/kg	0.50	31	25
Lead	M	2450	mg/kg	0.50	1200	130
Selenium	M	2450	mg/kg	0.20	0.37	0.28
Zinc	M	2450	mg/kg	0.50	800	84
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20		0.53
TPH >C6-C8	N	2670	mg/kg	1.0	< 1.0	< 1.0
TPH >C8-C10	N	2670	mg/kg	1.0	< 1.0	< 1.0
TPH >C10-C12	N	2670	mg/kg	1.0	< 1.0	< 1.0
TPH >C12-C16	N	2670	mg/kg	1.0	< 1.0	12
TPH >C16-C21	N	2670	mg/kg	1.0	15	24
TPH >C21-C25	N	2670	mg/kg	1.0	22	14
TPH >C25-C35	N	2670	mg/kg	1.0	17	14
TPH >C35-C40	N	2670	mg/kg	1.0	< 1.0	< 1.0
Total TPH >C6-C40	M	2670	mg/kg	10	54	63
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	3.5	2.8

Results - Soil

Project: 20/3521 Elleray Road

Client: Concept Consultants			**Chemtest Job No.:**		21-05674	21-05674
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1147940	1147942
			Sample Location:		WS2	WS2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	1.00
			Bottom Depth (m):			1.20
			Date Sampled:		22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Anthracene	M	2700	mg/kg	0.10	1.1	1.2
Fluoranthene	M	2700	mg/kg	0.10	11	6.7
Pyrene	M	2700	mg/kg	0.10	10	5.4
Benzo[a]anthracene	M	2700	mg/kg	0.10	6.9	3.9
Chrysene	M	2700	mg/kg	0.10	5.7	3.1
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	9.0	4.2
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	3.6	1.9
Benzo[a]pyrene	M	2700	mg/kg	0.10	6.9	3.1
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	5.3	2.1
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	1.5	0.59
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	4.2	1.7
Total Of 16 PAH's	M	2700	mg/kg	2.0	69	37
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-05677-1
Initial Date of Issue:	05-Mar-2021
Client	Concept Consultants
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ
Contact(s):	Ana Gonzalez Chris Hustler Kasia Mazerant
Project	20/3521 Elleray Hall
Quotation No.:	Q21-23032
Order No.:	CL2727
No. of Samples:	3
Turnaround (Wkdays):	5
Date Approved:	05-Mar-2021
Approved By:	
Details:	Glynn Harvey, Technical Manager

Date Received:	24-Feb-2021
Date Instructed:	01-Mar-2021
Results Due:	05-Mar-2021

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05677	21-05677	21-05677
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1147952	1147953	1147955
		Sample Location:			BH1	BH1	BH1
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.25	0.40	1.00
		Bottom Depth (m):					1.20
		Date Sampled:			22-Feb-2021	22-Feb-2021	22-Feb-2021
		Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-		-
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-		-
Moisture	N	2030	%	0.020	2.8	2.5	13
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH	M	2010		4.0	9.3	9.3	7.2
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.70	0.75	0.86
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.066	0.052	0.12
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphate (Total)	M	2430	%	0.010	0.28	0.10	0.043
Arsenic	M	2450	mg/kg	1.0	19	18	11
Cadmium	M	2450	mg/kg	0.10	0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	25	22	17
Copper	M	2450	mg/kg	0.50	60	30	16
Mercury	M	2450	mg/kg	0.10	0.36	3.2	0.15
Nickel	M	2450	mg/kg	0.50	24	21	13
Lead	M	2450	mg/kg	0.50	1200	130	58
Selenium	M	2450	mg/kg	0.20	0.21	0.23	0.25
Zinc	M	2450	mg/kg	0.50	89	62	35
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	4.8		
TPH >C6-C8	N	2670	mg/kg	1.0		< 1.0	< 1.0
TPH >C8-C10	N	2670	mg/kg	1.0		6.7	< 1.0
TPH >C10-C12	N	2670	mg/kg	1.0		10	< 1.0
TPH >C12-C16	N	2670	mg/kg	1.0		200	6.2
TPH >C16-C21	N	2670	mg/kg	1.0		1200	11
TPH >C21-C25	N	2670	mg/kg	1.0		520	9.3
TPH >C25-C35	N	2670	mg/kg	1.0		1000	7.4
TPH >C35-C40	N	2670	mg/kg	1.0		230	< 1.0
Total TPH >C6-C40	M	2670	mg/kg	10		3200	34
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0		
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0		
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	13		
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	14		

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05677	21-05677	21-05677
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1147952	1147953	1147955
			Sample Location:		BH1	BH1	BH1
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.25	0.40	1.00
			Bottom Depth (m):				1.20
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	28		
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	150		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	49		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	250		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	81		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	38		
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	270		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	1500		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	3700		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	350		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	5900		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	6100		
Naphthalene	M	2700	mg/kg	0.10	20	26	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	65	66	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	12	12	< 0.10
Fluorene	M	2700	mg/kg	0.10	75	83	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	560	710	< 0.10
Anthracene	M	2700	mg/kg	0.10	150	160	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	660	760	< 0.10
Pyrene	M	2700	mg/kg	0.10	560	620	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	300	31	< 0.10
Chrysene	M	2700	mg/kg	0.10	240	230	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	320	340	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	130	140	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	260	270	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	190	180	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	45	47	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	160	160	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	3700	3800	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0		
Chloromethane	M	2760	µg/kg	1.0	< 1.0		
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0		
Bromomethane	M	2760	µg/kg	20	< 20		
Chloroethane	U	2760	µg/kg	2.0	< 2.0		
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0		
1,1-Dichloroethene	M	2760	mg/kg	1.0	< 1.0		

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05677	21-05677	21-05677
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1147952	1147953	1147955
			Sample Location:		BH1	BH1	BH1
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.25	0.40	1.00
			Bottom Depth (m):				1.20
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0	< 1.0		
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0		
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0		
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0		
Trichloromethane	M	2760	µg/kg	1.0	< 1.0		
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0		
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0		
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0		
Benzene	M	2760	µg/kg	1.0	< 1.0		
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0		
Trichloroethene	N	2760	µg/kg	1.0	< 1.0		
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0		
Dibromomethane	M	2760	µg/kg	1.0	< 1.0		
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0		
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10		
Toluene	M	2760	µg/kg	1.0	< 1.0		
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10		
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10		
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0		
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0		
Dibromochloromethane	U	2760	µg/kg	10	< 10		
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0		
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0		
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0		
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0		
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0		
o-Xylene	M	2760	µg/kg	1.0	< 1.0		
Styrene	M	2760	µg/kg	1.0	< 1.0		
Tribromomethane	U	2760	µg/kg	1.0	< 1.0		
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0		
Bromobenzene	M	2760	µg/kg	1.0	< 1.0		
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50		
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0		
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0		
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0		
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0		
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0		

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05677	21-05677	21-05677
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1147952	1147953	1147955
			Sample Location:		BH1	BH1	BH1
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.25	0.40	1.00
			Bottom Depth (m):				1.20
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0		
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0		
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0		
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0		
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50		
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0		
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0		
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0		
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
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T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
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SOP	Standard operating procedure
LOD	Limit of detection

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None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-05752-1
Initial Date of Issue:	05-Mar-2021
Client	Concept Consultants
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ
Contact(s):	Ana Gonzalez Chris Hustler Kasia Mazerant
Project	20/3521 Elleray Hall
Quotation No.:	Q21-23032
Order No.:	CL2727
No. of Samples:	3
Turnaround (Wkdays):	5
Date Approved:	05-Mar-2021
Approved By:	
Details:	Glynn Harvey, Technical Manager

Date Received:	24-Feb-2021
Date Instructed:	01-Mar-2021
Results Due:	05-Mar-2021

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05752	21-05752	21-05752
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1148288	1148289	1148292
			Sample Location:		WS5	WS5	WS3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.25	0.40	1.00
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:			COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A		-	
Asbestos Identification	U	2192		N/A		No Asbestos Detected	
ACM Detection Stage	U	2192		N/A		-	
Asbestos by Gravimetry	U	2192	%	0.001		-	
Total Asbestos	U	2192	%	0.001		-	
Moisture	N	2030	%	0.020	3.6	9.2	16
Soil Colour	N	2040		N/A	Black	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	None
Soil Texture	N	2040		N/A	Chalk	Clay	Clay
pH	M	2010		4.0	8.9		
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.010		
Cyanide (Total)	M	2300	mg/kg	0.50	4.7		
Sulphate (Total)	M	2430	%	0.010	0.11		
Arsenic	M	2450	mg/kg	1.0	11		
Cadmium	M	2450	mg/kg	0.10	0.25		
Chromium	M	2450	mg/kg	1.0	3.5		
Copper	M	2450	mg/kg	0.50	8.4		
Mercury	M	2450	mg/kg	0.10	0.15		
Nickel	M	2450	mg/kg	0.50	3.7		
Lead	M	2450	mg/kg	0.50	50		
Selenium	M	2450	mg/kg	0.20	0.28		
Zinc	M	2450	mg/kg	0.50	33		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	72	43	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	120	15	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	450	11	6.5
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	570	14	6.9
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	1100	62	29
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	460	13	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	2700	160	42
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	280	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	5200	16	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	9900	41	6.1

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05752	21-05752	21-05752
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			Sample Location:		WS5	WS5	WS3
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			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:			COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	19000	170	38
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	27000	620	160
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	2800	48	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	64000	900	210
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	67000	1100	250
Naphthalene	M	2700	mg/kg	0.10	370	18	7.0
Acenaphthylene	M	2700	mg/kg	0.10	58	7.5	1.4
Acenaphthene	M	2700	mg/kg	0.10	59	4.8	1.6
Fluorene	M	2700	mg/kg	0.10	150	15	3.3
Phenanthrene	M	2700	mg/kg	0.10	580	71	14
Anthracene	M	2700	mg/kg	0.10	140	19	3.5
Fluoranthene	M	2700	mg/kg	0.10	380	61	10
Pyrene	M	2700	mg/kg	0.10	340	56	9.4
Benzo[a]anthracene	M	2700	mg/kg	0.10	140	27	4.0
Chrysene	M	2700	mg/kg	0.10	120	25	3.8
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	130	28	4.3
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	56	12	2.1
Benzo[a]pyrene	M	2700	mg/kg	0.10	120	23	3.5
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	83	15	3.8
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	20	4.3	0.98
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	69	11	2.2
Total Of 16 PAH's	M	2700	mg/kg	2.0	2800	400	74
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	510	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05752	21-05752	21-05752
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1148288	1148289	1148292
			Sample Location:		WS5	WS5	WS3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.25	0.40	1.00
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:			COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Trichloroethene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	2200	4.5	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	160	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	2200	5.8	< 1.0
o-Xylene	M	2760	µg/kg	1.0	1200	3.4	< 1.0
Styrene	M	2760	µg/kg	1.0	730	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	14	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	180	1.8	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	1100	4.4	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05752	21-05752	21-05752
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1148288	1148289	1148292
			Sample Location:		WS5	WS5	WS3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.25	0.40	1.00
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:			COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Total Phenols	M	2920	mg/kg	0.30	170	< 0.30	< 0.30

Results - Single Stage WAC

Project: 20/3521 Elleray Hall

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-05752						
Chemtest Sample ID:	1148288						
Sample Ref:							
Sample ID:							
Sample Location:	WS5						
Top Depth(m):	0.25						
Bottom Depth(m):							
Sampling Date:	22-Feb-2021						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	6.3	3	5	6
Loss On Ignition	2610	M	%	9.7	--	--	10
Total BTEX	2760	M	mg/kg	6.3	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	67000	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	2800	100	--	--
pH	2010	M		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0009	0.0092	0.5	2	25
Barium	1455	U	0.013	0.13	20	100	300
Cadmium	1455	U	< 0.00012	< 0.00012	0.04	1	5
Chromium	1455	U	0.0039	0.039	0.5	10	70
Copper	1455	U	0.0018	0.018	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0007	0.0070	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0017	0.017	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.005	0.051	4	50	200
Chloride	1220	U	5.9	59	800	15000	25000
Fluoride	1220	U	0.27	2.7	10	150	500
Sulphate	1220	U	7.2	72	1000	20000	50000
Total Dissolved Solids	1020	N	290	2900	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	3.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

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eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-05756-1
Initial Date of Issue:	05-Mar-2021
Client	Concept Consultants
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ
Contact(s):	Ana Gonzalez Chris Hustler Kasia Mazerant
Project	20/3521 Elleray Hall
Quotation No.:	Q21-23032
Order No.:	CL2727
No. of Samples:	4
Turnaround (Wkdays):	5
Date Approved:	05-Mar-2021
Approved By:	
Details:	Glynn Harvey, Technical Manager

Date Received:	24-Feb-2021
Date Instructed:	01-Mar-2021
Results Due:	05-Mar-2021

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05756	21-05756	21-05756
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1148308	1148310	1148311
			Sample Location:		BH2	BH2	BH2
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.9	1.2
			Bottom Depth (m):			1.0	
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	
ACM Detection Stage	U	2192		N/A	-	-	
Moisture	N	2030	%	0.020	11	14	13
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Clay	Clay
pH	M	2010		4.0	8.6	8.3	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.58	0.64	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.019	
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	
Sulphate (Total)	M	2430	%	0.010	0.084	0.052	
Arsenic	M	2450	mg/kg	1.0	39	9.9	
Cadmium	M	2450	mg/kg	0.10	1.0	< 0.10	
Chromium	M	2450	mg/kg	1.0	17	17	
Copper	M	2450	mg/kg	0.50	61	11	
Mercury	M	2450	mg/kg	0.10	0.88	< 0.10	
Nickel	M	2450	mg/kg	0.50	18	9.6	
Lead	M	2450	mg/kg	0.50	620	41	
Selenium	M	2450	mg/kg	0.20	< 0.20	0.26	
Zinc	M	2450	mg/kg	0.50	230	72	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	
Total Organic Carbon	M	2625	%	0.20	1.4		
TPH >C6-C8	N	2670	mg/kg	1.0	< 1.0		
TPH >C8-C10	N	2670	mg/kg	1.0	< 1.0		
TPH >C10-C12	N	2670	mg/kg	1.0	< 1.0		
TPH >C12-C16	N	2670	mg/kg	1.0	< 1.0		
TPH >C16-C21	N	2670	mg/kg	1.0	4.7		
TPH >C21-C25	N	2670	mg/kg	1.0	7.5		
TPH >C25-C35	N	2670	mg/kg	1.0	7.0		
TPH >C35-C40	N	2670	mg/kg	1.0	< 1.0		
Total TPH >C6-C40	M	2670	mg/kg	10	19		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0		< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0		< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0		< 1.0	< 1.0

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05756	21-05756	21-05756
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1148308	1148310	1148311
			Sample Location:		BH2	BH2	BH2
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.9	1.2
			Bottom Depth (m):			1.0	
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0		< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0		< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0		< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0		< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0		< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0		< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	1.9	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	0.45	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	5.2	0.34	0.42
Pyrene	M	2700	mg/kg	0.10	4.8	0.34	0.43
Benzo[a]anthracene	M	2700	mg/kg	0.10	2.8	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	2.8	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	4.1	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	1.6	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	2.9	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	2.4	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.56	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	2.1	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	32	< 2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0		< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0		< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20		< 20	< 20
Chloroethane	U	2760	µg/kg	2.0		< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0
1,1-Dichloroethene	M	2760	mg/kg	1.0		< 1.0	< 1.0

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05756	21-05756	21-05756
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1148308	1148310	1148311
			Sample Location:		BH2	BH2	BH2
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.9	1.2
			Bottom Depth (m):			1.0	
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0		< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0		< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0		< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0		< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0		< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0		< 2.0	< 2.0
Trichloroethene	N	2760	µg/kg	1.0		< 1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0		< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0		< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0		< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10		< 10	< 10
Toluene	M	2760	µg/kg	1.0		< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10		< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0		< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10		< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0		< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0		< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0		< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0		< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50		< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0		< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0		< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05756	21-05756	21-05756
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1148308	1148310	1148311
			Sample Location:		BH2	BH2	BH2
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.9	1.2
			Bottom Depth (m):			1.0	
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Sec-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0		< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0		< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0		< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0	< 1.0
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Results - Single Stage WAC

Project: 20/3521 Elleray Hall

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-05756						
Chemtest Sample ID:	1148309						
Sample Ref:							
Sample ID:							
Sample Location:	BH2						
Top Depth(m):	0.6						
Bottom Depth(m):							
Sampling Date:	22-Feb-2021						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	1.3	3	5	6
Loss On Ignition	2610	M	%	3.6	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	25	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	30	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0042	0.042	0.5	2	25
Barium	1455	U	0.010	0.10	20	100	300
Cadmium	1455	U	< 0.00012	< 0.00012	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0018	0.018	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.026	0.26	0.5	10	30
Nickel	1455	U	0.0007	0.0065	0.4	10	40
Lead	1455	U	0.0032	0.032	0.5	10	50
Antimony	1455	U	0.014	0.14	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.006	0.064	4	50	200
Chloride	1220	U	7.5	75	800	15000	25000
Fluoride	1220	U	1.2	12	10	150	500
Sulphate	1220	U	63	630	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	22	220	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-05764-1
Initial Date of Issue:	05-Mar-2021
Client	Concept Consultants
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ
Contact(s):	Ana Gonzalez Chris Hustler Kasia Mazerant
Project	20/3521 Elleray Hall
Quotation No.:	Q21-23032
Order No.:	CL2727
No. of Samples:	4
Turnaround (Wkdays):	5
Date Approved:	05-Mar-2021
Approved By:	
Details:	Glynn Harvey, Technical Manager

Date Received:	24-Feb-2021
Date Instructed:	01-Mar-2021
Results Due:	05-Mar-2021

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05764	21-05764	21-05764	21-05764
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1148334	1148335	1148336	1148338
			Sample Location:		WS4	WS4	WS4	WS3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.3	0.6	0.25
			Bottom Depth (m):		0.2			
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A		-		-
Asbestos Identification	U	2192		N/A		No Asbestos Detected		No Asbestos Detected
ACM Detection Stage	U	2192		N/A		-		-
Moisture	N	2030	%	0.020	8.5	8.7	13	3.9
Soil Colour	N	2040		N/A	Brown		Brown	Brown
Other Material	N	2040		N/A	Stones		None	Stones
Soil Texture	N	2040		N/A	Sand		Sand	Sand
pH	M	2010		4.0	8.9		8.8	8.8
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.64		1.1	1.1
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.013		< 0.010	0.070
Cyanide (Total)	M	2300	mg/kg	0.50	3.1		2.1	12
Sulphate (Total)	M	2430	%	0.010	0.18		0.050	0.40
Arsenic	M	2450	mg/kg	1.0	24		11	30
Cadmium	M	2450	mg/kg	0.10	0.15		< 0.10	0.33
Chromium	M	2450	mg/kg	1.0	27		17	24
Copper	M	2450	mg/kg	0.50	40		21	88
Mercury	M	2450	mg/kg	0.10	0.69		< 0.10	0.32
Nickel	M	2450	mg/kg	0.50	26		16	36
Lead	M	2450	mg/kg	0.50	290		50	250
Selenium	M	2450	mg/kg	0.20	0.27		0.28	0.34
Zinc	M	2450	mg/kg	0.50	81		47	140
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20		3.7		
TPH >C6-C8	N	2670	mg/kg	1.0			< 1.0	
TPH >C8-C10	N	2670	mg/kg	1.0			< 1.0	
TPH >C10-C12	N	2670	mg/kg	1.0			< 1.0	
TPH >C12-C16	N	2670	mg/kg	1.0			< 1.0	
TPH >C16-C21	N	2670	mg/kg	1.0			13	
TPH >C21-C25	N	2670	mg/kg	1.0			26	
TPH >C25-C35	N	2670	mg/kg	1.0			18	
TPH >C35-C40	N	2670	mg/kg	1.0			1.7	
Total TPH >C6-C40	M	2670	mg/kg	10			60	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0			< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0			< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0			55
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0			26
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0			44

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05764	21-05764	21-05764	21-05764
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1148334	1148335	1148336	1148338
			Sample Location:		WS4	WS4	WS4	WS3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.3	0.6	0.25
			Bottom Depth (m):		0.2			
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	20			82
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	86			320
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0			180
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	110			710
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0			< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0			< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0			15
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	18			63
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	120			530
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	580			2900
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	1500			8800
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	190			1100
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	2400			13000
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	2500			14000
Naphthalene	M	2700	mg/kg	0.10	2.4		0.21	24
Acenaphthylene	M	2700	mg/kg	0.10	9.0		0.75	2.6
Acenaphthene	M	2700	mg/kg	0.10	2.8		0.30	24
Fluorene	M	2700	mg/kg	0.10	8.6		0.65	100
Phenanthrene	M	2700	mg/kg	0.10	61		5.9	610
Anthracene	M	2700	mg/kg	0.10	17		1.5	200
Fluoranthene	M	2700	mg/kg	0.10	96		5.2	760
Pyrene	M	2700	mg/kg	0.10	90		4.8	680
Benzo[a]anthracene	M	2700	mg/kg	0.10	45		1.9	360
Chrysene	M	2700	mg/kg	0.10	37		1.6	270
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	66		1.4	380
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	26		1.0	160
Benzo[a]pyrene	M	2700	mg/kg	0.10	54		2.2	340
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	40		1.5	220
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	11		0.63	59
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	34		1.1	200
Total Of 16 PAH's	M	2700	mg/kg	2.0	600		31	4400
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0			< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0			< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0			< 1.0
Bromomethane	M	2760	µg/kg	20	< 20			< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0			< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0			< 1.0
1,1-Dichloroethene	M	2760	mg/kg	1.0	< 1.0			< 1.0

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05764	21-05764	21-05764	21-05764
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1148334	1148335	1148336	1148338
			Sample Location:		WS4	WS4	WS4	WS3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.3	0.6	0.25
			Bottom Depth (m):		0.2			
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0	< 1.0			< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0			< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0			< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0			< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0			< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0			< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0			< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0			< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0			2.4
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0			< 2.0
Trichloroethene	N	2760	µg/kg	1.0	< 1.0			< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0			< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0			< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0			< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10			< 10
Toluene	M	2760	µg/kg	1.0	< 1.0			1.5
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10			< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10			< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0			< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0			< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10			< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0			< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0			< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0			< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0			1.1
Styrene	M	2760	µg/kg	1.0	< 1.0			< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0			< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50			< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0			< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0			< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0			2.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0			< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0			< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0			6.5

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05764	21-05764	21-05764	21-05764
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1148334	1148335	1148336	1148338
			Sample Location:		WS4	WS4	WS4	WS3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.3	0.6	0.25
			Bottom Depth (m):		0.2			
			Date Sampled:		22-Feb-2021	22-Feb-2021	22-Feb-2021	22-Feb-2021
			Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0			< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0			< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0			< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50			< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0			< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0			< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0			< 1.0
Total Phenols	M	2920	mg/kg	0.30	< 0.30		< 0.30	0.85

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-05789-1
Initial Date of Issue:	11-Mar-2021
Client	Concept Consultants
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ
Contact(s):	Ana Gonzalez Kasia Mazerant
Project	20/3521 Elleray Hall

Quotation No.:	Q21-23032	**Date Received:**	25-Feb-2021
Order No.:	CL2732	**Date Instructed:**	05-Mar-2021
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	11-Mar-2021
Date Approved:	11-Mar-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05789	21-05789	21-05789	21-05789	21-05789	21-05789
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1148464	1148469	1148473	1148474	1148478	1148481
			Sample Location:		WS6	WS7	WS8	WS8	WS9	WS10
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.30	0.30	0.60	0.60	0.30
			Bottom Depth (m):		0.20	0.30	0.40	0.70	0.60	0.30
			Date Sampled:		23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-			-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected			No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-			-
Moisture	N	2030	%	0.020	9.5	12		18	18	18
Soil Colour	N	2040		N/A	Brown	Brown		Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones		None	None	Stones
Soil Texture	N	2040		N/A	Sand	Sand		Clay	Clay	Sand
pH	M	2010		4.0	9.6	8.5		7.8	7.8	7.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.63	0.90		0.68	0.63	0.64
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.13	0.048		< 0.010	< 0.010	0.017
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50	0.50
Sulphate (Total)	M	2430	%	0.010	0.19	0.12		0.035	0.026	0.12
Arsenic	M	2450	mg/kg	1.0	19	31		15	13	23
Cadmium	M	2450	mg/kg	0.10	0.22	0.87		0.13	0.11	0.80
Chromium	M	2450	mg/kg	1.0	12	14		15	17	23
Copper	M	2450	mg/kg	0.50	14	79		41	25	89
Mercury	M	2450	mg/kg	0.10	< 0.10	0.61		0.90	0.40	1.1
Nickel	M	2450	mg/kg	0.50	13	15		15	15	23
Lead	M	2450	mg/kg	0.50	33	430		170	130	500
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20		0.36	0.33	0.67
Zinc	M	2450	mg/kg	0.50	61	190		69	68	430
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50
TPH >C6-C8	N	2670	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0
TPH >C8-C10	N	2670	mg/kg	1.0	1.2	< 1.0		1.4		< 1.0
TPH >C10-C12	N	2670	mg/kg	1.0	18	< 1.0		20		< 1.0
TPH >C12-C16	N	2670	mg/kg	1.0	49	< 1.0		52		4.7
TPH >C16-C21	N	2670	mg/kg	1.0	29	< 1.0		25		25
TPH >C21-C25	N	2670	mg/kg	1.0	120	< 1.0		110		100
TPH >C25-C35	N	2670	mg/kg	1.0	3300	< 1.0		37		51
TPH >C35-C40	N	2670	mg/kg	1.0	1900	< 1.0		< 1.0		< 1.0
Total TPH >C6-C40	M	2670	mg/kg	10	5500	< 10		240		180
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0					< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0					< 1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0					< 1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0					< 1.0	
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0					< 1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0					< 1.0	

