

Site & Location	Mallinson Sports Centre, Highgate School, Bishopswood Road, London N6 4PH	Report No:	9916A / MR
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SUMMARY OF CLASSIFICATION TEST RESULTS

BH ID	Depth (m)	Type	w (%)	w _L (%)	w _p (%)	Pass 425 (%)	I _p (%)	Mod I _p (%)	I _L (%)	LOI (%)	Description
WS3	2.30	D	26	39	20	100	19		0.32		Orange brown and blue grey silty to very silty sandy to very sandy CLAY.
WS3	2.60	D	37								Orange brown and blue grey silty to very silty sandy to very sandy CLAY.
WS3	2.90	D	28								Orange brown and blue grey silty to very silty sandy to very sandy CLAY.
WS3	3.00	D	35								Orange brown and blue grey silty to very silty sandy to very sandy CLAY.
WS3	3.60	D	30								Orange brown and blue grey silty to very silty sandy to very sandy CLAY.
WS3	3.80	D	27								Dark grey silty sandy CLAY.
WS3	4.00	D	25								Dark grey silty sandy CLAY.
WS3	4.80	D	26								Dark grey silty sandy CLAY.
WS3	5.00	D	25								Dark grey silty sandy CLAY.
WS4	1.30	D	22								Orange brown and blue grey slightly sandy silty CLAY with rare flint gravel.
WS4	1.60	D	23								Orange brown and blue grey slightly sandy silty CLAY with rare flint gravel.
WS4	1.90	D	21								Orange brown and blue grey slightly sandy silty CLAY with rare flint gravel.
WS4	2.00	D	9								Orange brown mottled dark orange brown very clayey GRAVEL.
WS4	2.20	D	11	30	13	35.5**	17	6	-0.10		Orange brown mottled dark orange brown very clayey GRAVEL.
WS4	2.50	D	24								Orange brown mottled brown and blue grey sandy silty to very silty CLAY.
WS4	2.80	D	27								Orange brown mottled brown and blue grey sandy silty to very silty CLAY.
WS4	3.00	D	26	40	24	100	16		0.15		Orange brown mottled brown and blue grey sandy silty to very silty CLAY.
WS4	3.20	D	33								Orange brown mottled brown and blue grey sandy silty to very silty CLAY.
WS4	3.50	D	22								Orange brown mottled brown and blue grey sandy silty to very silty CLAY.
WS4	3.80	D	26	49	21	100	28		0.18		Dark grey slightly sandy to sandy silty CLAY.
WS4	4.00	D	26								Dark grey slightly sandy to sandy silty CLAY.