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05789	21-05789	21-05789	21-05789	21-05789	21-05789
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1148464	1148469	1148473	1148474	1148478	1148481
		Sample Location:			WS6	WS7	WS8	WS8	WS9	WS10
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.10	0.30	0.30	0.60	0.60	0.30
		Bottom Depth (m):			0.20	0.30	0.40	0.70	0.60	0.30
		Date Sampled:			23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0					< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0					< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0					< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0					< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0					< 1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0					< 1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0					< 1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0					< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0					< 1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0					< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0					< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0					< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0					< 10	
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.63		< 0.10	< 0.10	0.43
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	0.80		< 0.10	< 0.10	0.81
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.11		< 0.10	< 0.10	0.14
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.43		< 0.10	< 0.10	0.23
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	3.4		0.86	0.54	3.0
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.70		0.16	0.13	0.74
Fluoranthene	M	2700	mg/kg	0.10	0.35	10		1.2	1.2	7.7
Pyrene	M	2700	mg/kg	0.10	0.42	9.4		1.2	1.2	7.5
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	4.5		0.49	0.69	4.2
Chrysene	M	2700	mg/kg	0.10	< 0.10	4.3		0.64	0.72	4.2
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	7.1		< 0.10	0.54	6.2
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.8		< 0.10	0.35	2.9
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	5.5		< 0.10	0.77	4.7
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	3.9		< 0.10	0.66	3.4
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.97		< 0.10	0.34	1.1
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	4.2		< 0.10	0.58	2.8
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	59		4.6	7.7	50
Dichlorodifluoromethane	U	2760	µg/kg	1.0					< 1.0	
Chloromethane	M	2760	µg/kg	1.0					< 1.0	
Vinyl Chloride	M	2760	µg/kg	1.0					< 1.0	
Bromomethane	M	2760	µg/kg	20					< 20	
Chloroethane	U	2760	µg/kg	2.0					< 2.0	
Trichlorofluoromethane	M	2760	µg/kg	1.0					< 1.0	
1,1-Dichloroethene	M	2760	mg/kg	1.0					< 1.0	
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0					< 1.0	

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-05789	21-05789	21-05789	21-05789	21-05789	21-05789
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1148464	1148469	1148473	1148474	1148478	1148481
			Sample Location:		WS6	WS7	WS8	WS8	WS9	WS10
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.30	0.30	0.60	0.60	0.30
			Bottom Depth (m):		0.20	0.30	0.40	0.70	0.60	0.30
			Date Sampled:		23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
1,1-Dichloroethane	M	2760	µg/kg	1.0					< 1.0	
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0					< 1.0	
Bromochloromethane	U	2760	µg/kg	5.0					< 5.0	
Trichloromethane	M	2760	µg/kg	1.0					< 1.0	
1,1,1-Trichloroethane	M	2760	µg/kg	1.0					< 1.0	
Tetrachloromethane	M	2760	µg/kg	1.0					< 1.0	
1,1-Dichloropropene	U	2760	µg/kg	1.0					< 1.0	
Benzene	M	2760	µg/kg	1.0					< 1.0	
1,2-Dichloroethane	M	2760	µg/kg	2.0					< 2.0	
Trichloroethene	N	2760	µg/kg	1.0					< 1.0	
1,2-Dichloropropane	M	2760	µg/kg	1.0					< 1.0	
Dibromomethane	M	2760	µg/kg	1.0					< 1.0	
Bromodichloromethane	M	2760	µg/kg	5.0					< 5.0	
cis-1,3-Dichloropropene	N	2760	µg/kg	10					< 10	
Toluene	M	2760	µg/kg	1.0					< 1.0	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10					< 10	
1,1,2-Trichloroethane	M	2760	µg/kg	10					< 10	
Tetrachloroethene	M	2760	µg/kg	1.0					< 1.0	
1,3-Dichloropropane	U	2760	µg/kg	2.0					< 2.0	
Dibromochloromethane	U	2760	µg/kg	10					< 10	
1,2-Dibromoethane	M	2760	µg/kg	5.0					< 5.0	
Chlorobenzene	M	2760	µg/kg	1.0					< 1.0	
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0					< 2.0	
Ethylbenzene	M	2760	µg/kg	1.0					< 1.0	
m & p-Xylene	M	2760	µg/kg	1.0					< 1.0	
o-Xylene	M	2760	µg/kg	1.0					< 1.0	
Styrene	M	2760	µg/kg	1.0					< 1.0	
Tribromomethane	U	2760	µg/kg	1.0					< 1.0	
Isopropylbenzene	M	2760	µg/kg	1.0					< 1.0	
Bromobenzene	M	2760	µg/kg	1.0					< 1.0	
1,2,3-Trichloropropane	N	2760	µg/kg	50					< 50	
N-Propylbenzene	U	2760	µg/kg	1.0					< 1.0	
2-Chlorotoluene	M	2760	µg/kg	1.0					< 1.0	
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0					< 1.0	
4-Chlorotoluene	U	2760	µg/kg	1.0					< 1.0	
Tert-Butylbenzene	U	2760	µg/kg	1.0					< 1.0	
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0					< 1.0	
Sec-Butylbenzene	U	2760	µg/kg	1.0					< 1.0	

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-05789	21-05789	21-05789	21-05789	21-05789	21-05789
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1148464	1148469	1148473	1148474	1148478	1148481
			Sample Location:		WS6	WS7	WS8	WS8	WS9	WS10
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.30	0.30	0.60	0.60	0.30
			Bottom Depth (m):		0.20	0.30	0.40	0.70	0.60	0.30
			Date Sampled:		23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
1,3-Dichlorobenzene	M	2760	µg/kg	1.0					< 1.0	
4-Isopropyltoluene	U	2760	µg/kg	1.0					< 1.0	
1,4-Dichlorobenzene	M	2760	µg/kg	1.0					< 1.0	
N-Butylbenzene	U	2760	µg/kg	1.0					< 1.0	
1,2-Dichlorobenzene	M	2760	µg/kg	1.0					< 1.0	
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50					< 50	
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0					< 1.0	
Hexachlorobutadiene	U	2760	µg/kg	1.0					< 1.0	
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0					< 2.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0					< 1.0	
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30		< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-06275-1
Initial Date of Issue:	11-Mar-2021
Client	Concept Consultants
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ
Contact(s):	Ana Gonzalez Chris Hustler Kasia Mazerant
Project	20/3521 Elleray Hall
Quotation No.:	Q21-23032
Order No.:	CL2732
No. of Samples:	4
Turnaround (Wkdays):	5
Date Approved:	11-Mar-2021
Approved By:	
Details:	Glynn Harvey, Technical Manager

Date Received:	01-Mar-2021
Date Instructed:	05-Mar-2021
Results Due:	11-Mar-2021

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-06275	21-06275	21-06275	21-06275
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1151026	1151028	1151029	1151032
			Sample Location:		STP3	STP1	STP1	STP2
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.10	0.25	0.40
			Bottom Depth (m):		0.50	0.10	0.25	0.40
			Date Sampled:		25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-		-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected	
ACM Detection Stage	U	2192		N/A	-		-	
Moisture	N	2030	%	0.020	15	7.8		11
Soil Colour	N	2040		N/A	Brown	Brown		Brown
Other Material	N	2040		N/A	Stones	Stones		Stones
Soil Texture	N	2040		N/A	Sand	Sand		Sand
pH	M	2010		4.0	8.0	9.0		8.8
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.65	0.74		0.53
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.37		0.064
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	0.60		< 0.50
Sulphate (Total)	M	2430	%	0.010	0.020	1.1		0.13
Arsenic	M	2450	mg/kg	1.0	11	26		11
Cadmium	M	2450	mg/kg	0.10	< 0.10	3.2		0.19
Chromium	M	2450	mg/kg	1.0	14	38		15
Copper	M	2450	mg/kg	0.50	15	170		25
Mercury	M	2450	mg/kg	0.10	0.17	5.3		0.39
Nickel	M	2450	mg/kg	0.50	11	35		16
Lead	M	2450	mg/kg	0.50	52	770		100
Selenium	M	2450	mg/kg	0.20	0.26	0.31		< 0.20
Zinc	M	2450	mg/kg	0.50	32	470		59
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50		< 0.50
TPH >C6-C8	N	2670	mg/kg	1.0	< 1.0			< 1.0
TPH >C8-C10	N	2670	mg/kg	1.0	< 1.0			< 1.0
TPH >C10-C12	N	2670	mg/kg	1.0	< 1.0			18
TPH >C12-C16	N	2670	mg/kg	1.0	< 1.0			33
TPH >C16-C21	N	2670	mg/kg	1.0	< 1.0			70
TPH >C21-C25	N	2670	mg/kg	1.0	< 1.0			150
TPH >C25-C35	N	2670	mg/kg	1.0	< 1.0			160
TPH >C35-C40	N	2670	mg/kg	1.0	< 1.0			32
Total TPH >C6-C40	M	2670	mg/kg	10	< 10			460
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0		
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0		< 1.0		
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0		25		
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0		22		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0		51		

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants			**Chemtest Job No.:**		21-06275	21-06275	21-06275	21-06275
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1151026	1151028	1151029	1151032
			Sample Location:		STP3	STP1	STP1	STP2
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.10	0.25	0.40
			Bottom Depth (m):		0.50	0.10	0.25	0.40
			Date Sampled:		25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0		370		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		60		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		520		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0		21		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0		36		
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0		69		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		220		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0		2100		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		410		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		2800		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		3400		
Naphthalene	M	2700	mg/kg	0.10	< 0.10	3.3		1.9
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	6.6		2.4
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	5.4		4.9
Fluorene	M	2700	mg/kg	0.10	< 0.10	11		7.5
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	63		54
Anthracene	M	2700	mg/kg	0.10	< 0.10	23		15
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	130		67
Pyrene	M	2700	mg/kg	0.10	< 0.10	120		62
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	58		30
Chrysene	M	2700	mg/kg	0.10	< 0.10	57		28
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	78		36
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	31		15
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	62		31
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	42		< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	11		< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	35		< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	740		350
Dichlorodifluoromethane	U	2760	µg/kg	1.0		< 1.0		
Chloromethane	M	2760	µg/kg	1.0		< 1.0		
Vinyl Chloride	M	2760	µg/kg	1.0		< 1.0		
Bromomethane	M	2760	µg/kg	20		< 20		
Chloroethane	U	2760	µg/kg	2.0		< 2.0		
Trichlorofluoromethane	M	2760	µg/kg	1.0		< 1.0		
1,1-Dichloroethene	M	2760	mg/kg	1.0		< 1.0		
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0		< 1.0		

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-06275	21-06275	21-06275	21-06275
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1151026	1151028	1151029	1151032
			Sample Location:		STP3	STP1	STP1	STP2
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.10	0.25	0.40
			Bottom Depth (m):		0.50	0.10	0.25	0.40
			Date Sampled:		25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,1-Dichloroethane	M	2760	µg/kg	1.0		< 1.0		
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0		
Bromochloromethane	U	2760	µg/kg	5.0		< 5.0		
Trichloromethane	M	2760	µg/kg	1.0		< 1.0		
1,1,1-Trichloroethane	M	2760	µg/kg	1.0		< 1.0		
Tetrachloromethane	M	2760	µg/kg	1.0		< 1.0		
1,1-Dichloropropene	U	2760	µg/kg	1.0		< 1.0		
Benzene	M	2760	µg/kg	1.0		< 1.0		
1,2-Dichloroethane	M	2760	µg/kg	2.0		< 2.0		
Trichloroethene	N	2760	µg/kg	1.0		< 1.0		
1,2-Dichloropropane	M	2760	µg/kg	1.0		< 1.0		
Dibromomethane	M	2760	µg/kg	1.0		< 1.0		
Bromodichloromethane	M	2760	µg/kg	5.0		< 5.0		
cis-1,3-Dichloropropene	N	2760	µg/kg	10		< 10		
Toluene	M	2760	µg/kg	1.0		< 1.0		
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		< 10		
1,1,2-Trichloroethane	M	2760	µg/kg	10		< 10		
Tetrachloroethene	M	2760	µg/kg	1.0		< 1.0		
1,3-Dichloropropane	U	2760	µg/kg	2.0		< 2.0		
Dibromochloromethane	U	2760	µg/kg	10		< 10		
1,2-Dibromoethane	M	2760	µg/kg	5.0		< 5.0		
Chlorobenzene	M	2760	µg/kg	1.0		< 1.0		
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0		< 2.0		
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0		
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0		
o-Xylene	M	2760	µg/kg	1.0		< 1.0		
Styrene	M	2760	µg/kg	1.0		< 1.0		
Tribromomethane	U	2760	µg/kg	1.0		< 1.0		
Isopropylbenzene	M	2760	µg/kg	1.0		< 1.0		
Bromobenzene	M	2760	µg/kg	1.0		< 1.0		
1,2,3-Trichloropropane	N	2760	µg/kg	50		< 50		
N-Propylbenzene	U	2760	µg/kg	1.0		< 1.0		
2-Chlorotoluene	M	2760	µg/kg	1.0		< 1.0		
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0		
4-Chlorotoluene	U	2760	µg/kg	1.0		< 1.0		
Tert-Butylbenzene	U	2760	µg/kg	1.0		< 1.0		
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0		
Sec-Butylbenzene	U	2760	µg/kg	1.0		< 1.0		

Results - Soil

Project: 20/3521 Elleray Hall

Client: Concept Consultants		**Chemtest Job No.:**			21-06275	21-06275	21-06275	21-06275
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1151026	1151028	1151029	1151032
			Sample Location:		STP3	STP1	STP1	STP2
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.10	0.25	0.40
			Bottom Depth (m):		0.50	0.10	0.25	0.40
			Date Sampled:		25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,3-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0		
4-Isopropyltoluene	U	2760	µg/kg	1.0		< 1.0		
1,4-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0		
N-Butylbenzene	U	2760	µg/kg	1.0		< 1.0		
1,2-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0		
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		< 50		
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0		< 1.0		
Hexachlorobutadiene	U	2760	µg/kg	1.0		< 1.0		
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0		< 2.0		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0		
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30		< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-08859-1		
Initial Date of Issue:	25-Mar-2021		
Client	Concept Consultants		
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ		
Contact(s):	Ana Gonzalez Kasia Mazerant		
Project	20/3521 Elieray Hall & North Lake Depot		
Quotation No.:	Q21-23032	**Date Received:**	19-Mar-2021
Order No.:	CL2776	**Date Instructed:**	19-Mar-2021
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	26-Mar-2021
Date Approved:	25-Mar-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Water

Project: 20/3521 Elieray Hall & North Lake Depot

Client: Concept Consultants		**Chemtest Job No.:**			21-08859
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1163651
		Sample Location:			BH2
		Sample Type:			WATER
		Date Sampled:			17-Mar-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.2
Sulphate	U	1220	mg/l	1.0	89
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	µg/l	0.20	0.57
Boron (Dissolved)	U	1455	µg/l	10.0	110
Cadmium (Dissolved)	U	1455	µg/l	0.12	< 0.12
Chromium (Dissolved)	U	1455	µg/l	0.50	6.9
Copper (Dissolved)	U	1455	µg/l	0.50	1.5
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	µg/l	0.50	1.0
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	1.2
Zinc (Dissolved)	U	1455	µg/l	3.0	4.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

Results - Water

Project: 20/3521 Elieray Hall & North Lake Depot

Client: Concept Consultants		**Chemtest Job No.:**			21-08859
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1163651
		Sample Location:			BH2
		Sample Type:			WATER
		Date Sampled:			17-Mar-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0

Results - Water

Project: 20/3521 Elieray Hall & North Lake Depot

Client: Concept Consultants		**Chemtest Job No.:**			21-08859
Quotation No.: Q21-23032		**Chemtest Sample ID.:**			1163651
		Sample Location:			BH2
		Sample Type:			WATER
		Date Sampled:			17-Mar-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Total Phenols	U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

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I/S	Insufficient Sample
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None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-19966-1		
Initial Date of Issue:	18-Jun-2021		
Client	Concept Consultants		
Client Address:	Unit D, Herald Way Binley Industrial Estate Coventry CV3 2RQ		
Contact(s):	Ana Gonzalez Kasia Mazerant		
Project	20/3521 Elleray Hall & North Lane Depot		
Quotation No.:	Q21-23032	**Date Received:**	11-Jun-2021
Order No.:	CL2904	**Date Instructed:**	11-Jun-2021
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	17-Jun-2021
Date Approved:	18-Jun-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Water

Project: 20/3521 Elleray Hall & North Lane Depot

Client: Concept Consultants			**Chemtest Job No.:**		21-19966
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1219867
Order No.: CL2904			Client Sample Ref.:		1A
			Sample Location:		BH1
			Sample Type:		WATER
			Date Sampled:		09-Jun-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.3
Sulphate	U	1220	mg/l	1.0	110
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	µg/l	0.20	0.57
Boron (Dissolved)	U	1455	µg/l	10.0	84
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	µg/l	0.50	7.0
Copper (Dissolved)	U	1455	µg/l	0.50	1.5
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	µg/l	0.50	0.59
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	1.4
Zinc (Dissolved)	U	1455	µg/l	2.5	< 2.5
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10

Results - Water

Project: 20/3521 Elleray Hall & North Lane Depot

Client: Concept Consultants			**Chemtest Job No.:**		21-19966
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1219867
Order No.: CL2904			Client Sample Ref.:		1A
			Sample Location:		BH1
			Sample Type:		WATER
			Date Sampled:		09-Jun-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0

Results - Water

Project: 20/3521 Elleray Hall & North Lane Depot

Client: Concept Consultants			**Chemtest Job No.:**		21-19966
Quotation No.: Q21-23032			**Chemtest Sample ID.:**		1219867
Order No.: CL2904			Client Sample Ref.:		1A
			Sample Location:		BH1
			Sample Type:		WATER
			Date Sampled:		09-Jun-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Total Phenols	U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

16. PHOTOGRAPHS

Project No	20/3521	Hole ID	WS1
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	001 & 002
Client	Richmond & Wandsworth Council	Date	February 2021

CONCEPT

HEAD OFFICE:
Unit 8 Warple Mews
Warple Way
London W3 0RF
si@conceptconsultants.co.uk
+44(0) 20 8811 2880

LABORATORY:
47-49 Brunel Road
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+44(0) 20 8740 1553

MIDLANDS OFFICE:
Unit D Herlad Way
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+44(0) 24 7708 7670

Photograph No 001

Photograph No 002

Project No	20/3521	Hole ID	WS2
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	003 & 004
Client	Richmond & Wandsworth Council	Date	February 2021

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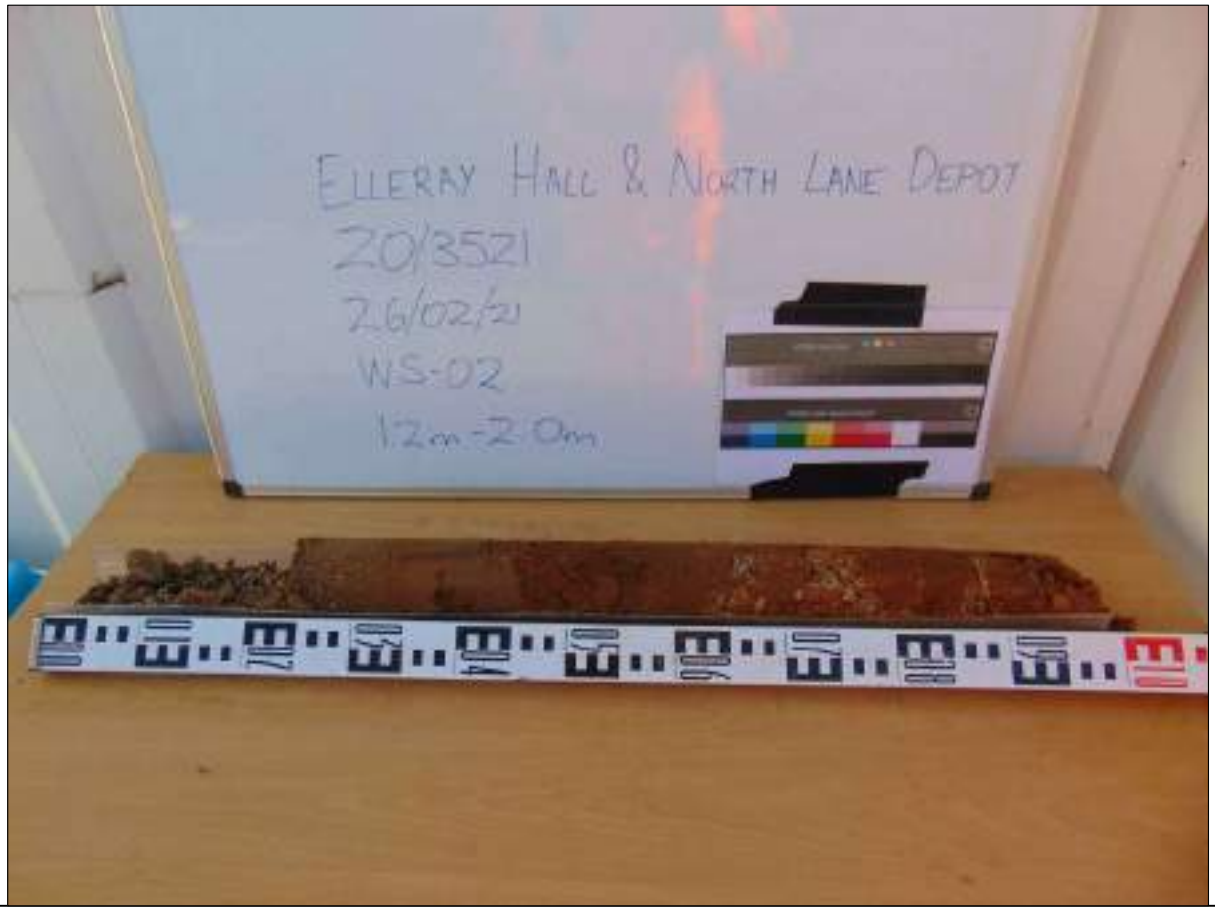

Photograph No 003

Photograph No 004

Project No	20/3521	Hole ID	WS3
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	005 & 006
Client	Richmond & Wandsworth Council	Date	February 2021

CONCEPT
MCERTS WAGS CHAS
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Photograph No 005

Photograph No 006

Project No	20/3521	Hole ID	WS4
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	007 & 008
Client	Richmond & Wandsworth Council	Date	February 2021

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Photograph No 007

Photograph No 008

Project No	20/3521	Hole ID	WS5
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	009 & 010
Client	Richmond & Wandsworth Council	Date	February 2021

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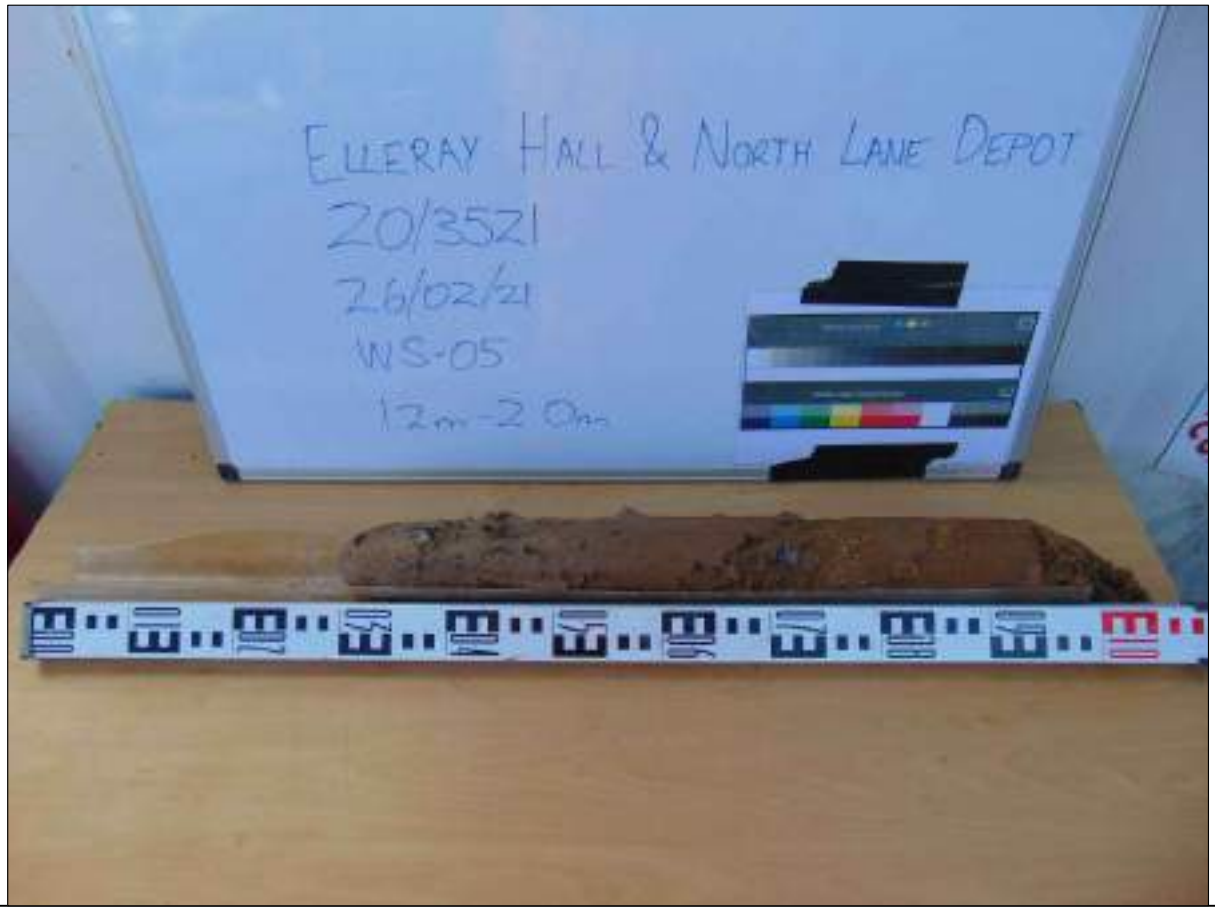