Testing in accordance with BS EN ISO 17892 unless specified otherwise

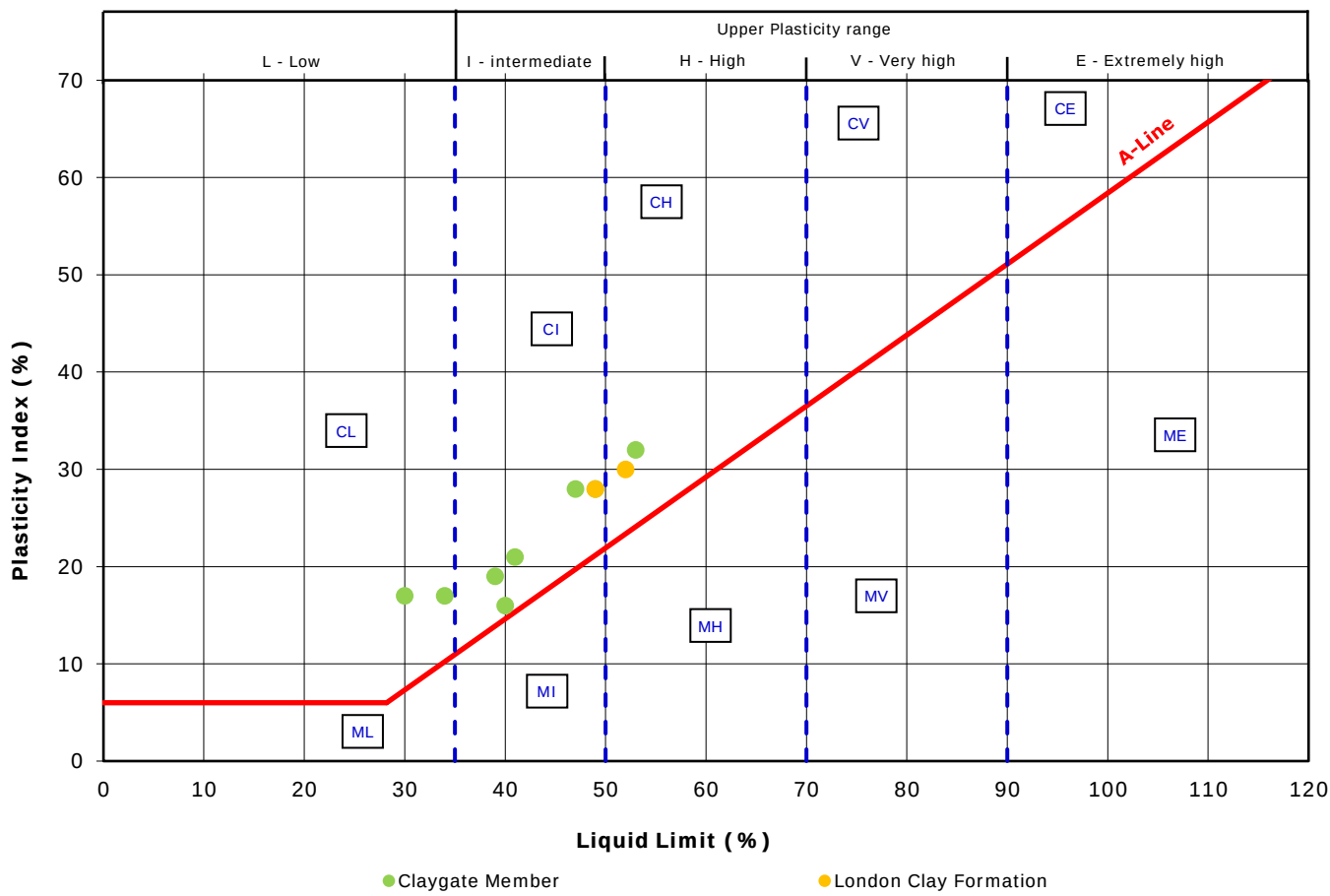
Date: 11 Jan 19

Modified Plasticity Index calculated in accordance with NHBC Standards Chapter 4.2 (reported if %passing 425mm <95%)

Percent passing 425µm: by estimation, by hand* or by sieving**

(Classification Sheet 3 of 3)