Photograph No 009

Photograph No 010

Project No	20/3521	Hole ID	WS6
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	011 & 012
Client	Richmond & Wandsworth Council	Date	February 2021

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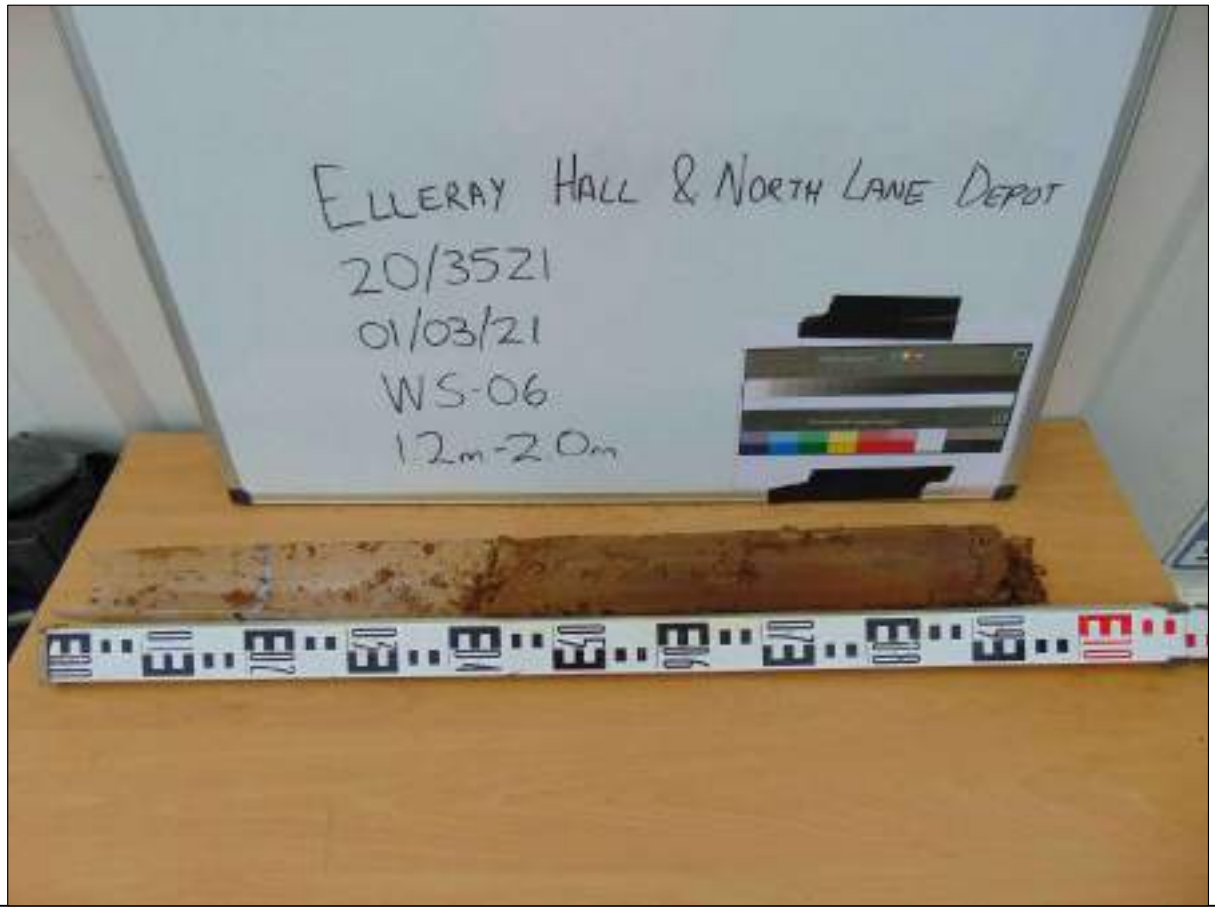

Photograph No 011

Photograph No 012

Project No	20/3521	Hole ID	WS7
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	013 & 014
Client	Richmond & Wandsworth Council	Date	February 2021

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Photograph No 013

Photograph No 014

Project No	20/3521	Hole ID	WS8
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	015 & 016
Client	Richmond & Wandsworth Council	Date	February 2021

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Photograph No 015

Photograph No 016

Project No	20/3521	Hole ID	WS9
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	017 & 018
Client	Richmond & Wandsworth Council	Date	February 2021

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Photograph No 017

Photograph No 018

Project No	20/3521	Hole ID	WS10
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	019 & 020
Client	Richmond & Wandsworth Council	Date	February 2021

CONCEPT

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Photograph No 019

Photograph No 020

Project No	20/3521	Hole ID	STP1
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	021 & 022
Client	Richmond & Wandsworth Council	Date	25/02/2021

CONCEPT

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Photograph No 021

Photograph No 022

Project No	20/3521	Hole ID	STP1
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	023 & 024
Client	Richmond & Wandsworth Council	Date	25/02/2021

CONCEPT

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Photograph No 023

Photograph No 024

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Client	Richmond & Wandsworth Council	Date	25/02/2021

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Photograph No 026

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Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	027 & 028
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Photograph No 027

Photograph No 028

Project No	20/3521	Hole ID	STP2
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	029 & 030
Client	Richmond & Wandsworth Council	Date	25/02/2021

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Photograph No 029

Photograph No 030

Project No	20/3521	Hole ID	STP3
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	031 & 032
Client	Richmond & Wandsworth Council	Date	25/02/2021

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Photograph No 031

Photograph No 032

Project No	20/3521	Hole ID	STP3
Project Name	Elleray Hall & North Lane Depot/East Car Park	Photograph No	033 & 034
Client	Richmond & Wandsworth Council	Date	25/02/2021

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Photograph No 033

Photograph No 034

APPENDIX A: Unexploded Ordnance Risk Assessment

JOMAS ENGINEERING ENVIRONMENTAL

WE LISTEN, WE PLAN, WE DELIVER

Geotechnical Engineering and Environmental Services across the UK.

DETAILED UNEXPLODED ORDNANCE (UXO) RISK ASSESSMENT

FOR THE SITE AT

Elleray Hall & North Lane Depot, Teddington TW11
And
East Car Park, Teddington TW11

This report has been produced by Primely on behalf of JOMAS

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EXECUTIVE SUMMARY

Site location and general description

Primely Ltd has been commissioned by *JOMAS ASSOCIATES Ltd* to carry out a detailed Unexploded Ordnance (UXO) Risk Assessment for the development projects at North lane depot East car park, Teddington TW11 0HG and Elleray Hall, Elleray Road, Teddington TW11 0HG. The sites are centred approximately on National Grid Reference TQ 15689 70909.

The site is bounded on all sides by private homes, with North Lane on its West and Middle Lane centred between the two plots as seen in figure 2.1.

The site is currently occupied by commercial buildings in part and associated with hard-standing tarmacked ground.

TW11 0HG is currently in Coronavirus (Covid-19) England Tier 5 (Stay at home)
Data from NHSX, correct as of 16th January 2021

Scope of proposed works

It is understood that a series of site investigation works are planned across the site area.

Risk assessment

Primely Ltd has assessed that there is a **LOW** risk of items of unexploded German aerial delivered. Other types of munitions also constitute a **LOW** risk**.**

- The site is located within the London Borough of Richmond upon Thames, historic county of Middlesex, which sustained a low-density bombing campaign during the Blitz.
- Official records show that 59 high explosive (HE) bombs were dropped in Teddington throughout the war.
- November 1940 saw the borough sustain its highest casualties. 74 people were killed.
- On the night of November 29,130 bombs and between 3,000 and 5,000 incendiary devices rained down on Twickenham and Teddington, destroying 150 houses and damaging more than 6,000 others.

- The National Physical Laboratory had been designated a special target by the Luftwaffe, as it was here the engineer and aeronautical designer Barnes Wallis was developing the 'Bouncing Bomb', later to be used by the RAF in the famous Dambusters raid of May 1943. The raid destroyed Germany's Mohne and Eder dams.
- There was an American army base in Bushy Park (600m south west of the site).
- Teddington Film Studios, one of the few British studios (2km southeast), received a direct hit from a V1 on the evening of July 5, 1944.
- By the end of the war, 143 civilians had been killed in air raids, 500 houses had been destroyed, and another 32,000 residences had sustained damage.

Recommended risk mitigation measures

To support the proposed works, Primely Ltd suggests the following risk mitigation measures:

- No further action. However, re-active measures should be employed such as a UXO “Toolbox” brief, a UXO ‘Emergency Management Plan’ and/or an “on-call” service.

Primely Ltd can supply the above services.

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Acronyms and abbreviations

AAA	Anti-Aircraft Artillery
AP	Armour Piercing
AP	Anti-Personnel
ARP	Air Raid Precaution (Wardens)
BD	Bombing Density
BGL	Below Ground Level
BGS	British Geological Survey (UK)
BH	Borehole
BPD	Bomb Penetration Depth
CDM	Construction (Design and Management) Regulations 2015 (UK)
CIRIA	Construction Industry Research and Information Association
CPT	Cone Penetrometer Test
EOC	Explosive Ordnance Clearance
EOD	Explosive Ordnance Disposal
ERP	Emergency Response Plan
ERW	Explosive Remnants of War
FFE	Free From Explosives
GI	Ground Investigation
GPS	Global Positioning System
HE	High Explosive
HSE	Health and Safety Executive
HSWA	Health and Safety at Work Act 1974
IB	Incendiary Bomb
JSEODOC	Joint Services Explosive Ordnance Disposal Operations Centre (UK)
LE	Low Explosive
LM	Luftmine (Germany)
HSWA	Health and Safety at Work Act 1974
IB	Incendiary Bomb
JSEODOC	Joint Services Explosive Ordnance Disposal Operations Centre (UK)
LE	Low Explosive
LM	Luftmine (Germany)
LSA	Land Service Ammunition MOD Ministry of Defence (UK)
NEQ	Net Explosive Quantity
RAF	Royal Air Force
RN	Royal Navy
ROF	Royal Ordnance Factory
SAA	Small Arms Ammunition
SAP	Semi-Armour-Piercing
RAF	Royal Air Force
SI	Site Investigation
SIP	Self-Igniting Phosphorous
UXB	Unexploded Bomb
UXO	Unexploded Ordnance
V1	Vengeance Weapon 1 - Flying bombs
V2	Vengeance Weapon 2 - Flying bombs
WAAF	Women Auxiliary Air Force
ROF	Small Arms Ammunition
SI	Site Investigation

INTRODUCTION

Primely Ltd has been commissioned by *JOMAS ASSOCIATES* to carry out a detailed Unexploded Ordnance (UXO) Risk Assessment for the development projects at North Lane Depot East car par and Elleray Hall, Elleray Road, Teddington TW11 0HG*, United Kingdom*. The desk study provides a detailed assessment of the location with regards to the risks of encountering items of unexploded ordnance and the consequences of that encounter.

This report documents the findings of the study carried out for the assessment of the potential risk from deep buried unexploded High Explosive (HE) bombs and munitions constituents at the site, and make suitable recommendations to mitigate the risk to a level that is as low as reasonable and practicable (ALARP).

Reasonable efforts have been exerted to ensure that significant and sufficient available historical information has been accessed and checked. The evidence assessed has been, where possible, included in the report to enable *JOMAS* and its representatives to understand the basis of the risk assessment.

Primely Ltd cannot be held responsible for inaccuracies, gaps in the available historical information, or for any changes to the assessed level of risk or risk mitigation measures based on documentation or other information that may have become available or discovered later than the date of this study.

The exact location of ordnances, their nature, as well as their quantities is ambiguous to say the least with absolute exactitude because wartime records are difficult to verify. However, our study leans on the accumulation and careful analysis of a multitude of accessible evidence.

There are several sources of information through which investigations for UXO hazards can be collected; these include the national archives, MoD archives, local historical sources, historical mapping, as well as available aerial photography. Information was considered only if it reasonably correlated with the site.

1. METHODOLOGY

1.1 Method objectives

This report follows the guidelines outlined in CIRIA Report C681, '*Unexploded Ordnance (UXO): A Guide for the Construction Industry'* which represents best practice and has been endorsed by the HSE. The report recommends appropriate site and work-specific risk mitigation measures to reduce the risk from explosive ordnance during the envisaged works to a level that is as low as reasonably practicable (ALARP).

The ALARP principle is a key factor in efficiency and effectiveness in reducing UXO risks. Any additional mitigation that delivers low benefits but consumes disproportionate time, money, and effort, is dimmed unnecessary. It is important to note that the principle is not trying to reduce the risk to zero, but to find the balance of reducing the cost of a risk significantly without compromising safety. The assessment of UXO risk is a measure of probability of encountering a deep buried unexploded ordnance and the consequence of that encounter. If risks of an UXO were identified, the methods of mitigation recommended in this report are considered reasonably and sufficiently robust to reduce them to ALARP.

Primely Ltd has been supporting the UK construction industry with UXO Risk Management measures and can support JOMAS ASSOCIATES through the whole risk management process. We offer the complete UXO risk management process from the preliminary and detailed desk study through to on-site support.

1.2 Sources of Information

Reasonable effort has been made to ensure that relevant evidence was consulted and presented to produce a thorough and comprehensible report. To achieve this, the following records and archives material, held in the public domain, have been accessed:

- Primely Ltd in-house data base.
- The National Archives, Kew.
- Historical mapping datasets.
- British Geological Survey
- Historic England National Monuments Record.
- Available material from 33 Engineer Regiment (EOD) Archive.
- Open sources such as published books and verified online resources.

2. SITE DETAILS AND DESCRIPTION

2.1 Site location and Description

The investigation is for the sites located at North lane depot East car park and Elleray Hall, Elleray Road, Teddington TW11 0HG, United Kingdom. The site is centred approximately on National Grid Reference TQ 15689 70909.

The site is bounded on all sides by private homes, with North Lane on its West and Middle Lane centred between the two plots as seen in figure 2.1 below.

The site is currently occupied by commercial buildings in part and associated with hard-standing tarmacked ground.

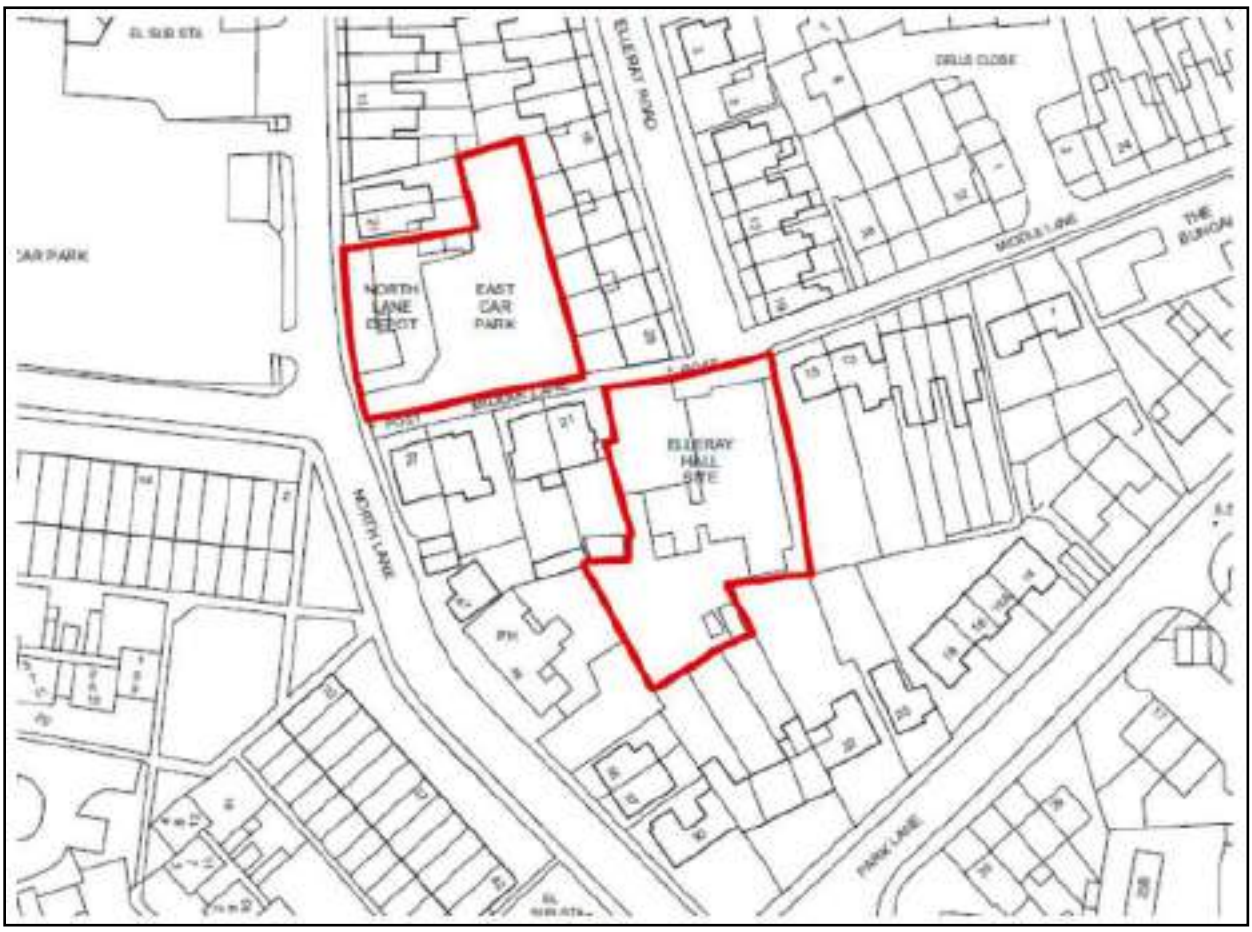

Figure 2.1: Description of the site location

2.2 Proposed Scheme of work

It is understood that a series of site investigation works are planned across the site area.

2.3 Ground Conditions - Geology

It should be noted that the maximum depth that a bomb could reach may vary across a site and will be largely dependent on the specific underlying geological strata and its density.

2.4 Historical Ground Investigation Data

The British Geological Survey Geology of Britain web map services provides access to the geographic locations and logs of historical borehole investigations and well installations located nearby, to the north and east of the site (See figure 2.4 below).

Figure 2.4: Historical borehole records (Source: BGS Web Service)

Table 2.4.1 below displays the strata succession encountered in the boreholes (See appendix for full log). No boreholes were found closer to the site.

Table 2.4.1: LITTLE QUEENS ROAD TWICKENHAM

Name: LITTLE QUEENS ROAD TWICKENHAM **Reference:** TQ17SE19 **Length (m):** 9.600000 **Easting**: 515500 **Northing:** 170800		
Geological section	**Thickness**	**Depth**
Topsoil	0.2m	0.6
Made ground	5.9m	6.1m
Gravel	0.3m	6.4m
Brown clay	0.3m	6.7m
Blue clay	3m	9.77m

Table 2.4.2: GOVERNMENT CHEMIST LAB NPPL 11

Name: GOVERNMENT CHEMIST LAB NPPL 11 **Reference:** TQ17SE64/K **Length (m):** 10.000000 **Easting:** 515470 **Northing:** 170750		
Geological section	**Thickness**	**Depth**
Made ground	5.9m	1.0m
Gravel	0.3m	1.8m
Weathered London clay	0.3m	7.8m
London clay	3m	8m

3. HISTORICAL DATASETS

3.1 General

The following section presents information identified relating to the site of military value of various types. The focus of this report concerns German aerial delivered weapons dropped during WWI and WWII.

The Great War started in Belgium and France along the Western Front in 1914 but by the beginning of 1915 it had moved closer to home. During the first great war, London was targeted and bombed by Zeppelin Airships. An estimated 250 tons of ordnance were dropped upon the city, most of which fell on the City of London. The first Zeppelin raid over London came on the 31st May 1915 and the increasing threat of attack saw the establishment of a ring of defensive airfields around the city.

The country received a much-needed respite from bombing in June 1941, when Luftwaffe squadrons were ordered to concentrate on the war against Russia. The resumption of Hitler's bombing of England, a period known as The Little Blitz, did not occur until the spring of 1944, when raids were launched from Luftwaffe bases in occupied France.

WWI bombs were generally smaller in sizes and were dropped from a lower altitude which resulted in a limited penetration in depth of these ordnances. This report has placed a greater emphasis on WWII bombs as they can be found significantly deeper than the WWI ordnances.

3.2 Site History

The sites are situated in Teddington, in the London Borough of Richmond upon Thames. It is also in the historic county of Middlesex.

In 1800 the population of Teddington was under 700, in 100 houses. The number of houses had probably doubled by the 1860s, but the population was still only just over 1000. In 1861 the Manor of Teddington, which consisted of nearly half the parish, was sold for the development of desirable villas. To assist this development the railway arrived in 1863.

There were no buildings in Broad Street in 1800 although there were houses in Middle Lane backing on to Broad Street and in Park Lane, including the alms houses, built in 1739 and demolished in about 1950. Elleray Villa was built by 1820 on the corner of North Lane with an entrance in Broad Street. The house was demolished in about 1890 and the site crossed by Elleray Road. There was a house round the corner in Stanley Road in 1800. It is thought that this was the house called Maud Cottage, later called The Hollies or the Old Hollies. The house was demolished in 1965 to make way for the redevelopment of the land between Somerset Road and Walpole Road.

Built in 1911, Elleray Hall's initial purpose was to act as a parish hall. It wasn't until 1950's Teddington's Old Peoples' Welfare Committee (T.O.P.W.C.) began utilising the hall for distributing off-ration sweets to its local elderly community. T.O.P.W.C. had been formed in 1946 with the aim of aiding the elderly with fuel and food. Seventy-two years on, T.O.P.W.C. has become Elleray Community Association but its objective of combating isolation in the neighbourhood continues.

At the end of October 1940, concerns ran high when a bomb landed on the apron of Teddington Weir. The breach caused by the bomb's detonation created a reduction in the depth of water at Teddington Reach (1.6 km east of the site) by six feet, making navigation impossible except at high tides. Those dwelling on Trowlock Island were marooned temporarily. Full navigation of the Reach would not be restored for seven weeks.

In the months that followed, the aerial bombardment grew heavier. November 1940 saw the borough sustain its highest casualties. 74 people were killed, the majority in a devastating attack which took place on the night of November 29. 130 bombs and between 3,000 and 5,000 incendiary devices rained down on Twickenham and Teddington, destroying 150 houses and damaging more than 6,000 others. The worst damage was sustained just 130m north of the depot, at Church Road.
Mrs Lilian Dring, a Teddington resident, wrote: *"Most of Teddington became a raging inferno. Duty rotas were abandoned and every available warden was on duty most of the night. The Baltic Timber Yard, Stanley Road* (which is just over 300m north west of the site) *and the Baptist Church went up in mountains of flame which almost met over our heads as we patrolled Walpole Road."*

Another tragedy occurred the same night. Bombs intended to pulverize the National Physical Laboratory at Teddington exploded over a public air raid shelter in the laboratory's grounds, killing eight residents of Walpole Crescent. The NPL (circa 500m Northwest of the sites of interest) had been designated a special target by the Luftwaffe, as it was here the engineer and aeronautical designer Barnes Wallis was developing the 'Bouncing Bomb', later to be used by the RAF in the famous Dambusters raid of May 1943. The raid destroyed Germany's Mohne and Eder dams.

During the 'Little Blitz', as far as residents of the borough were concerned, the worst of these raids occurred on February 25, 1944, when 45 bombs were dropped in an effort to destroy both the National Physical Laboratory and an American army base in Bushy Park (600m south west of the site). The Luftwaffe missed their targets. Three bombs fell in Fulwell Golf Course (1.2km north) and 28 landed in Hampton and Hampton Hill (1.6km northwest).

Teddington Film Studios, one of the few British studios (2km southeast) to remain in operation during World War II, received a direct hit from a V1 on the evening of July 5, 1944. The bomb completely gutted the main studio and took the life of 'Doc' Salomon, the studio's American production manager. This effectively put an end to Teddington Studio's valiant efforts to produce morale-boosting films throughout the war. Understandably, the psychological impact these missiles had on the local population was devastating. An even greater threat was posed by the sophisticated, longer-range V2 rockets. Unlike the V1, which could be seen and heard from a distance, the V2 was silent and there was no warning

of its arrival: it simply dropped to the ground and exploded violently on impact. The only V2 to land in the area, at the rear of Fairfax Road, 1.3km southeast, left a crater 40 feet wide and 8 feet deep. Fear of this new menace from the skies led to the evacuation of 7,000 women and children from the borough in July 1944.

By the end of the war, 143 civilians had been killed in air raids, 500 houses had been destroyed, and another 32,000 residences had sustained damage.

3.2.1 Second World War Bombing Statistics

The following table summarises the quantity of German bombs (excluding 1kg incendiaries and antipersonnel bombs) falling on the borough of Richmond upon Thames between 1940 and 1945.

Table 3.2.1 Ordnance Statistic within the borough[1]

Record of German Ordnance Dropped on Teddington		
Area Acreage		**N/A**
Weapons	High Explosive Bombs (all types)	59
	Parachute Mines	-
	Oil Bombs	-
	Phosphorus Bombs	-
	Fire Pot	-
	Pilotless Aircraft (V-1) incidents	-
	Long Range Rockets (V-2) incidents	-
Total		
Items per 1000 acres		N/A

[1] **Source**: Home Office Statistics

This table does not include UXO found during or after WWII.

1kg incendiary and anti-personnel bombs were frequently considered too numerous to be recorded and their locations to be registered. They were, consequently, considered to have been dropped ubiquitously across the area. Although the risk relating to Incendiary bombs is lesser than that relating to larger HE bombs, they are still lethal as they were designed to inflict damage and injury. The risk of harm should not be dismissed.

3.3 Ordnance Survey Historical Maps

Historical maps were obtained for this report and are presented in Annex F (historical maps). These maps provide an indication of the composition of the site pre and post- WWII. See below for a summary of the site history on various mapping editions.

Table 3.3 – Ordnance Survey Historical Maps Description

Pre WW1		
Date	**Scale**	**Description**
1896	1:2,500	The site is bounded by Broad street to the north, Park Lane to the south, North Lane to the west and Elleray road to the east. It is set in rural Teddington and contains two buildings that are not clearly defined.
1915	1:2,500	During WW1, there were developments adjacent to the site with the emergence of a row of terraced houses facing Elleray road and a Hall at the bottom of the site. The area itself illustrates a progress in development.

Pre WW2		
Date	**Scale**	**Description**
1920	1:2,500	After WW1, there has been minimal changes to the area.
1934	1:10,560	In the period before WW2, very little or no changes have taken place from the previous map edition. Memorial Hospital has been built west of the area, on a site that previously used to be a Nursery.

Post WW2		
Date	**Scale**	**Description**
1959	1:2,500	The site is unchanged with only the Hall being converted into Works building. The area itself is more urbanised with more building's, particularly in the open spaces south and east of the site.
1963-1979	1:2,500	No changes on the site. Nursery and allotment areas towards the south-west have been developed with more housing.
1991	1:2,500	Changes have taken place on the site with a car park built on the north and a Day Centre at the south. Buildings west of the site, adjacent to North Lane have also been replaced by a big car park.
1975	1:10,000	No discernable changes have taken place.
1987	1:10,000	No discernable changes have taken place.

3.4 Aerial Bombing

The focus of research is centered on German air-delivered ordnance dropped during WW1. However, other forms of explosive contamination will be considered. It is assessed that the risk of encountering WW1 bombs is low as they were dropped from a lower altitude and were generally smaller in sizes, resulting in a much lower penetration depth.

As for the site of interest in **figure 3.4.1** below show the concentric red lines that portray a high bombing density on and around the site area. This indicates that there has been a significant tonnage of bombs dropped in the area. This may be due to the high number of military target present in the area.

3.5 Sources of Potential Unexploded Ordnance

During WWI and WWII, many towns and cities across the UK were subjected to bombing which often resulted in extensive damage to town centres, docks, railways, industrial areas, and other infrastructures. Part of the destruction could be associated with the poor accuracy of the technology and the nature of bombing techniques.

The bombing records were gathered by the police, Air Raid Precaution (ARP) wardens, and military personnel. The records were maintained locally and/or by regions, in the form of written records, maps (depicting strikes' locations and damage to structures). Records were detailed and typically made through direct observations, or by post-raid surveys. As the immediate priority was to assist casualties and minimise damage, loss or incompletion of some records were inevitable.

UXO found at diverse sites in the UK originates from three principal sources;

1. During escape of Luftwaffe aircrafts from an aerial attack, they would drop some or all their load resulting in bombs being found in unexpected locations. This is commonly referred to as tip and run. The CIRIA publication C681 suggests that approximately 10 per cent of all munitions deployed failed to function as designed. Thus, many remained buried and can present a potential risk especially to workers undertaking construction and civil engineering groundwork.
2. During transportation of aggregate containing munitions from a contaminated area to an area that was previously free of UXO.
3. Poor precision during targeting (due to high altitude night bombing and/or poor visibility) resulted in bombs landing off target, but within the surrounding area. British decoy sites were constructed to deliberately cause incorrect targeting, often built in remote and uninhabited areas.

3.5.1 Allied as source of UXO

As the pressure mounted during WWII, the government requisitioned considerable areas of land for defence, where the armed forces would carry out training, construction of airfields and facilities for munitions production and storage. It has been estimated that at least 20 per cent of the UK's land has been used for military training at some point.

Thousands of tons of the munitions used during the war were used for the Allied Forces weapon testing, and military training. Therefore, allied UXO contamination derived from legacy munitions from military training, deliberate or accidental dumping (AXO), and ordnance that directly resulted from war fighting activities are known as Explosive Remnants of War.

There is no supporting evidence that the site had been used for military purpose or even to store resources. The closest legitimate target was the training ground at Mill green.

3.5.2 German as source of UXO

Where a bomb fails to detonate upon penetration of the ground, it leaves behind an entry hole that is not always apparent, and some were unreported, leaving the buried bomb being unrecorded. Aerial bombing of London witnessed a wide range of German bombs.

3.6 WWII German aerial Ordnance Type Description High Explosive (HE) Bombs

3.6.1 German SC50 and SC250

The SC series of High Explosive Bombs were thin cased bombs used for general demolition. In this series, most bombs were between 50kg to 500kg, with larger bombs of up to 1,800kg **(see Annex A)**. Their fill of high explosive made up half their weight. The SC50 was made of a 'one piece drawn steel body'. The SD series were bombs made with a thicker case and a lower charge weight and were generally used against hardened targets (See table 3.6.1 below).

Table 3.6.1: Range of German bomb series

Weight in Kg	Weight in lb	Series
50kg	112lb	S.C. or S.D.
250kg	550lb	S.C. or S.D.
500kg	1,000lb	S.C. or S.D.
1000kg	2,400 lb	S.C. (Herman)
1,000kg	2,400 lb	S.D. (Esau)
1,400kg	3,200 lb	S.D. (Fritz)
1,800kg	4,000 lb	S.C. (Satan)

3.6.2 1Kg Incendiary Bomb SD2 'Butterfly' Bomb (Armed status)

The 1 kg B1E incendiary bomb **(see annex B)** consisted of a cylinder of magnesium alloy, with an incendiary filling of thermite with three steel fins. These bombs were ignited by a small percussion charge, fired upon impact. Explosive heads were later incorporated into the IB. Whilst Incendiary Bombs may have fallen within the Study Site, they were considered ubiquitous and record keeping of those were sometimes discarded if they were under 1kg.

3.6.3 The Butterfly Bomb (or Sprengbombe Dickwandig 2 kg or SD2)

These were a German 2-kilogram antipersonnel sub munition used by the Luftwaffe, made of a thin cylindrical metal outer shell which hinged open when the bomblets were deployed **(see annex B).** The design was very distinctive and easy to recognise as it had the appearance of a large butterfly. SD2 bomblets were dropped in large numbers from containers holding between 6 and 108 sub munitions. These broke open in air and scattered the sub-munitions.

3.6.4 V1s and V2s

The final phase of bombing began at the end of 1944 when the first V2 rocket exploded in addition to IBs and HE bomb strikes. The fear of the V1 flying bombs and V2 rockets was tangible. These unmanned bombs were caused when London targets were overshot. The V type rockets were thin-skinned, unmanned, and less accurate weapons **(see annex C)**. There was no advance warning for a rocket which travelled faster than the speed of sound, reaching its target four minutes after launch. Enormously destructive, they caused huge craters and flattened whole rows of houses. Across London thousands of homeless people needed rehousing.

3.7 Consequences of interaction

A friction impact from intrusive machineries could provoke a shock-sensitive fuse explosive. The effects of chemical breakdown of the explosive fill and the general degradation over time can cause explosive compounds to crystallise and extrude out from the main body of the bomb. It may only require a limited amount of energy to initiate the extruded explosive around the fuse pocket which could detonate the main charge.

Upon detonation, factors that may be affected may vary depending on the site-specific conditions but can be summarised as:

- People – site workers, local residents and general public.
- Plant and equipment – construction plant on site.
- Services – subsurface gas, electricity, telecommunications.
- Structures – not only visible damage to above ground buildings, but potentially damage to foundations and the weakening of support structures.

The depth that an unexploded bomb will penetrate depends on several factors including:

- Size and shape of bomb
- Height of release
- Velocity and angle of bomb
- Nature of the ground cover
- The Geology.

Unexploded ordnance does not spontaneously explode as military HE. It is generally reasonably stable and requires significant energy for detonation to occur. In the case of a German UXB, discovered within the construction site, there are other potential initiation mechanisms such as a significant impact e.g. from piling machinery or large and violent mechanical excavation, onto the main body of the weapon (unless the fuse is struck).

Most German bomb and mine fuses were electric and were highly engineered compared to their British equivalents. A small proportion of German WWII bombs employed clockwork fuses. It is probable that clockwork or mechanical fuse mechanisms would have corroded since WWII and this will generally prevent them from functioning.

4. REQUIREMENT FOR UXO RISK ASSESSMENT

4.1 Background

There is currently no formal obligation for construction or development projects to undertake a UXO risk assessment in the UK and there is no specific legislation enforcing this on the management for the mitigation of UXO risk. However, the CDM legislation outlined below makes noticeably clear that those responsible for intrusive works should undertake a comprehensive and robust assessment of the potential risks to employees and implement mitigation measures to address any hazards identified.

4.2 CDM Regulations 2015

The Construction (Design and Management) Regulations 2015 defines the responsibilities of parties involved in the construction of temporary or permanent structures. The CDM 2015 establishes a duty of care extending from clients, principle coordinators, designers, and contractors to those working on, or affected by, a project. Those responsible for construction projects may therefore be accountable for the personal or proprietary loss of third parties if correct health and safety procedure has not been applied. The CDM 2015 does not specifically reference UXO. The risk presented by such items is both within the scope and purpose of the legislation. It is therefore implied that there is an obligation on parties to:

- Provide or obtain an appropriate assessment of potential UXO risks at the site.
- Emplace appropriate risk mitigation measures if necessary.
- Supply all parties with relevant risk information.
- Prepare a suitably robust emergency response plan.

4.3 Other legislations

The 1974 Health and Safety at Work Act dictates that all employers have a responsibility under this Act and the Management of Health and Safety at Work Regulations 1999, to ensure the health and safety of their employees and third parties, so far as is reasonably practicable. In the event of a casualty resulting from the failure of an employer or client to address the risks relating to UXO, the organisation may be criminally liable under the Corporate Manslaughter and Corporate Homicide Act 2007.

5. DATA ANALYSIS

The sites are situated in Teddington, in the London Borough of Richmond upon Thames. It is also in the historic county of Middlesex. The borough received a low bombing campaign during the war.

There were no buildings in Broad Street (150m northeast of the site) in 1800 although there were houses in Middle Lane backing on to Broad Street and in Park Lane, including the alms houses, built in 1739 and demolished in about 1950. Elleray Villa was built by 1820. The house was demolished in about 1890 and the site crossed by Elleray Road.
Built in 1911, Elleray Hall's initial purpose was to act as a parish hall.
At the end of October 1940, a bomb landed on the apron of Teddington Weir. The breach caused by the bomb's detonation created a reduction in the depth of water at Teddington Reach (1.6 km east of the site) by six feet, making navigation impossible.
November 1940 saw the borough sustain its highest casualties. 74 people were killed, the majority in a devastating attack which took place on the night of November 29. 130 bombs and between 3,000 and 5,000 incendiary devices rained down on Twickenham and Teddington, destroying 150 houses and damaging more than 6,000 others. The worst damage was sustained just 130m north of the depot, at Church Road.

Another tragedy occurred the same night. Bombs intended to pulverize the National Physical Laboratory at Teddington exploded over a public air raid shelter in the laboratory's grounds, killing eight residents of Walpole Crescent. The NPL (circa 500m Northwest of the sites of interest) had been designated a special target by the Luftwaffe, as it was here the engineer and aeronautical designer Barnes Wallis was developing the 'Bouncing Bomb', later to be used by the RAF in the famous Dambusters raid of May 1943. The raid destroyed Germany's Mohne and Eder dams.

There was an American army base in Bushy Park (600m south west of the site), which was hit by 45 bombs On February 25, 1944.

The National Physical Laboratory was an official Luftwaffe target, which it missed their targets. Three bombs fell in Fulwell Golf Course (1.2km north) and 28 landed in Hampton and Hampton Hill (1.6km northwest).

Teddington Film Studios, one of the few British studios (2km southeast) to remain in operation during World War II, received a direct hit from a V1 on the evening of July 5, 1944. By the end of the war, 143 civilians had been killed in air raids, 500 houses had been destroyed, and another 32,000 residences had sustained damage.

6. RISK ASSESSMENT

There is a **low** risk of encountering German air delivered HE bombs. British AAA projectiles and Incendiary bombs pose a **low** threat.

6.1 Maximum Bomb Penetration Depth

A key consideration when assessing the likelihood of finding a high explosive bomb is the depth at which they may be found. The penetration is dependent upon the:

- **Nature** of the ground;
- **Weight** of the ordnance;
- **Type** of ordnance.

6.1.1 The J-Curve Effect

When an air-delivered bomb penetrates the ground after it is dropped from height, it is slowed by its passage through underlying soils, its trajectory curves towards the surface with a final horizontal offset from the point of entry**.** This is typically a distance of about one third of the bomb's penetration depth but can be up to 15m. This underground trajectory is known as a **J curve (See Annex E)** and is the reason why bombs can be found under basements that were constructed before WW2.

Research during WW2 suggested that a 1000kg bomb dropped in clay could theoretically penetrate a vertical depth of 25m and 8m horizontally. It should be noted that the maximum **actual** depth of penetration observed in the research for a 1000kg bomb was 12.5m. Contemporary bomb disposal guidance indicated that only 1% of bombs (of 50kg or heavier) penetrated more than 9m.

6.1.2 WWII UXB Penetration Studies

During WWII, the Ministry of Home Security undertook a major study on actual bomb penetration depths, carrying out statistical analysis on the measured depths of 1,328 bombs as reported by Bomb Disposal. Conclusions were made as to the likely average and maximum depths of penetration of different sized bombs in different geological strata.
For example, the largest common German bomb (500kg) had a likely concluded penetration depth of 6m in sand or gravel but 11m in clay. The maximum observed depth for a 500kg bomb was 11.4m and for a 1000kg bomb 12.8m. Theoretical calculations suggested that significantly greater penetration depths were probable.

6.1.3 Site Specific Bomb Penetration Considerations

Although it is possible that the Luftwaffe deployed bombs in the area, their deployment was infrequent, and to use such larger (or the largest) bombs for BPD calculations were not justifiable on either technical or risk management grounds. WWII German bombs have a greater penetration depth when compared to IBs and AAA projectiles, which are unlikely to be encountered at depths greater than 1m. Given the development of the Site after WWII, the presence of Unexploded Ordnance is significantly reduced, unless a cross contamination has taken place.

6.2 Risk Pathway

Given the types of UXO that might be present on Site, all types of aggressive intrusive engineering activities (i.e. excavations and piling) may generate a significant risk pathway. Whilst not all UXO encountered aggressively will initiate upon contact, such a discovery could lead to serious impact on the project especially in terms of critical injury to personnel, damage to equipment and project delay.

6.4 Risk Rating Calculation

This Semi-Quantitative Risk Assessment assesses and rates the risks posed by the most probable threat items when conducting many different activities on the site. Risk Rating is determined by calculating the probability of encountering UXO and the consequences of initiating it.

Table 6.4.1 – UXO Risk Calculation

UXO RISK CALCULATIONS TABLE – ALL AREAS				
Activities	**Threat item**	**Probability (SH X EM=P)**	**Consequence (DXPSR=C)**	**Risk rating (PXC=RR)**
Trial Pits (Within existing foundations)	HE Bombs	1x1=1	2x3=6	1x6=6
	AAA projectiles	1x1=1	3x2=6	1x6=6
	IBs	1x1=1	2x3=6	1x6=6
Boreholes (Within existing foundations)	HE Bombs	1x2=2	2x2=4	2x4=8
	AAA projectiles	1x1=1	2x2=4	1x4=4
	IBs	1x1=1	2x2=4	1x4=4
Piling (Within existing foundations)	HE Bombs	1x3=3	3x1=3	3x3=4
	AAA Projectiles	1x1=1	3x2=6	1x6=6
	IBs	1x1=1	2x2=4	1x4=12

SH: Site History
EM: Engineering Methodology
P: Probability
D: Depth
C: Consequence
PSR: Proximity to Sensitive Receptors
RR: Risk Rating

Key

Low	Medium	High	Very High

Probability Calculation

The potential that an item of UXO would detonate, if encountered, relies on a number of variable factors. There are no empirical means of accurately and reasonably calculating the probability of an UXO detonation during intrusive site activities. During the semi quantitative risk assessment process, SH and IM are scored from 1 to 3 with 1 = Low, 2 = Medium and 3 = High. Probability is therefore scored 1 to 9.

Table 6.4.2 – Risk Rating - Probability and Consequence

		Probability					
		1	2	3	4	6	9
Consequence	1	1	2	3	4	6	9
	2	2	4	6	8	12	18
	3	3	6	9	12	18	27
	4	4	8	12	16	24	36
	6	6	12	18	24	36	54
	9	9	18	27	36	54	81

Table 6.4.3 – Risk Scoring Categories

Risk Rating (P x C)	Risk Rating (P x C)	Risk Tolerability	Action Required
1-9	Low	Partly Tolerable	Re-active measures should be employed such as a UXO “Toolbox” brief, a UXO ‘Emergency Management Plan’ and/or an “on-call” service.
12-18	Low-Medium	Less Tolerable	
24-27	Medium-High	intolerable	Pro-active measures should be employed such as EOD Engineer Site Supervision and Magnetometer Surveys.
36-81	High	Highly Intolerable	

In utilising table 6.4.3 above, Primely Ltd can assess the risk tolerability and devise a suitable level of risk mitigation to meet the ALARP principle.

7 RECOMMENDED RISK MITIGATION MEASURES

For the works carried out at North Lane depot East car park, Teddington TW11 0HG and Elleray Hall, Elleray Road, Teddington TW11 0HG, United Kingdom, Primely Ltd estimates that there is a LOW risk of deep buried UXO and recommends:

No further action. However, re-active measures should be employed such as a UXO "Toolbox" brief, a UXO 'Emergency Management Plan' and/or an "on-call" service. A Site Management documentation detailing the actions to undertake in the event of a suspected or real UXO discovery should be held on-site to guide, which can be supplied by Primely Ltd.

This desktop assessment is based upon analysis of historical evidence along with other data readily available. Every reasonable effort has been made to locate and present significant and pertinent information.

Primely Ltd cannot be held accountable for any changes to the assessed risk level or risk mitigation measures, based on documentation or other data that may come to light later than the date of this study or which was not available to Primely Ltd during the production of this report.

The accuracy of WWII era records sometimes proves difficult to verify. Therefore, conclusions as to the exact location and nature of a UXO risk can rarely be quantified and are to a degree subjective. To counter this, a range of sources have been consulted and analysed. Wartime records show that the quality and nature of record keeping varied between boroughs; while some local authorities maintained records with a methodical approach, others considered a more vague, dispersed, and narrow in scope. Many other records were damaged or destroyed in subsequent bombing raids. Furthermore, records of attacks on military or strategic targets were often maintained separately from the general records and those have not always survived.

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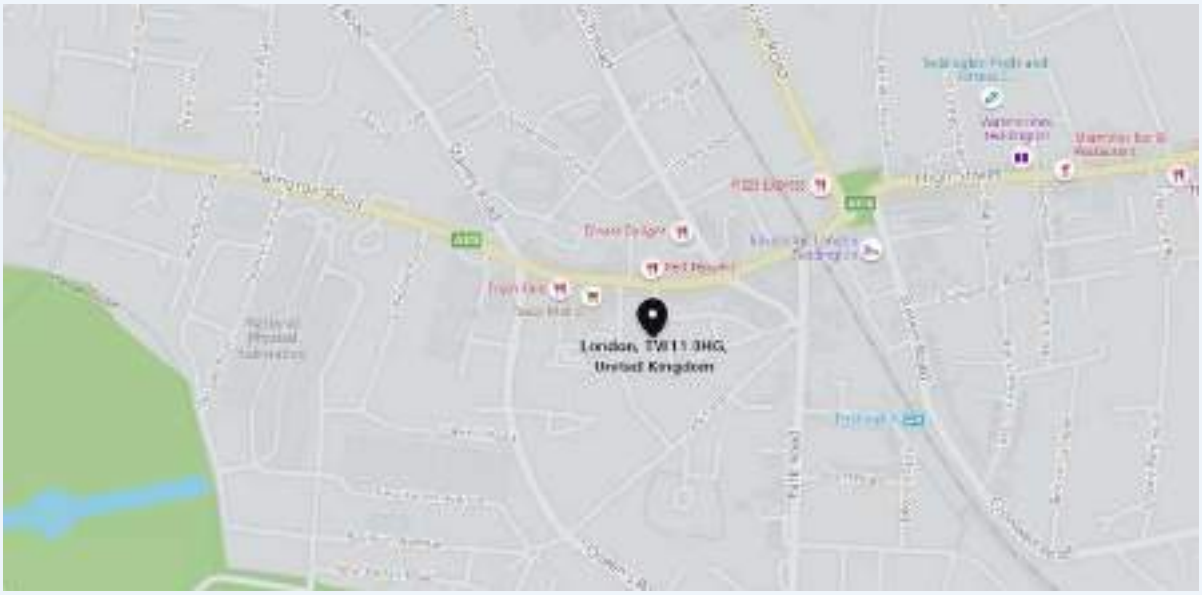
APPENDICES

Appendix A Site Location



Appendix B Historical Borehole scans

SITE INVESTIGATION REPORT No.41413

LOCATION

PROPOSED DEVELOPMENT.
THE CAUSEWAY.
TEDDINGTON.
MIDDLESEX

TQ17SE 181

FOR

PETTITT & MOORE.
CONSULTING ENGINEERS
84, COLDHARBOUR LANE,
HAYES,
MIDDLESEX.

JANUARY 1979

TQ17SE 181

MAY GURNEY (TECHNICAL SERVICES) Ltd., NORWICH 1583 7049

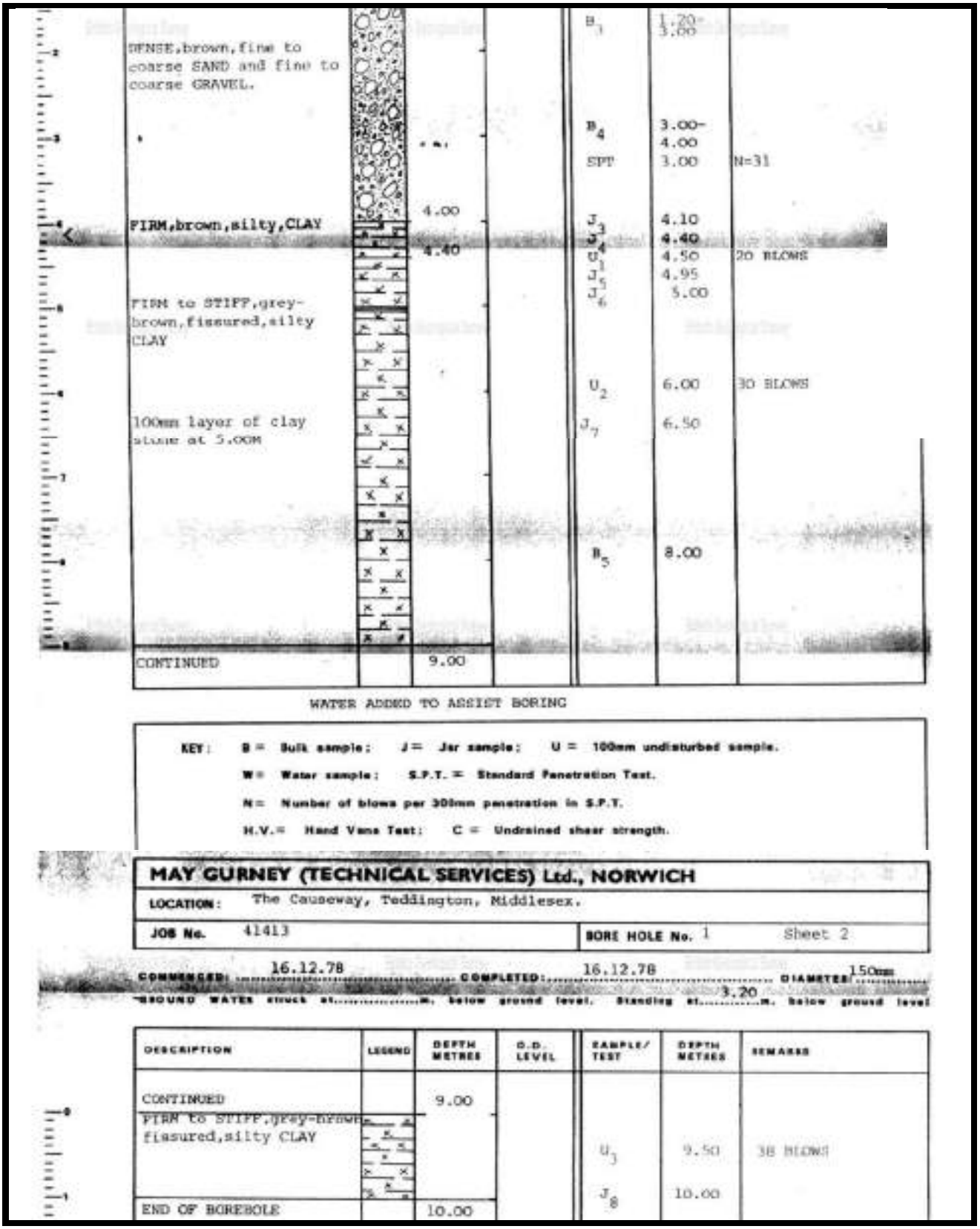
LOCATION: The Causeway, Teddington, Middlesex.