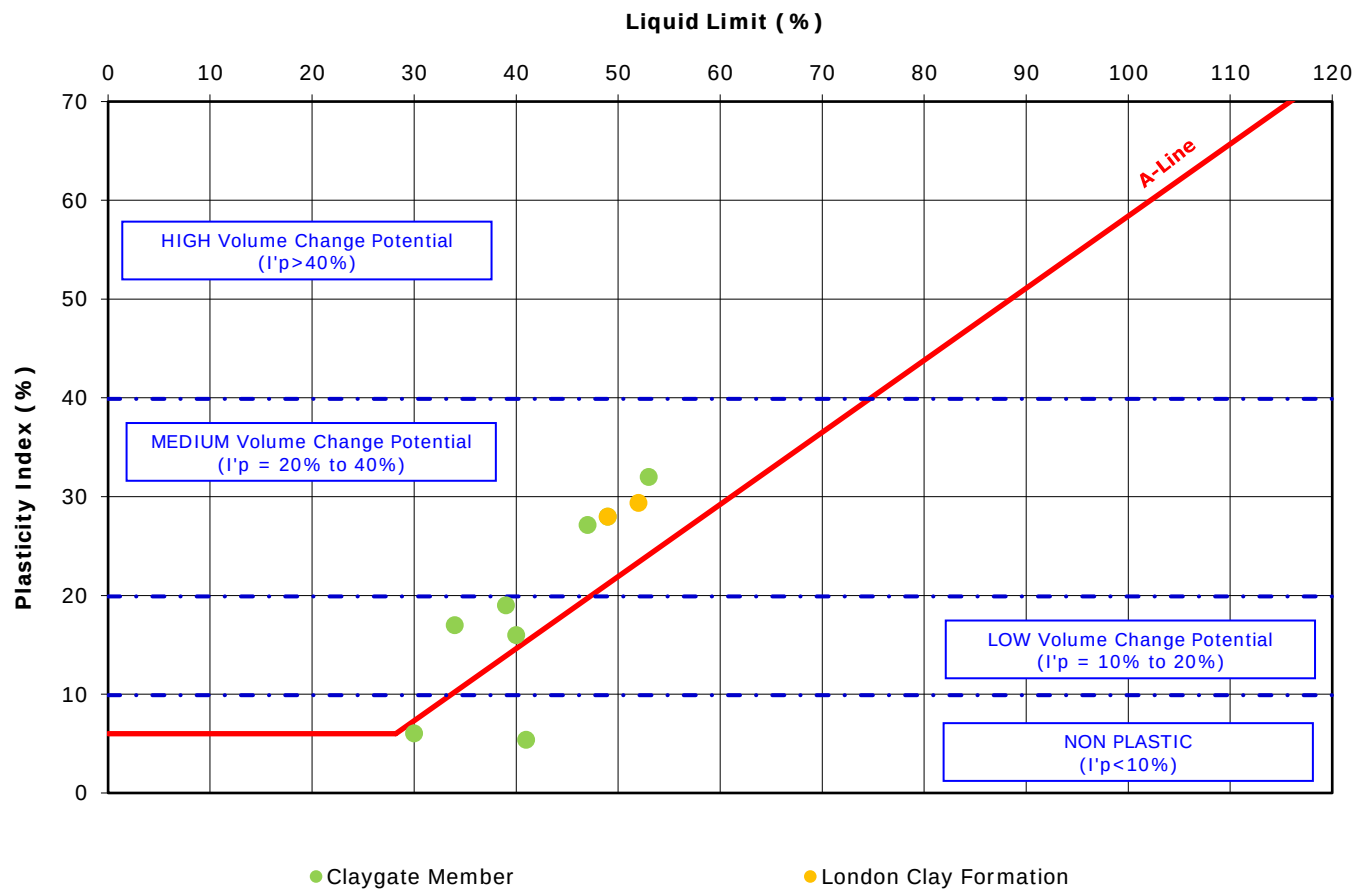
Plasticity Chart



M - SILT [plots below the A-Line]
C - CLAY [plots above the A-Line]

Classification in accordance with BS5930:2015 "Code of practice for site investigations"