JOB No. 41413 BORE HOLE No. 1 Sheet 1

COMMENCED: 16.12.78 COMPLETED: 16.12.78 DIAMETER: 150mm

GROUND WATER struck at.....m. below ground level. Standing at 3.20 m. below ground level

DESCRIPTION	LEGEND	DEPTH METRES	O.D. LEVEL	SAMPLE/ TEST	DEPTH METRES	REMARKS
GROUND LEVEL		0.00		J_1	0.20	
Dark grey-brown, clay, sand, gravel, glass etc - FILL.		0.60		B_1	0.20-0.60	
VERY DENSE, brown, clayey, fine to coarse SAND and GRAVEL.		1.20		J_2	0.70	
				B_2	0.70-1.20	
				SPT	1.00	N=67
				SPT	1.50	65 BLOWS FOR 225mm


DENSE,brown,fine to coarse SAND and fine to coarse GRAVEL.
FIRM,brown,silty,CLAY
4.00
4.40
FIRM to STIFF,grey-brown,fissured,silty CLAY
100mm layer of clay
9.00
CONTINUED
B1 1.20-3.00
B4 3.00-4.00
SPT 3.00 N=31
J3 4.10
J4 4.40
U1 4.50 20 BLOWS
J5 4.95
J6 5.00
U2 6.00 30 BLOWS
J7 6.50
B5 8.00
WATER ADDED TO ASSIST BORING
KEY: B = Bulk sample; J = Jar sample; U = 100mm undisturbed sample.
W = Water sample; S.P.T. = Standard Penetration Test.
N = Number of blows per 300mm penetration in S.P.T.
H.V. = Hand Vane Test; C = Undrained shear strength.
MAY GURNEY (TECHNICAL SERVICES) Ltd., NORWICH
LOCATION: The Causeway, Teddington, Middlesex.
JOB No. 41413
BORE HOLE No. 1 Sheet 2
COMMENCED: 16.12.78 COMPLETED: 16.12.78 DIAMETER: 150mm
GROUND WATER struck at.....m. below ground level. Standing at 3.20m. below ground level
DESCRIPTION
LEGEND
DEPTH METRES
O.D. LEVEL
SAMPLE/ TEST
DEPTH METRES
REMARKS
CONTINUED 9.00
FIRM to STIFF,grey-brown fissured,silty CLAY
U3 9.50 38 BLOWS
J8 10.00
END OF BOREHOLE 10.00

WATER ADDED TO ASSIST BORING

KEY: B = Bulk sample; J = Jar sample; U = 100mm undisturbed sample.
W = Water sample; S.P.T. = Standard Penetration Test.
N = Number of blows per 300mm penetration in S.P.T.
H.V. = Hand Vane Test; C = Undrained shear strength.

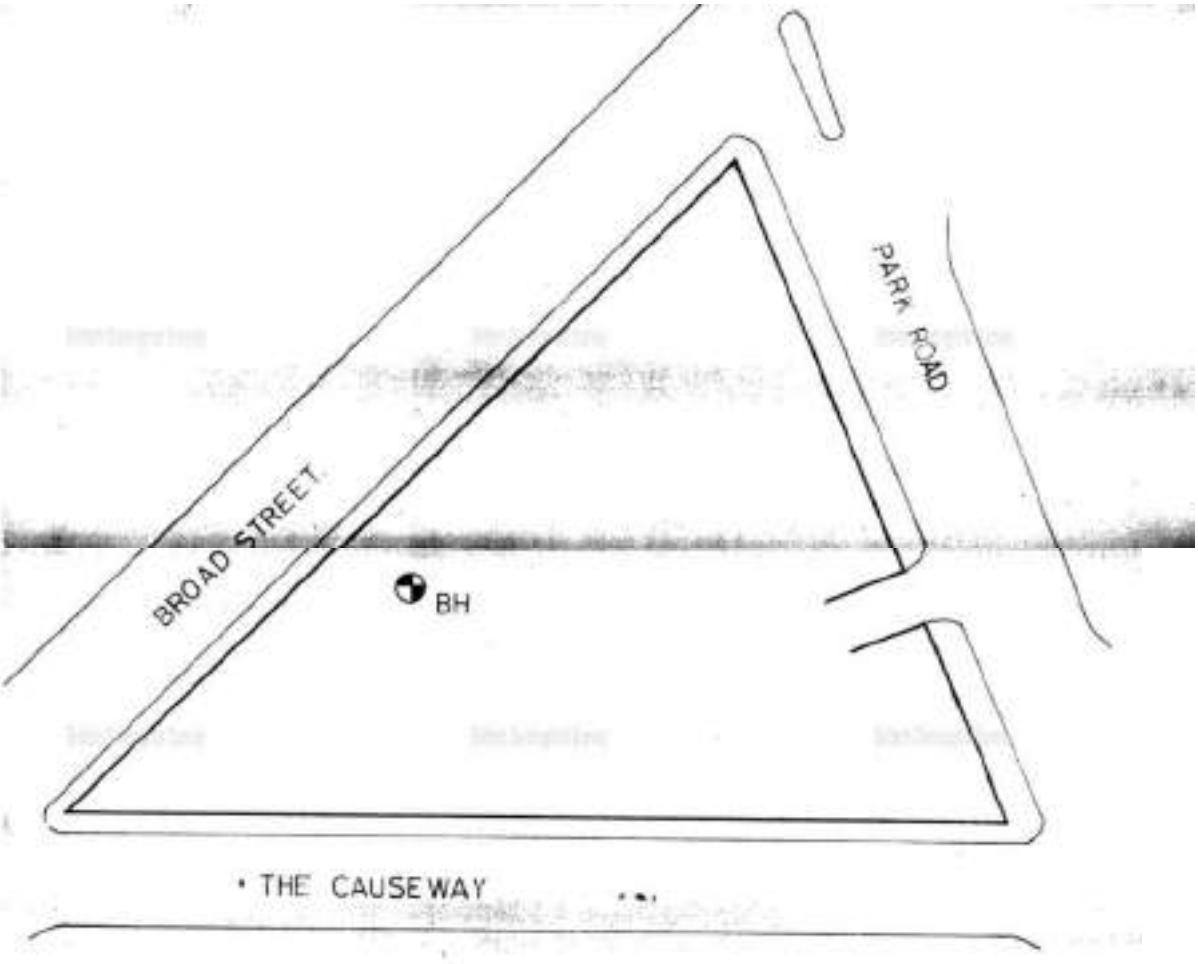
TQ17SE 181

MAY, GURNEY (TECHNICAL SERVICES) LTD.

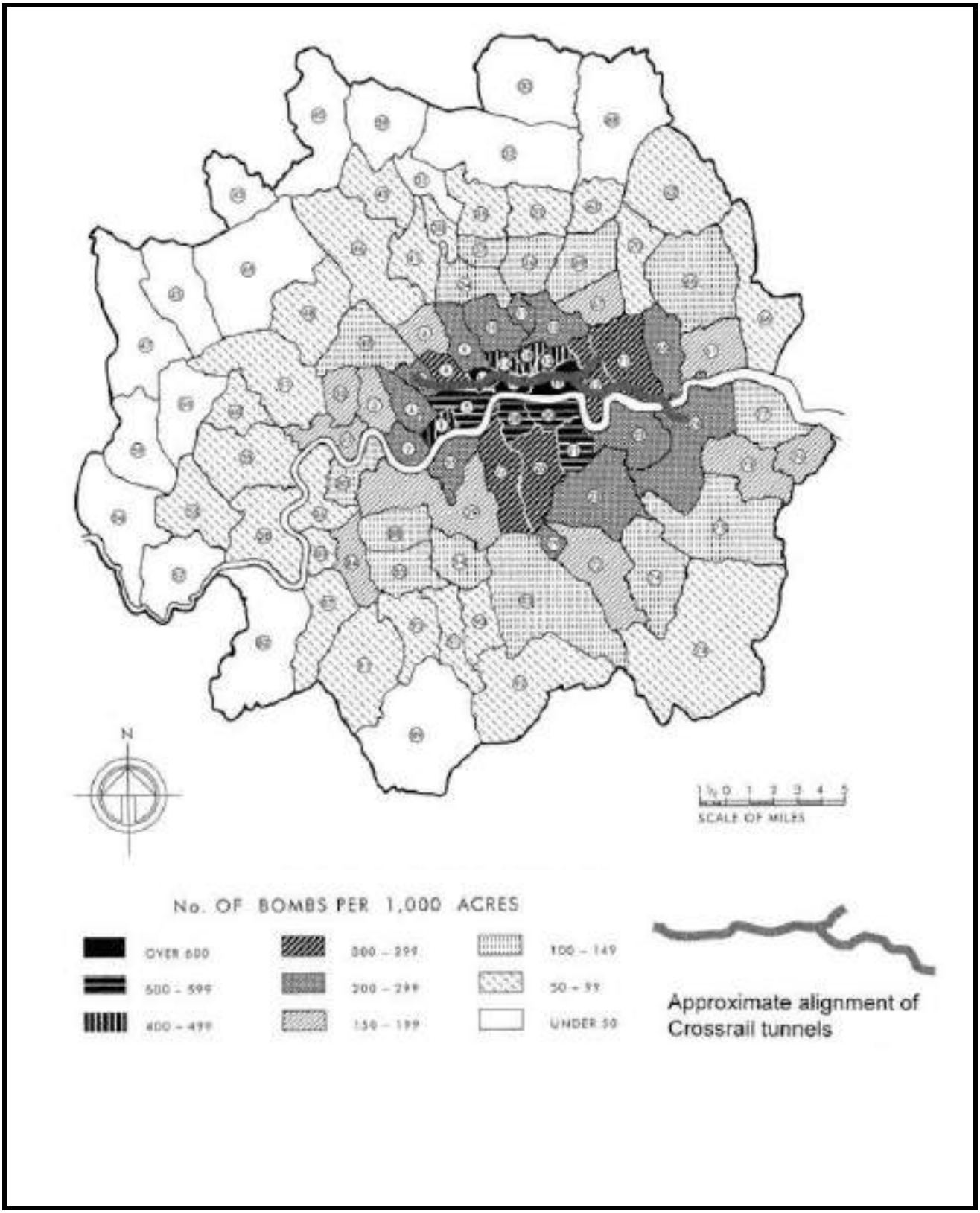
Site plan showing borehole position.

scale 1:500

ref: 41413/SP1



Appendix C London bombing census Map



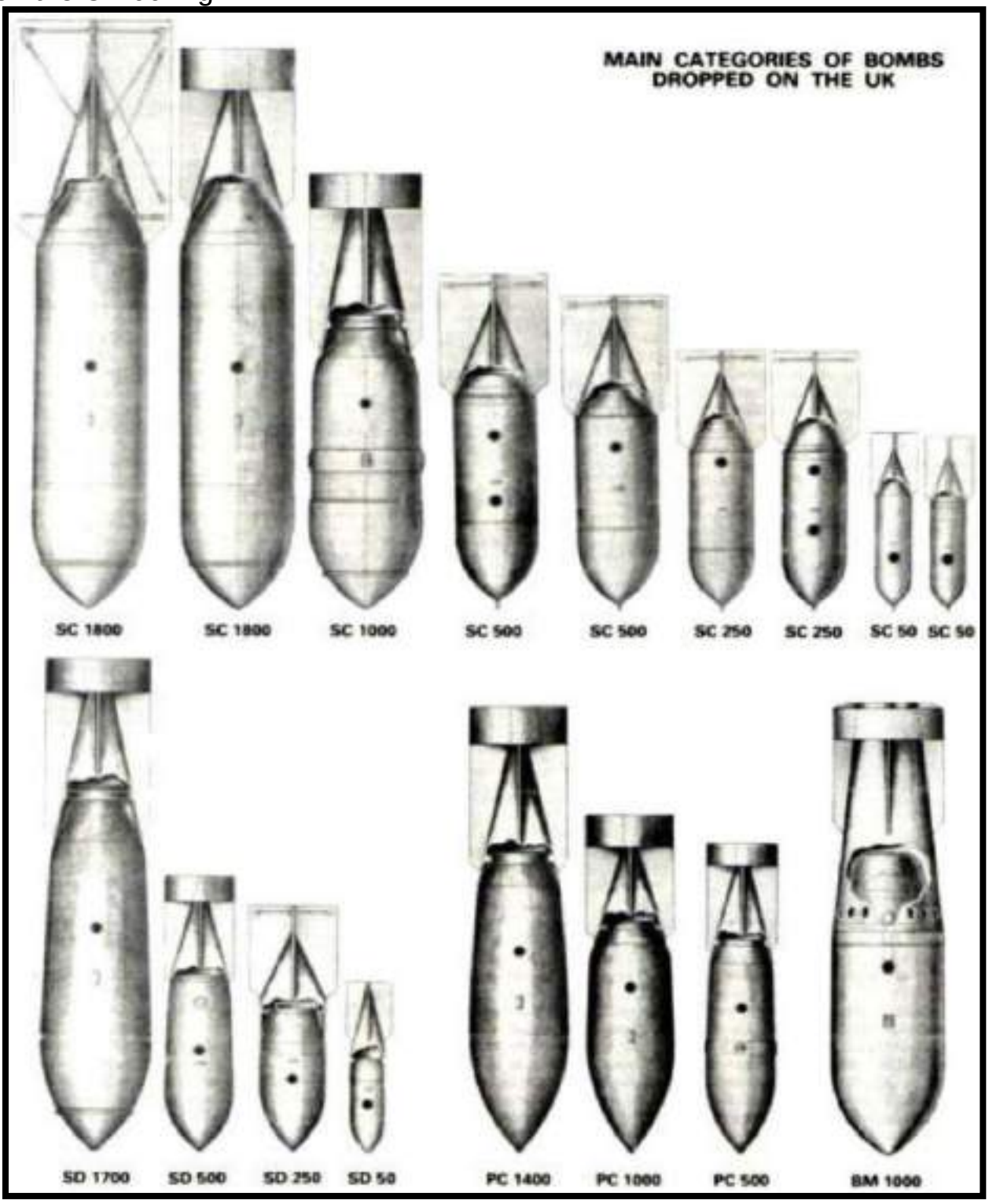
Appendix D Bomb Damage Maps

Bombsight free public resource - bomb location map
No map available

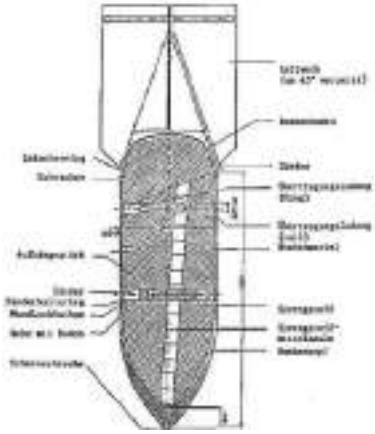
LCC Bomb Damage Maps
No map available.

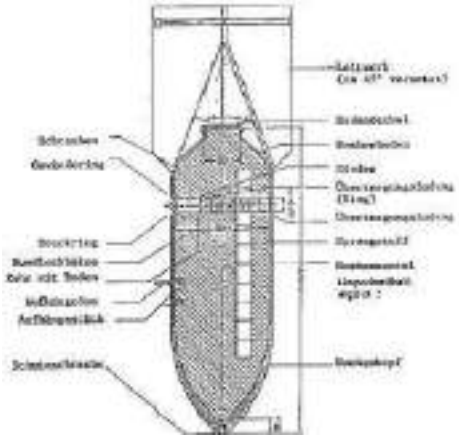
ANNEXES

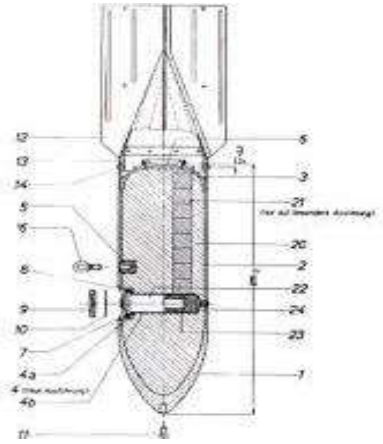
ANNEX A – German Bombs Series and Main categories of bombs dropped on the UK during WWII



ANNEX B Most used Bombs

SC500 HE Bomb		
	**Variants**	K, L2, J
	Mass	500 kg (1,100 lb)
	Length	2.03 m (6 ft 8 in)
	Diameter	457 mm (18 in)
	Fill	Amatol; TNT; Trialent
	Fill weight	220 kg (490 lb)

SC250 HE Bomb		
	**Weight**	250 kg (550 lb)
	Length	164 cm (65 in) (overall) 120 cm (47 in) (body)
	Diameter	37 cm (15 in)
	Filling	Amatol (60%) / TNT (40%) or TNT with a variety of additives including wax, woodmeal, aluminum powder, naphthalene and ammonium nitrate
	Filling weight	250 kg (550 lb)
	Length	164 cm (65 in) (overall) 120 cm (47 in) (body)

SC50 HE Bomb		
	**Overall Length**	46.1 inches (1,171 mm)
	Body Length	30.0 inches (762 mm)
	Body Diameter	7.9 inches (201 mm)
	Tail Width	16.1 inches (409 mm)
	Filling Weight	24.4 kilograms (54 lb)
	Total Weight	55 kilograms (121 lb)
	Charge/Weight Ratio	45.75%
	Explosive Filling	Cast TNT, Amatol or Trialen
	Bomb Type	High Explosive

Incendiary Bomb

Bomb weight	1kg
Construction	Electron case with steel nose cap
Length	350mm
Body diameter	30mm
Fill	650g (1.7 lb) Thermite
Fuse	impact
used extensively in WW II and often in a conjunction with HE bombs.	

SD-2 Butterfly bomb

Weight	2Kg
Length	200mm
Body diameter	80mm
explosive	Fp 60/40
NEQ	0.225Kg (0.496lb)
Fuse	Mechanical Clockwork/ Mechanical time or B1/B2 Harassment
German 2 kg anti-personnel submunition used by the Luftwaffe during ww2. They were packed into containers holding between 6 and 108 submunitions.	

Parachute Mine (Luftmine B / LMB)

Bomb Weight	987.017kg (2176lb)
ExplosiveWeight	125-130kg (276-287lb)
Fuze Type	Impact/ Time delay / hydrostatic pressure fuze
Bomb Dimensions	1640 x 512mm (64.57 x 20.16in)
Body Diameter	368mm (14.5in)
Remarks	Parachute Mines were normally carried by HE115 (Naval operations), HE 111 and JU 88 aircraft types. Deployed a parachute when dropped in order to control its descent.

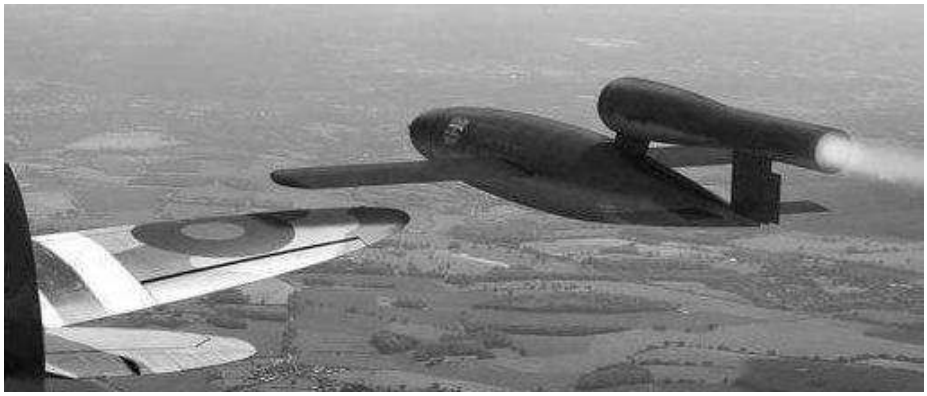
ANNEX C British Anti Aircrafts Ammuntions

3.7” British Anti Aircraft Artillery Projectile (AAA)		
	**Body**	forward centring bands and a wider driving band. Square-based Brass cartridge shell with tapered nose
	Dimensions	94mm x 360mm (3.7 x 14.7”)
	Weight	12.7kg (28lb)
	Fuze	Mechanical time fuze
	Composition	Cast steel
	Explosive	Amatol, TNT or RDX/TNT. MK6 had

40mm Bofor’s Projectile		
	**Weight**	1.96lb (0.86kg)
	Explosive Weight	300g (0.6lb)
	Fuze Type	Proximity and Mechanical Time Fuze
	Rate of Fire	120 rounds per minute Projectile
	Dimensions	40mm x 310mm (1.6in x 12.2in)
	Ceiling	23,000ft (7000m)

ANNEX D – Vengeance weapons

Annex D1 The V1 Flying Bomb



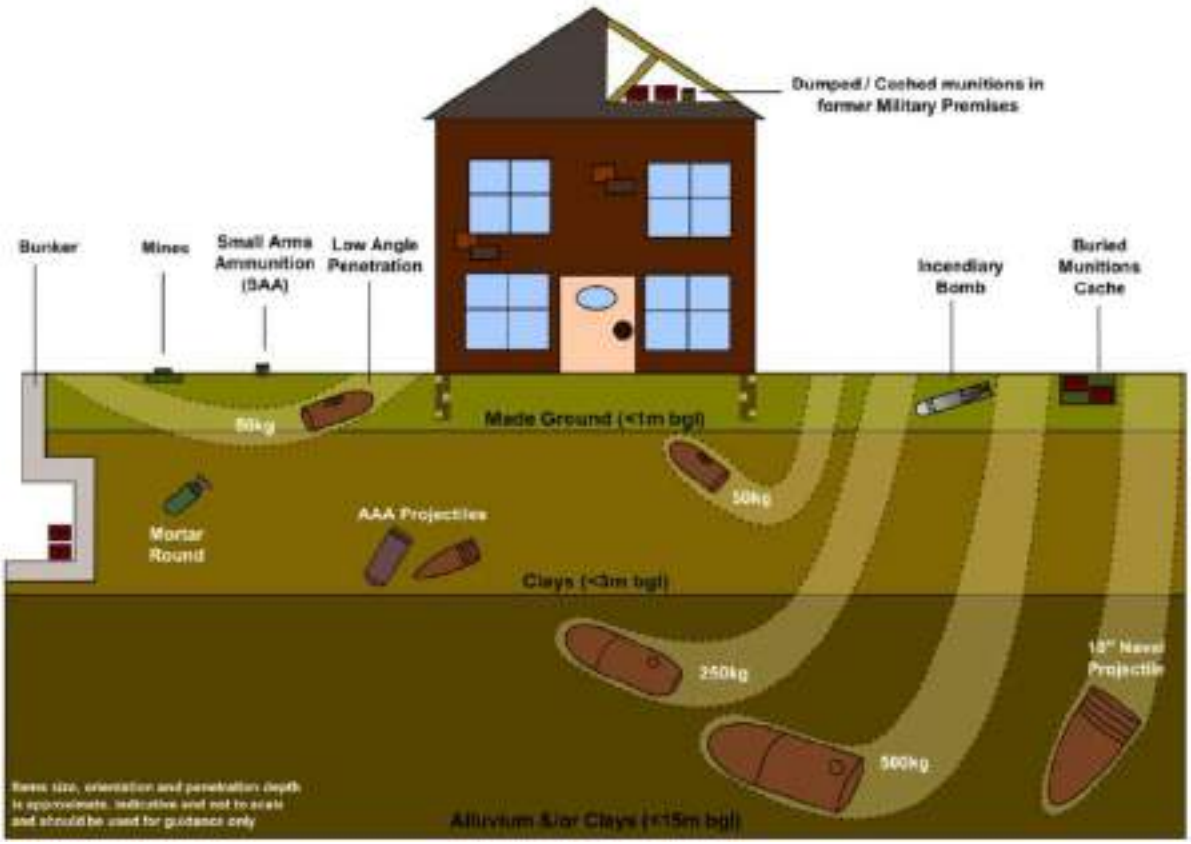
The V1 Flying bomb was the world's first cruise missile, they were also known as Doodle bugs or Vengeance weapon. The V1 was an unmanned plane that delivered a ton of high explosive. Between June 1944 and March 1945, 2419 of them exploded in London. The V1 was capable of inflicting huge damage to buildings, homes, and personnel. In the inner London suburbs where terrace houses were packed together, sometimes up to 20 houses would totally collapse, just at one hit. The blast area of a V1 extended across a radius of 400 -600 yards in each direction. https://youtu.be/ro4ApX7EhJw

Annex D2 The V2 Rocket

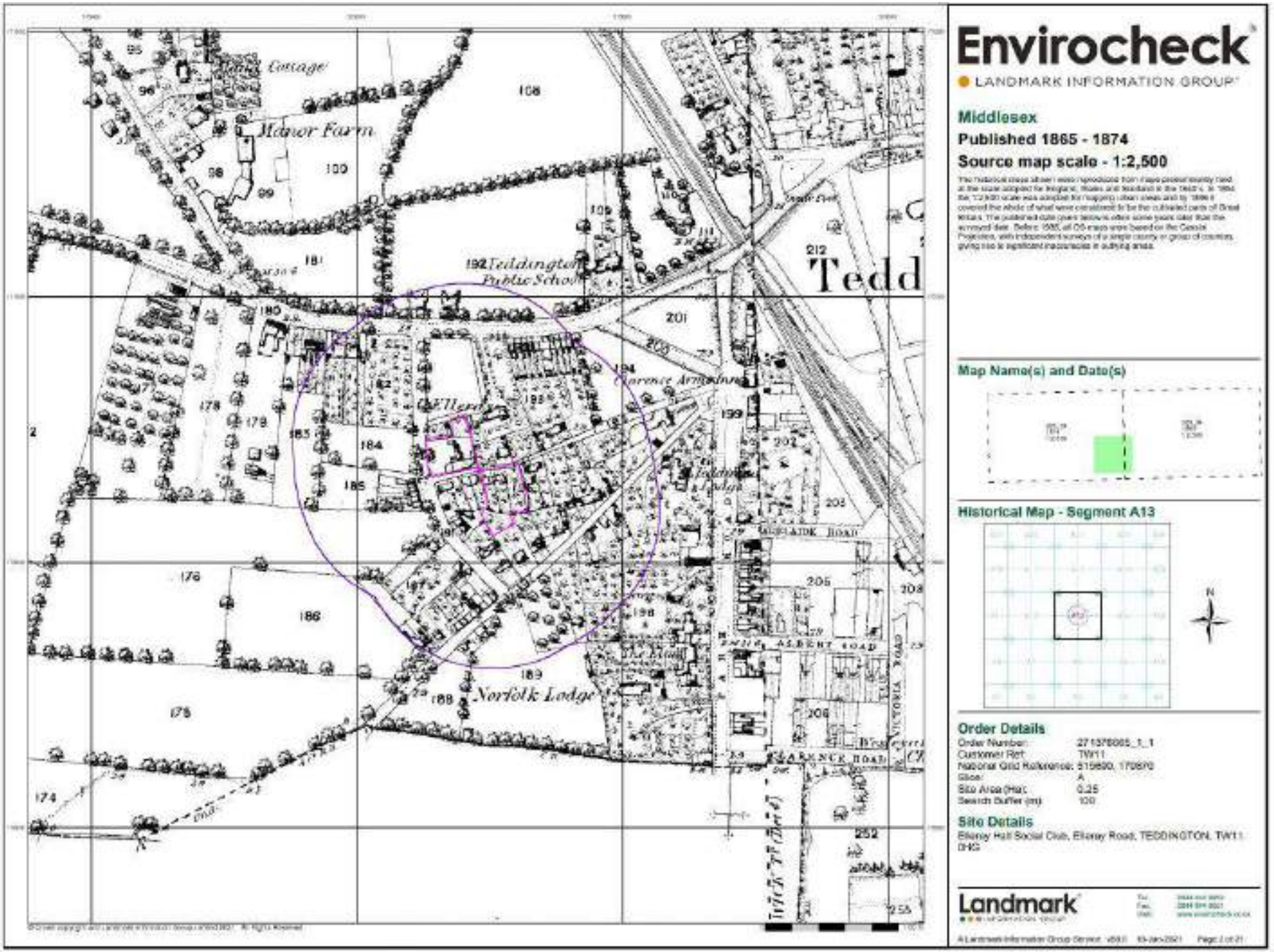
https://rarehistoricalphotos.com/v2-rocket-in-pictures/

In addition to type and weight designations, HE bombs sometimes carried a suffix to indicate the type of fuse or zünder employed, i.e, mV = *"mit Verzögerung"* (with short delay action) and LZZ = *"LangZeitZünder"* (long time delay). Thus, for example, the designation SC250 LZZ identified a general purpose, high explosive bomb, weighing 250kg and fitted with a long delay fuse. The thin-cased general purpose was called the "*sprengbombe cylindrich*" (SC. Used for blast effect, they had a relatively high charge ratio of 55%. Used primarily for general demolition, something like 80% of German high explosive bombs dropped on the UK were of the SC type.

ANNEX E The J – Curve



ANNEX F: Historical Maps



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LANDMARK INFORMATION GROUP

Middlesex

Published 1865 - 1874

Source map scale - 1:2,500

The historical maps shown were reproduced from maps produced mainly next at the scale adopted for England, Wales and Scotland in the mid-1:1, to 1864 the 1:2,500 scale was adopted for mapping urban areas and by 1890 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1855, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

Historical Map - Segment A13

Order Details

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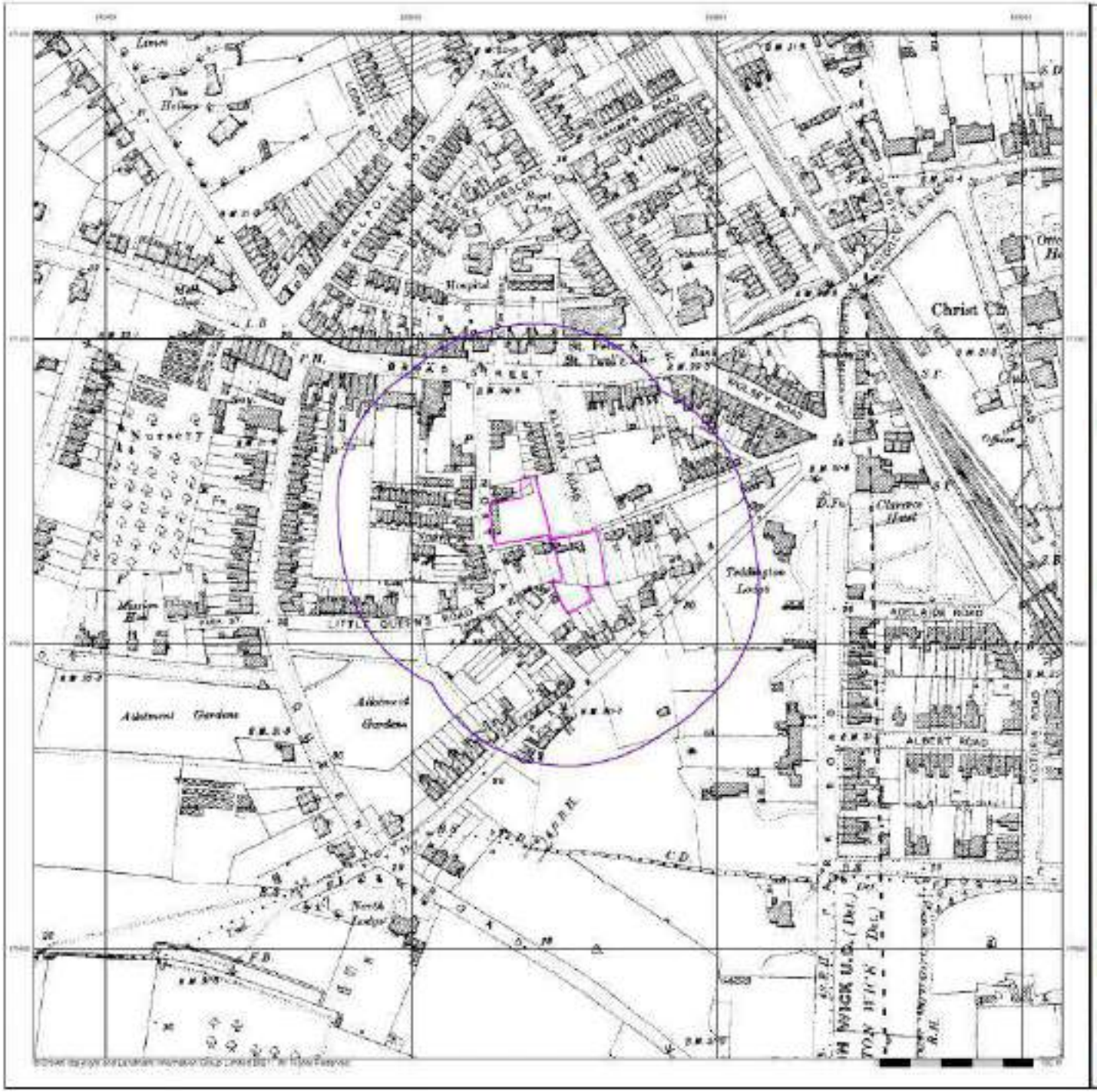
Search Buffer (m):	100

Site Details

Ellerslie Hall Social Club, Ellerslie Road, TEDDINGTON, TW11 0HG

Landmark



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London

Published 1896

Source map scale - 1:2,500

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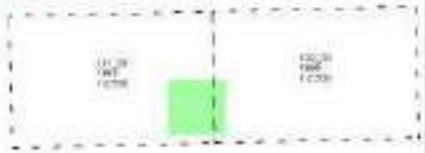

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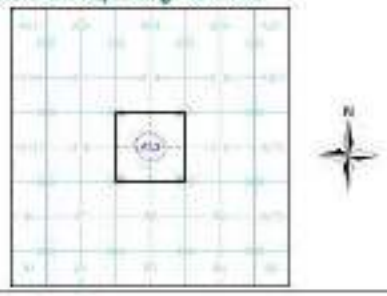

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Site Details

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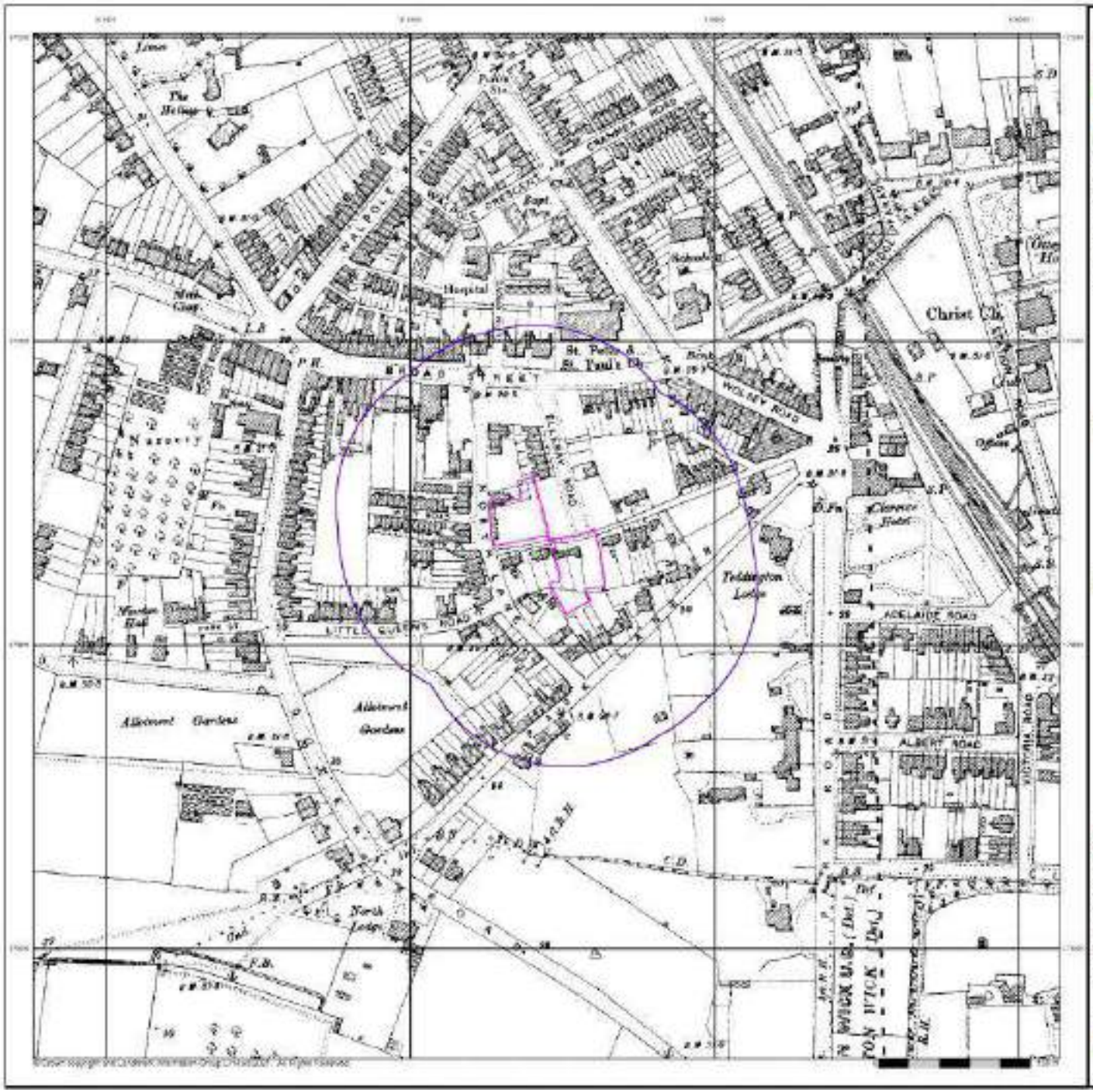

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Middlesex

Published 1896

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominately held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1918 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant discrepancies in overlying areas.

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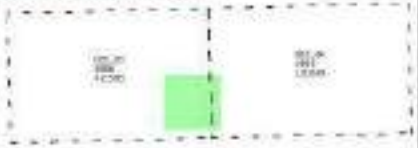

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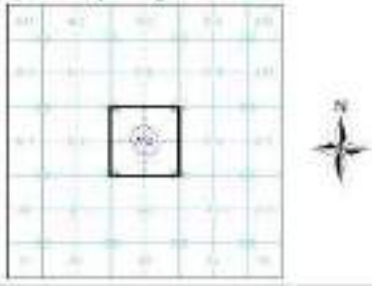

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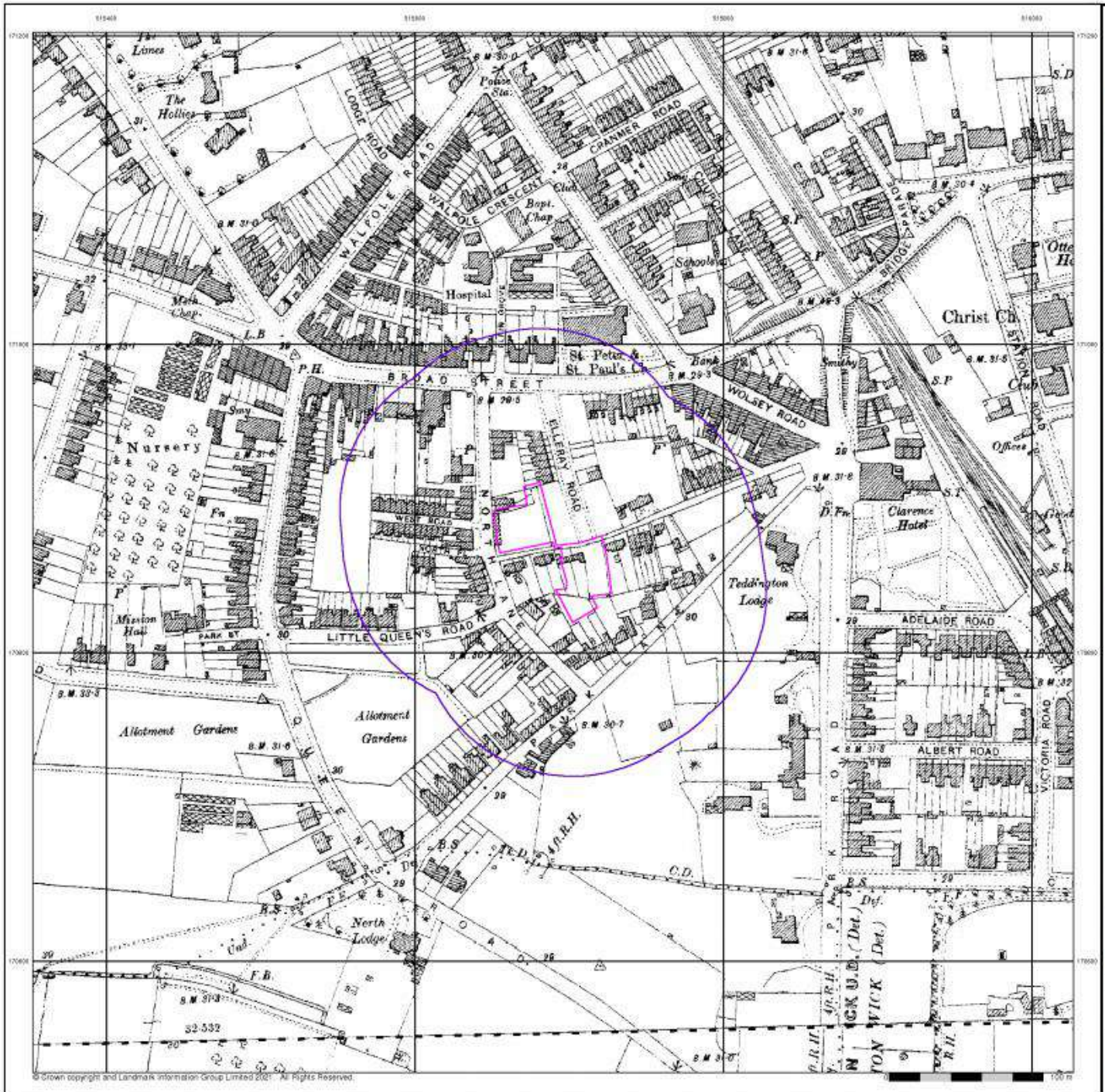
Site Details

Elmsty Hall Social Club, Elmsty Road, TEDDINGTON, TW11 9HG

Landmark



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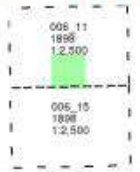

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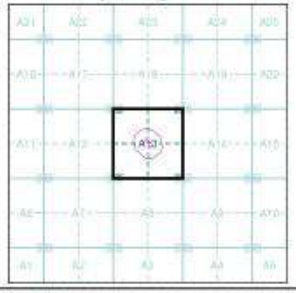

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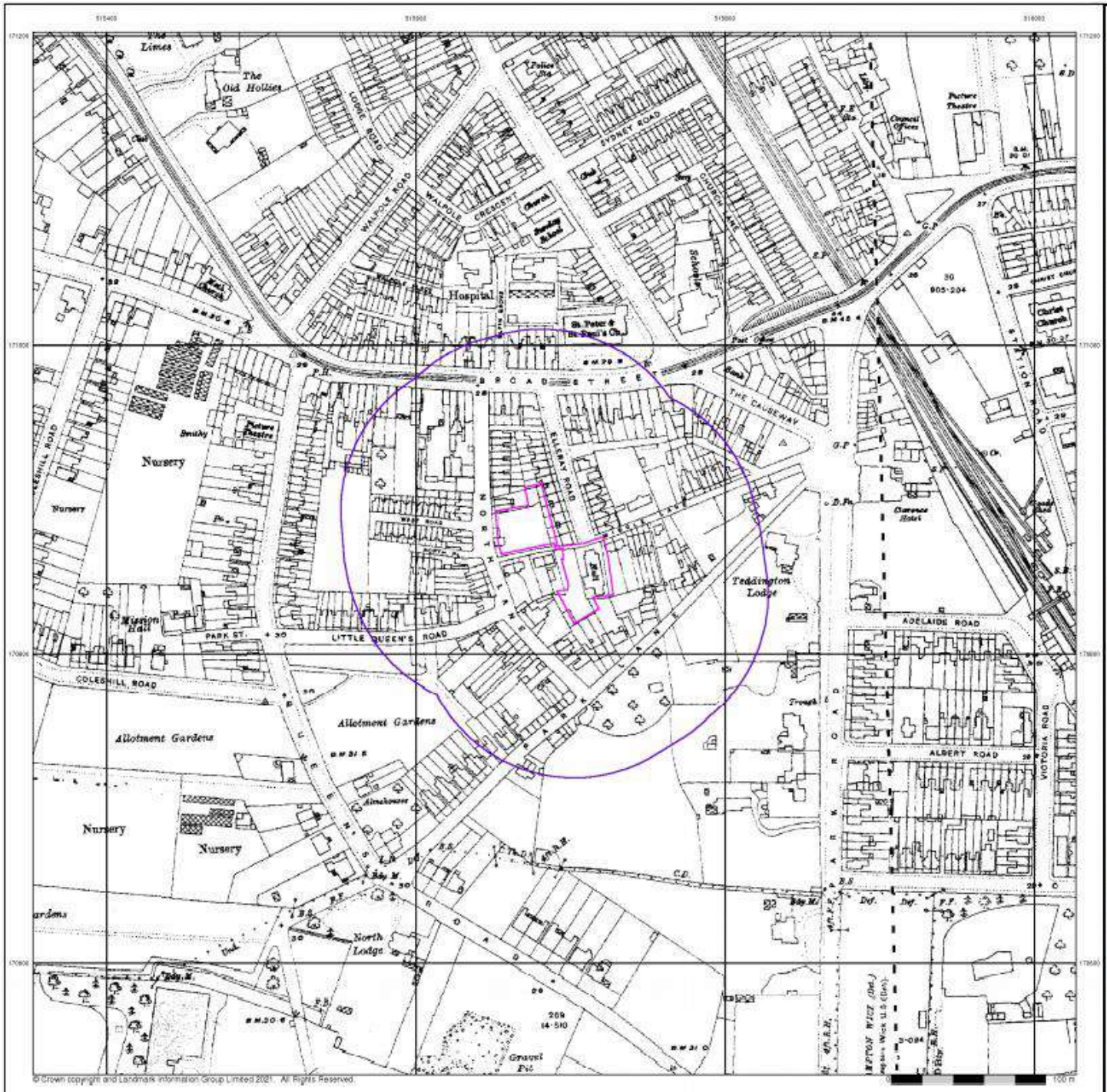
Site Details

Elleray Hall Social Club, Elleray Road, TEDDINGTON, TW11 0HG



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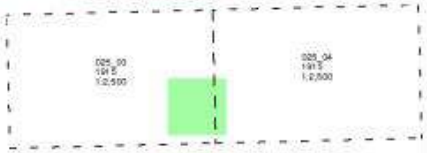
Map Name(s) and Date(s)



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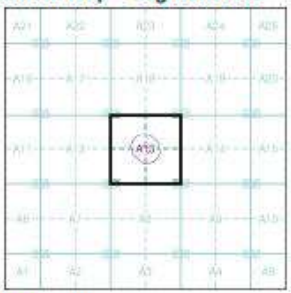

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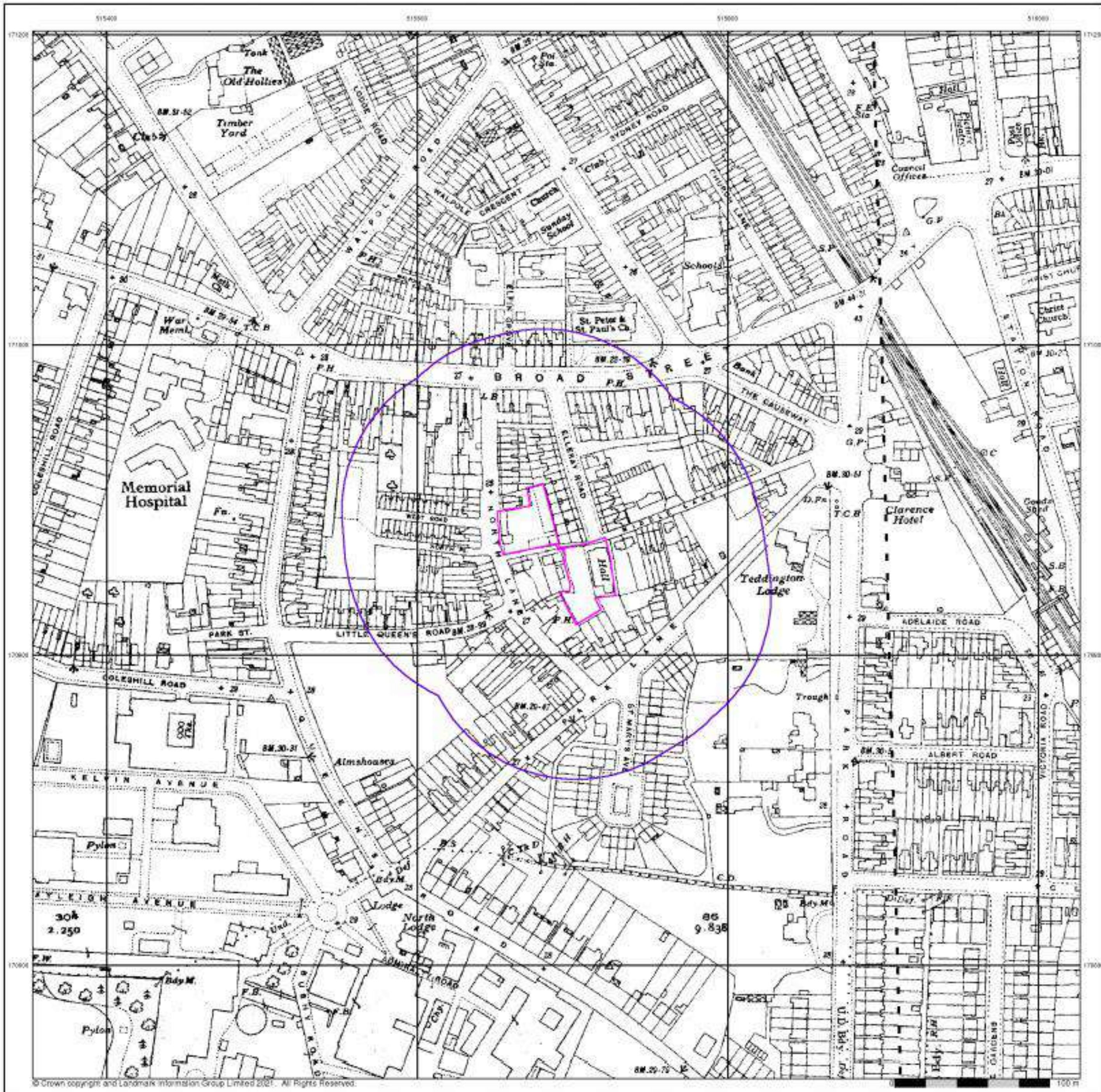

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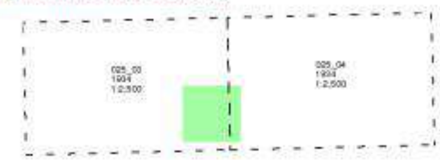

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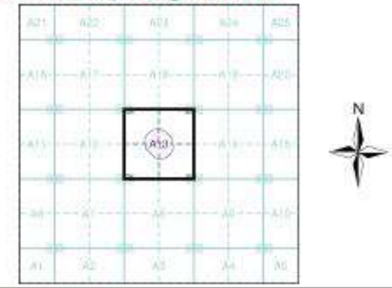

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Site Details

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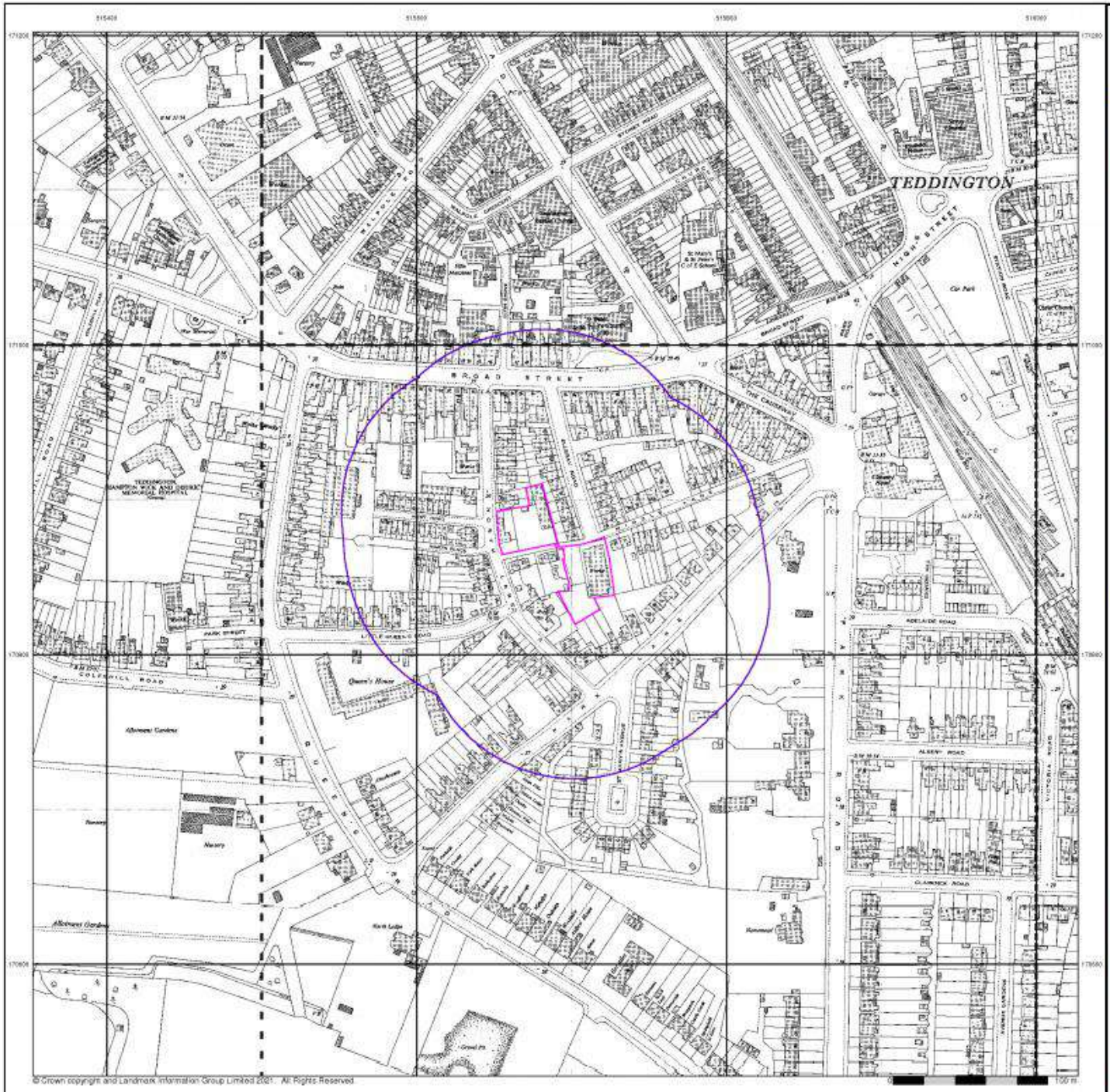

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Ordnance Survey Plan

Published 1959

Source map scale - 1:1,250

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Map Name(s) and Date(s)

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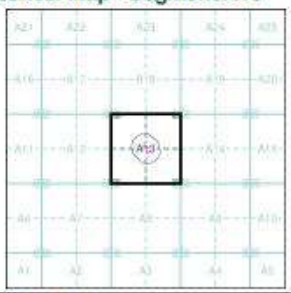

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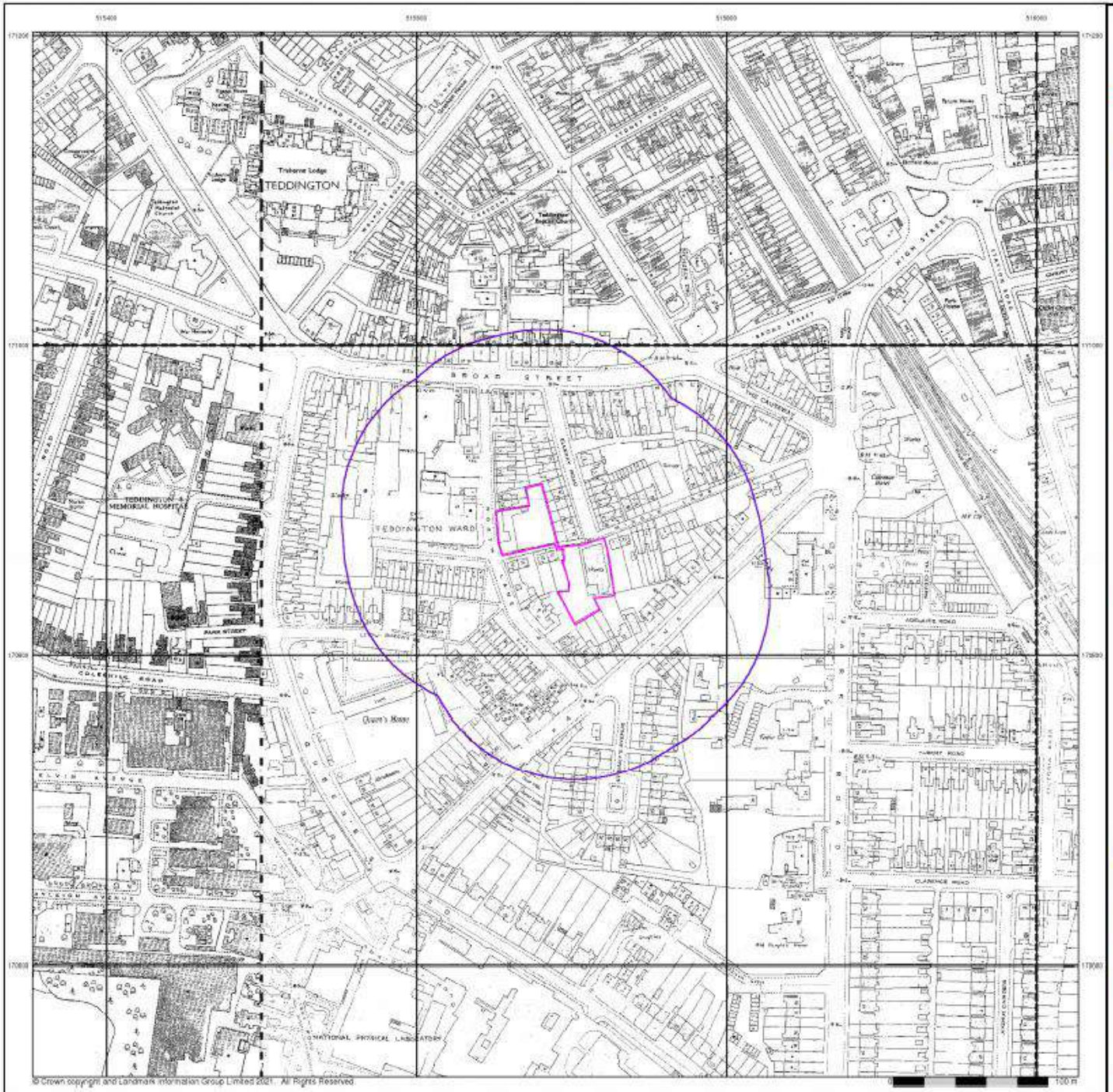

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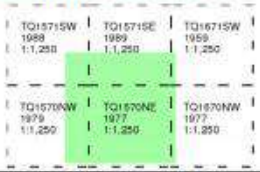
Additional SIMs

Published 1959 - 1989

Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



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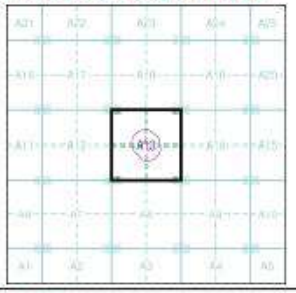

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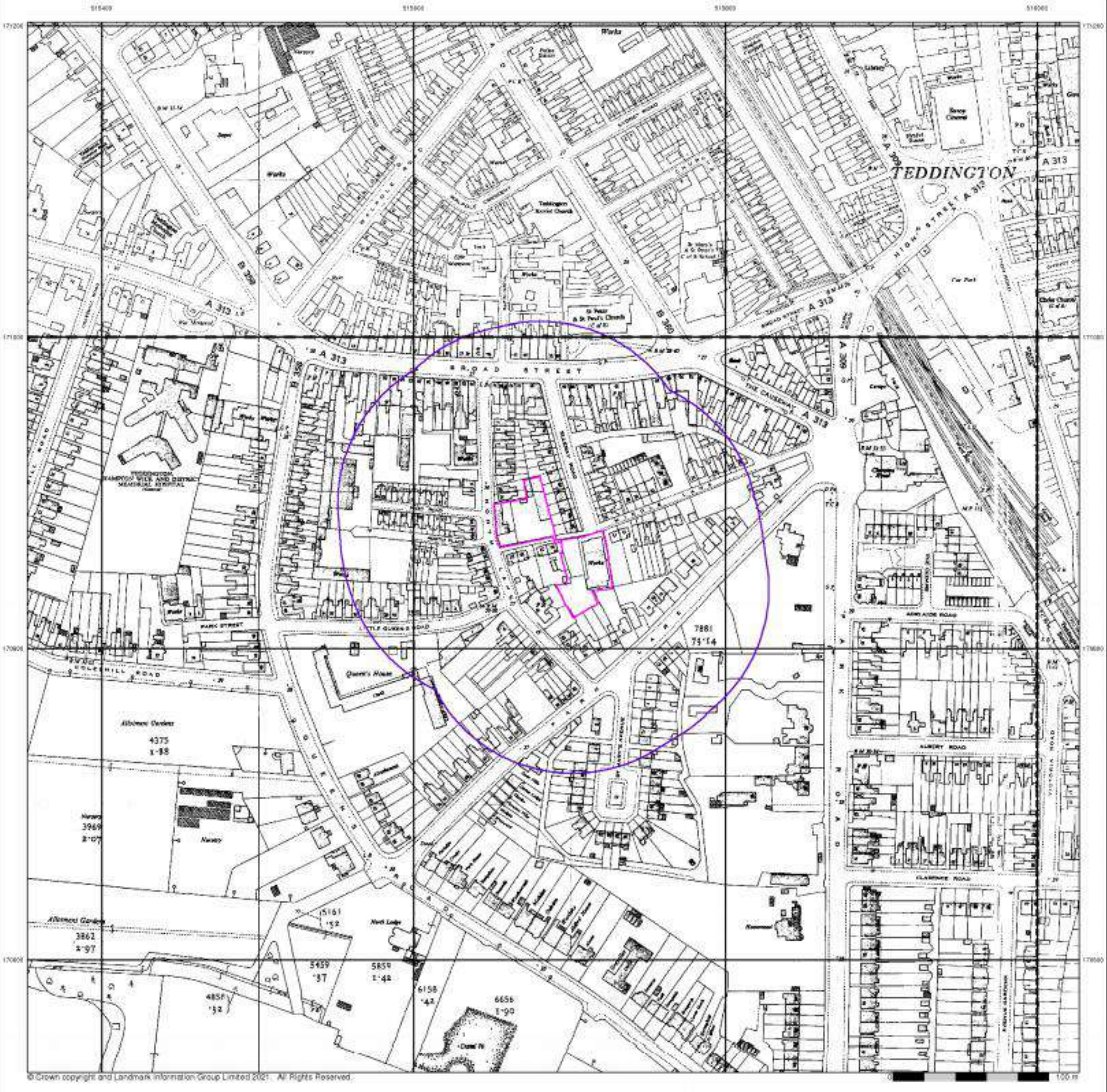

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Ordnance Survey Plan

Published 1960 - 1962

Source map scale - 1:2,500

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Map Name(s) and Date(s)

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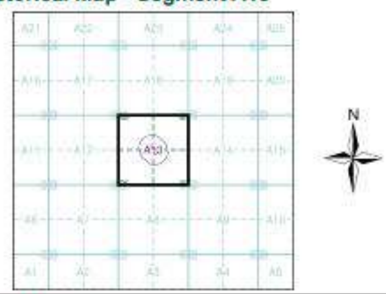

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Site Details

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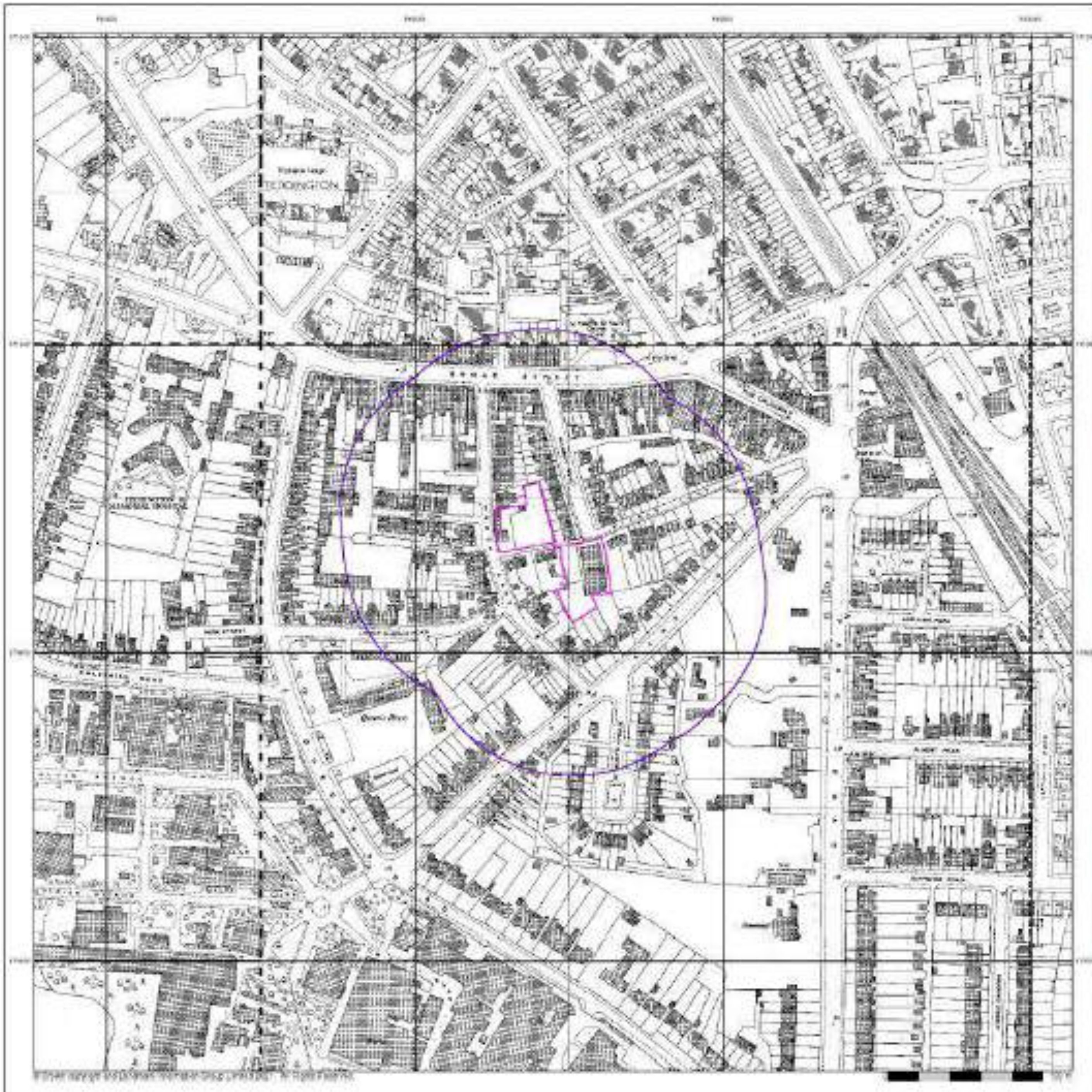

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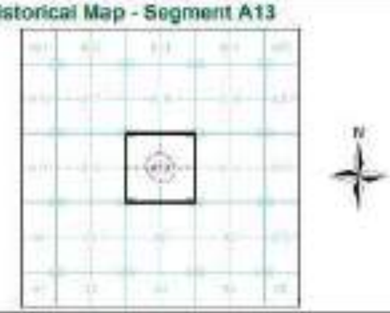
Ordnance Survey Plan

Published 1963 - 1979

Source map scale - 1:1,250

Map Name(s) and Date(s)

Historical Map - Segment A13



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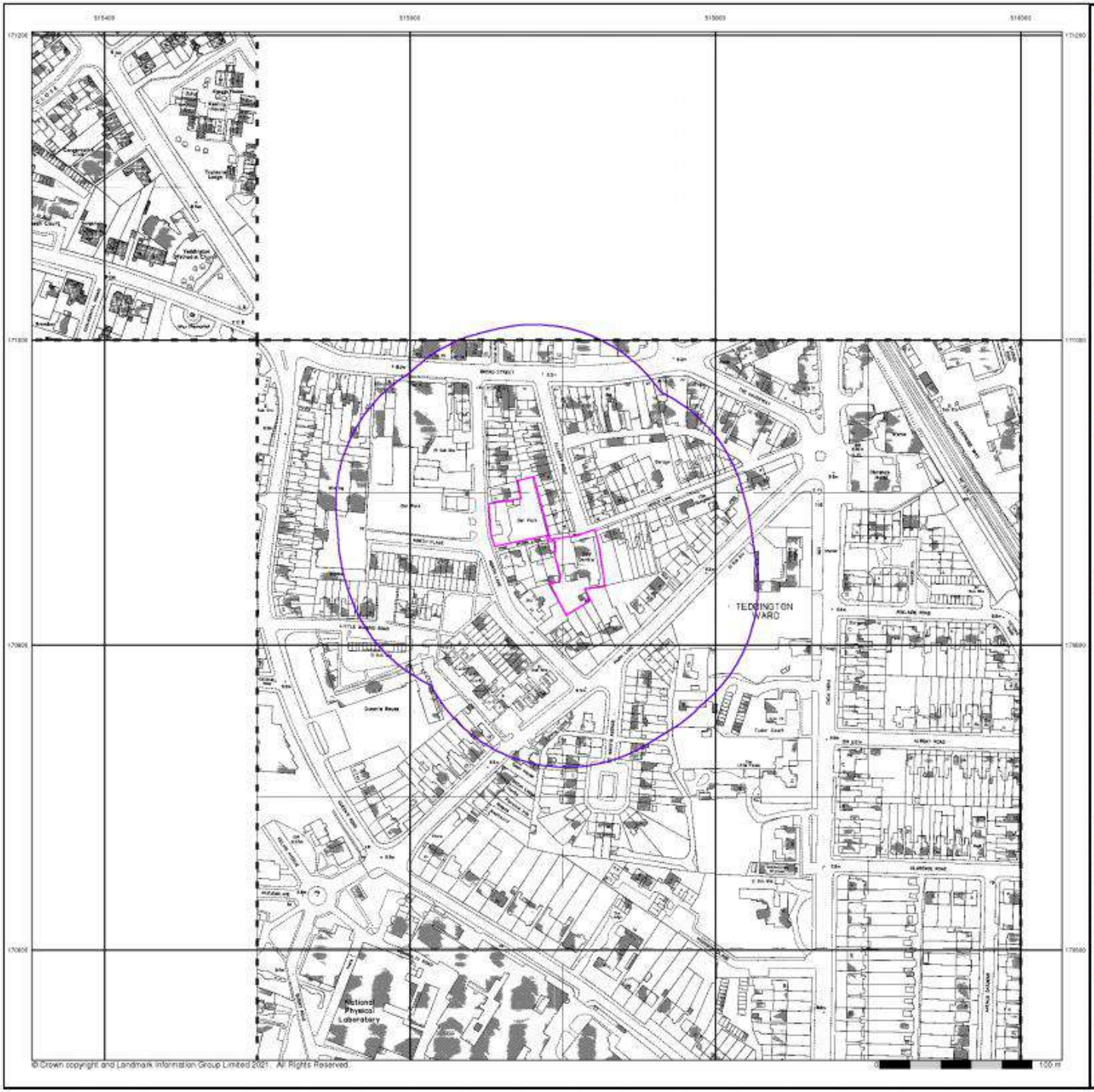
Site Details

Elleray Hall Social Club, Elleray Road, TEDDINGTON, TW11 0HG

Landmark



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Ordnance Survey Plan

Published 1973 - 1987

Source map scale - 1:1,250

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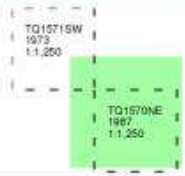

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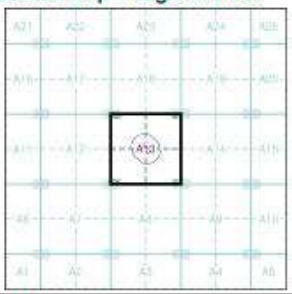

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Slice:	A
Site Area (Ha):	0.25
Search Buffer (m):	100

Site Details

Elleray Hall Social Club, Elleray Road, TEDDINGTON, TW11 0HG

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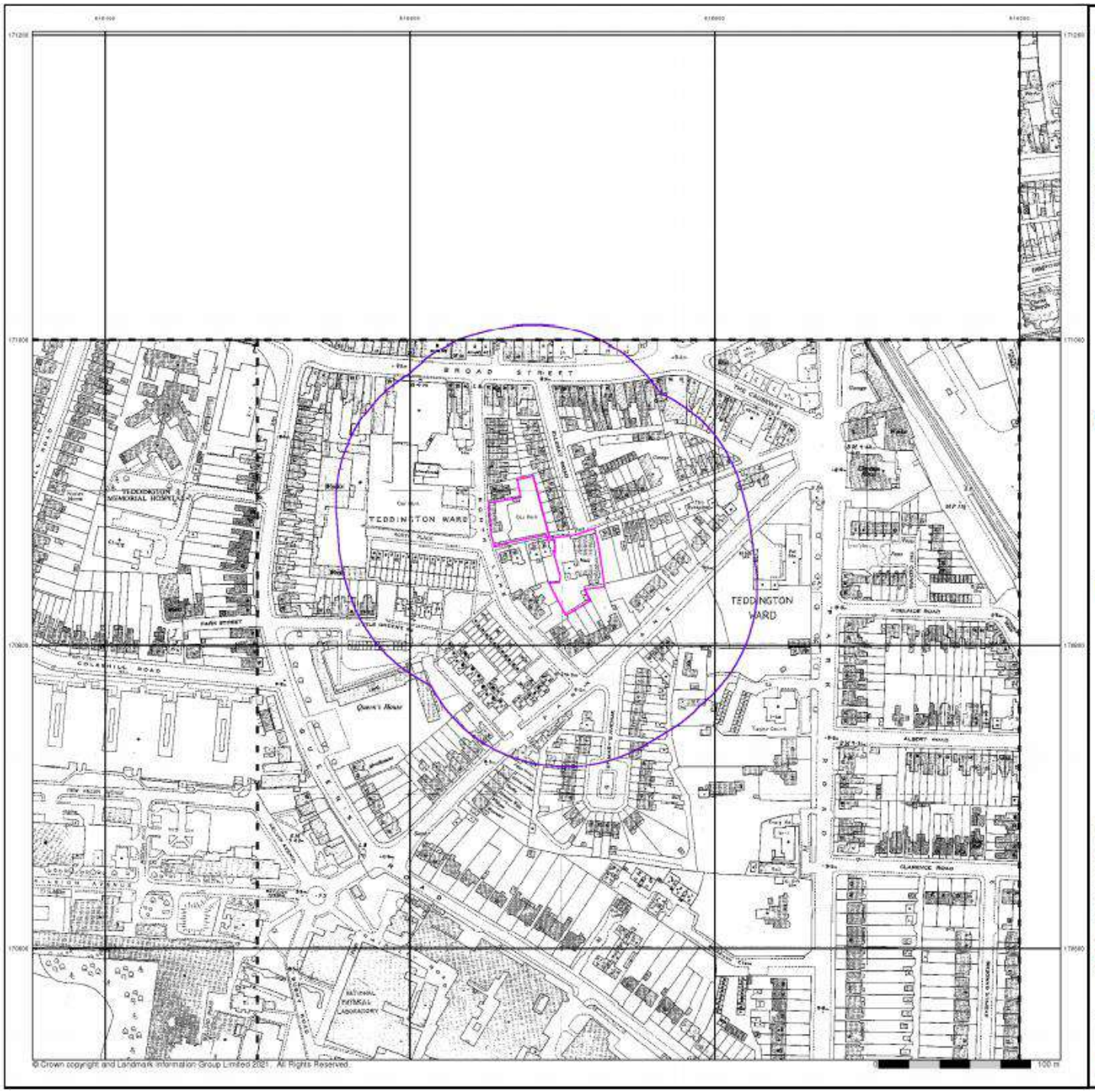

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Additional SIMs

Published 1983 - 1990

Source map scale - 1:1,250

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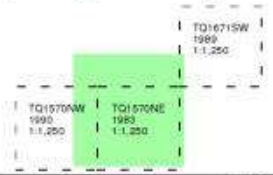
Map Name(s) and Date(s)



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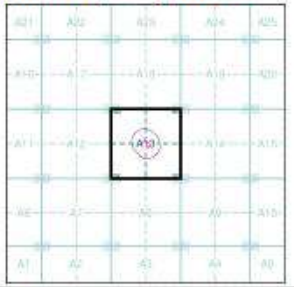

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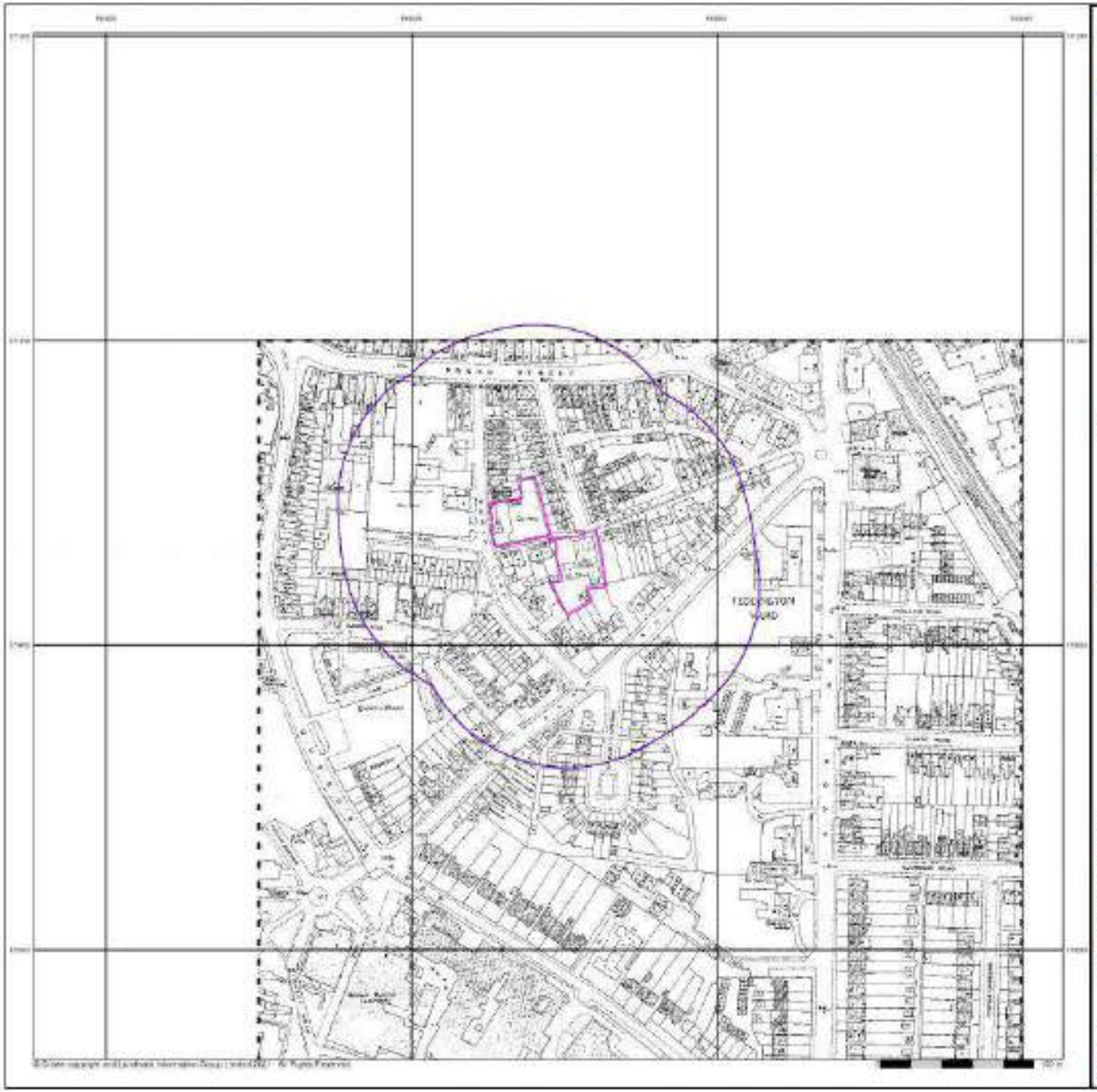
Search Buffer (m):	100

Site Details

Elleray Hall Social Club, Elleray Road, TEDDINGTON, TW11 0HG



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Additional SIMs

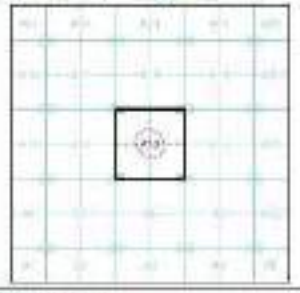
Published 1986

Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1996, and contain detailed information on buildings, roads and land use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

Historical Map - Segment A13

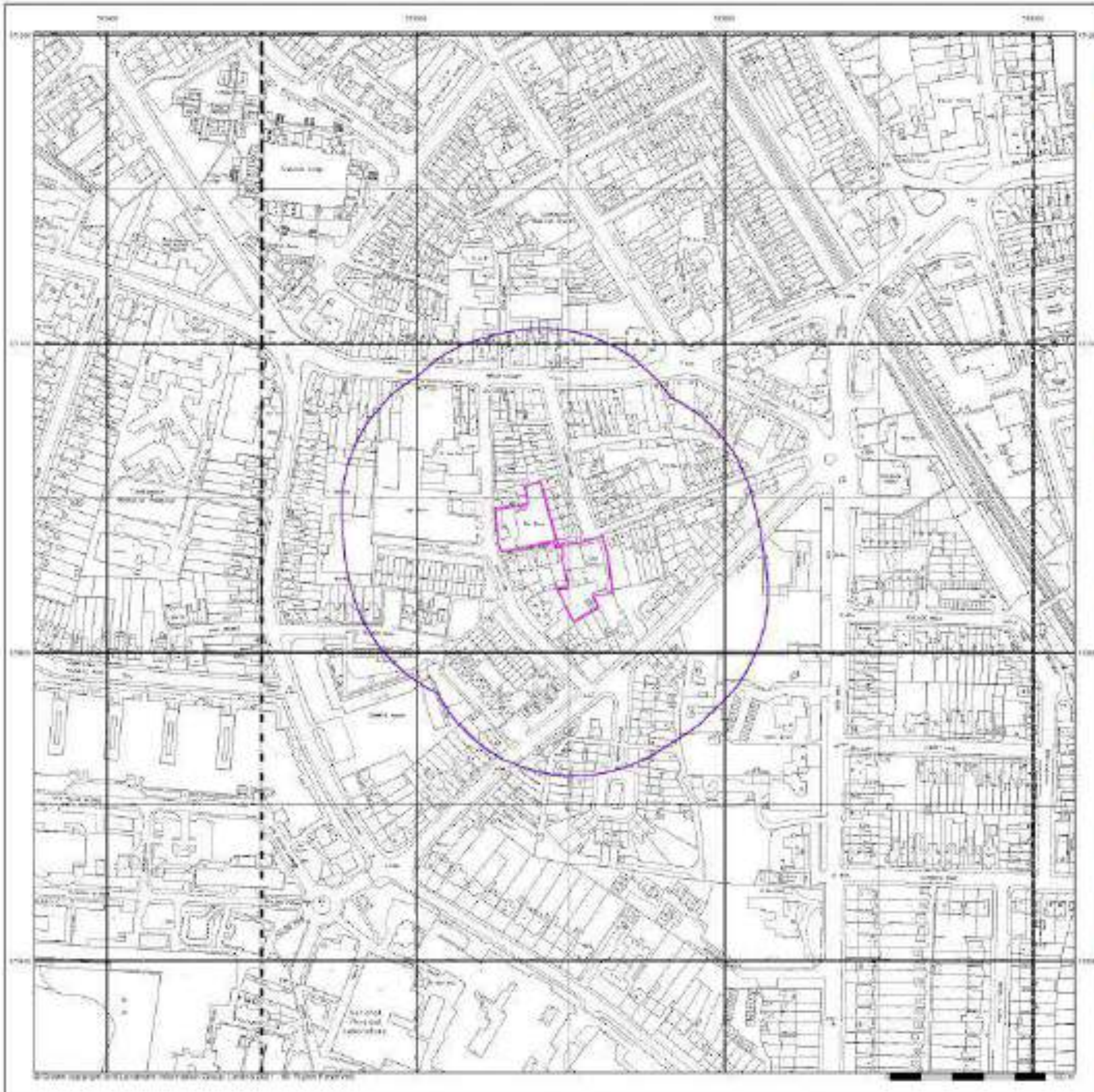


Order Details

Order Number:	271370665_1_1
Customer Ref:	TW11
National Grid Reference:	516690, 170870
Slice:	A
Site Area (Ha):	0.25
Search Buffer (m):	100

Site Details

Ellerey Hall Social Club, Ellerey Road, TEDDINGTON, TW11 0HG



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Large-Scale National Grid Data

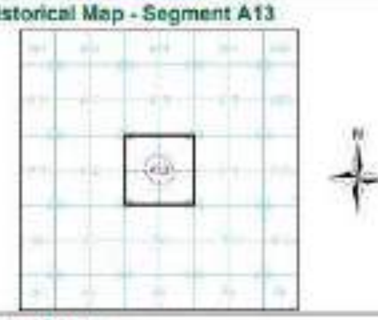
Published 1991

Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1987, and continued to be produced until 1996. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

Historical Map - Segment A13



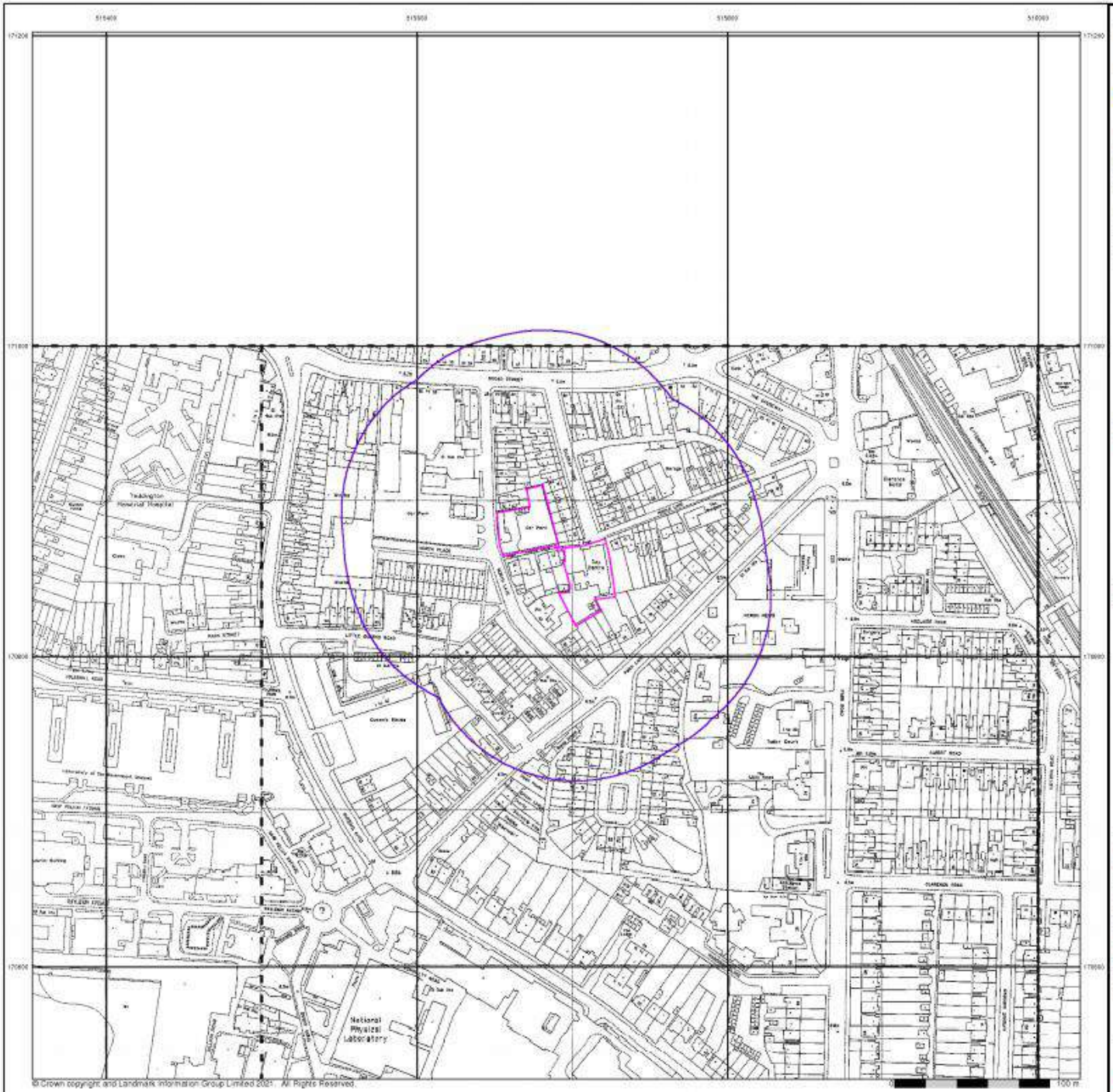
Order Details

Order Number: 271379866_1_1
Customer Ref: TW11
National Grid Reference: 510680, 170870
Slice: A
Site Area (Ha): 0.25
Search Buffer (m): 100

Site Details

Elleray Hall Social Club, Elleray Road, TEDDINGTON, TW11 0HG

Landmark



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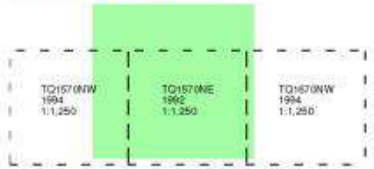
Large-Scale National Grid Data

Published 1992 - 1994

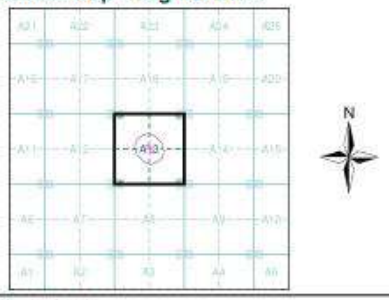
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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Customer Ref:	TW11
National Grid Reference:	516600, 170870
Slice:	A
Site Area (Ha):	0.25
Search Buffer (m):	100

Site Details

Elleray Hall Social Club, Elleray Road, TEDDINGTON, TW11 0HG

Landmark INFORMATION GROUP

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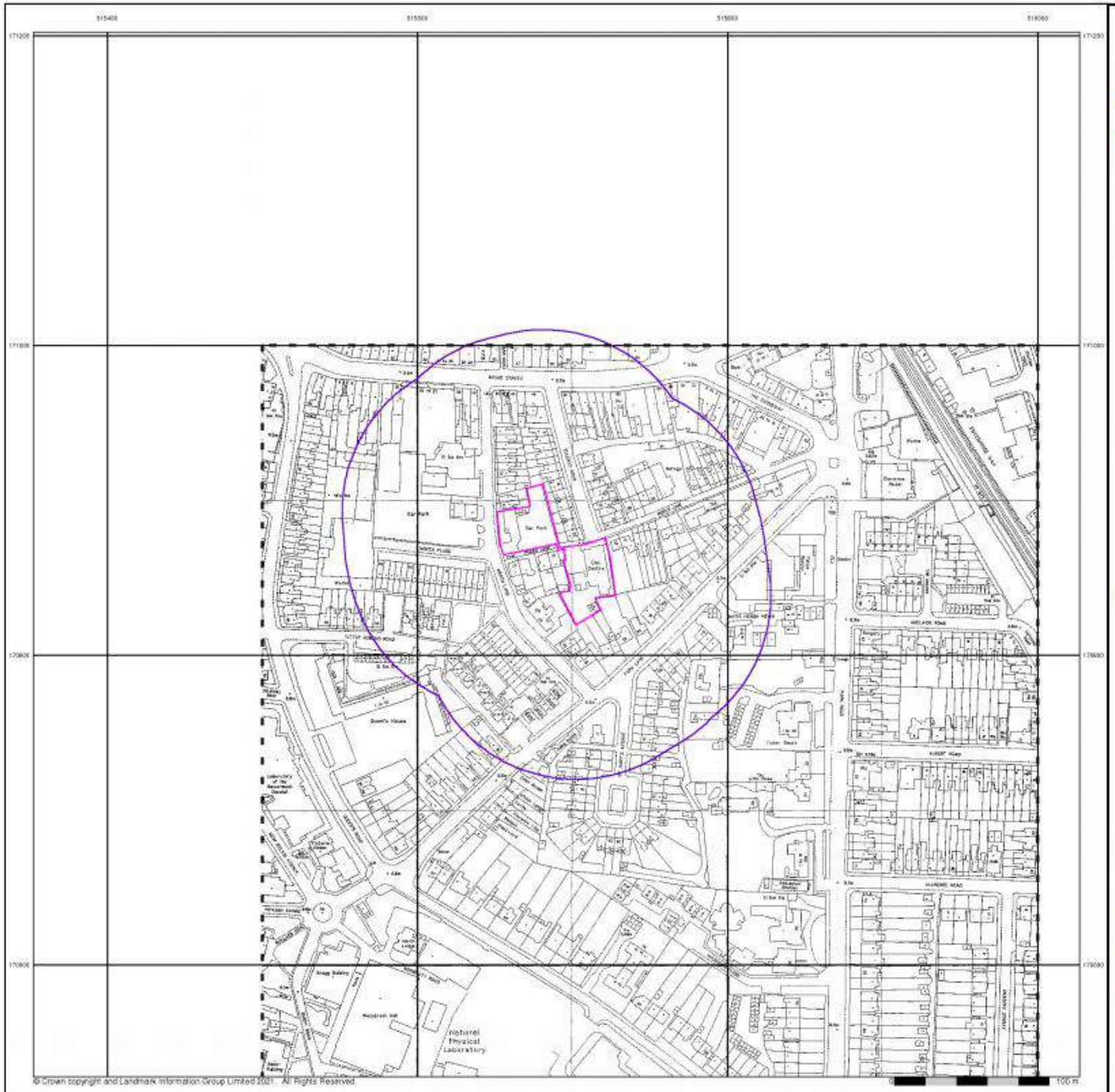
Web: www.envirocheck.co.uk



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Large-Scale National Grid Data

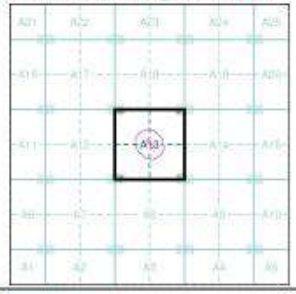
Published 1994

Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

Historical Map - Segment A13



Order Details

Order Number:	271376665_1_1
Customer Ref:	TW11
National Grid Reference:	515690, 170870
Slice:	A
Site Area (Ha):	0.25
Search Buffer (m):	100

Site Details

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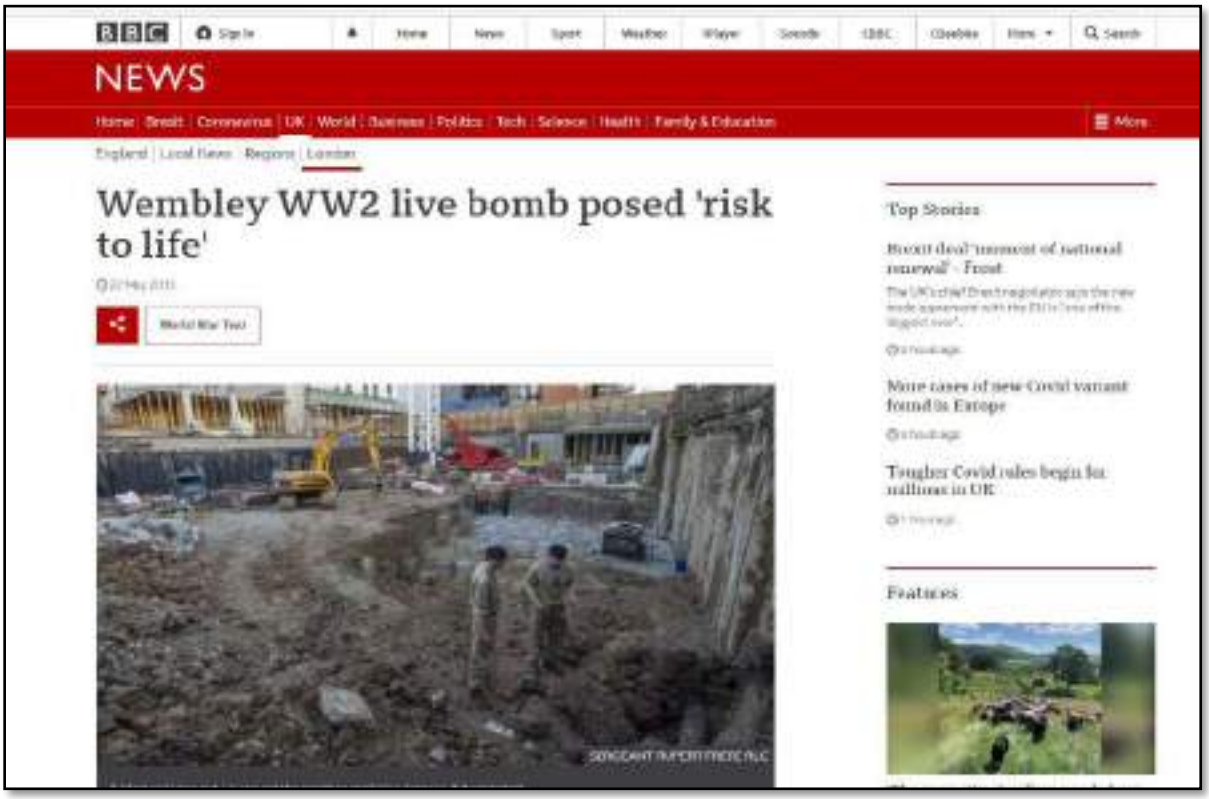
SOME BOMB INCIDENTS IN THE UK IN RECENT YEARS

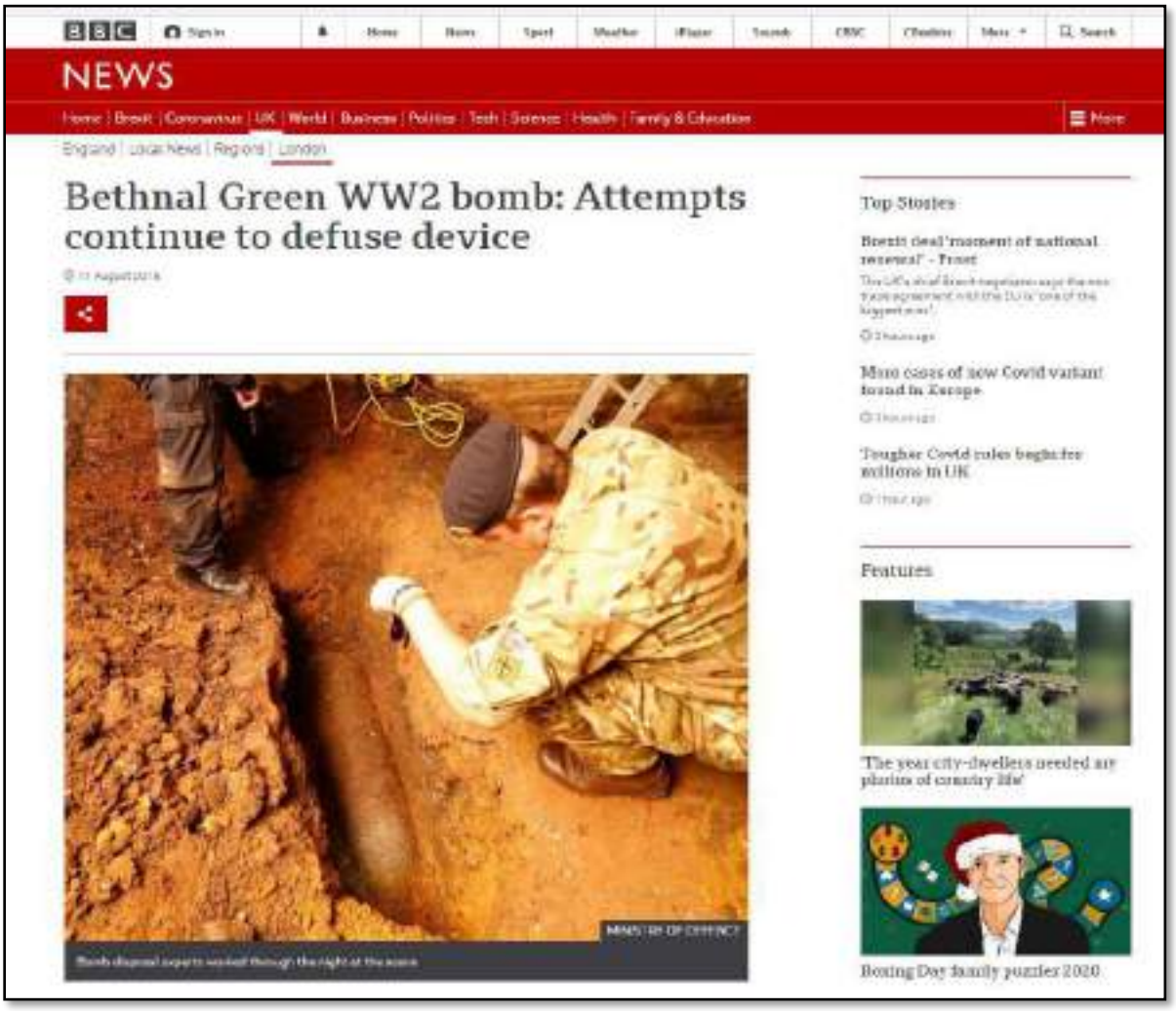
Kingston (2019)

City Airport (2018)



Wembley (May 2015)

White City (July 2015)



Bethnal Green (April 2015)

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