Plasticity Chart

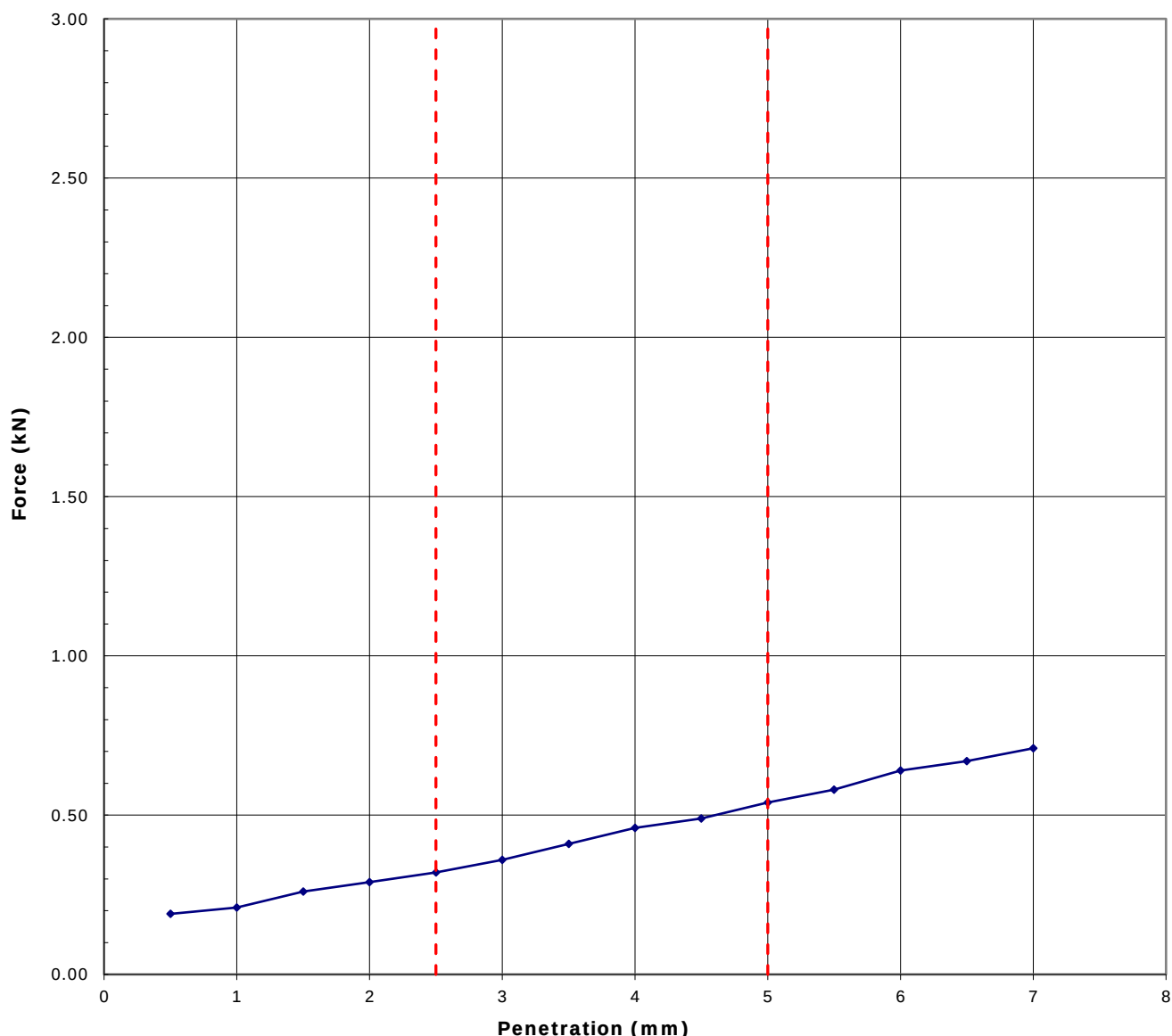


Modified Plasticity Index, I'_p:

$$I'_p = \frac{I_p \times (\% \text{ passing } 425\text{mm})}{100\%} \quad (\text{where } I_p = \text{Plasticity Index})$$

Classification in accordance with NHBC Standards, Part 4 'Foundations', Chapter 4.2 'Building near trees'

**Determination of California Bearing Ratio
(In accordance with: BS1377:1990, Part 4, Clause 7)**



Location ID:	CBR1 (Top)	Stratum at test depth:	MADE GROUND: dark brown / black silty very clayey topsoil with occasional gravel. Gravel is fine to coarse subangular brick and masonry. Occasional live roots.
Depth:	0.50m		
Moisture content:	24.3%		
Bulk Density	1.943mg/m ³	Preparation: Method 5 - re-mould sample by dynamic compaction with 2.5kg hammer. Sample not soaked.	
Dry Density	1.573mg/m ³		

CBR results				
Penetration (mm)	Test force (kN)	Standard force (kN)	CBR (%)	Notes
2.5	0.32	13.2	2.4	
5.0	0.54	20.0	2.7	

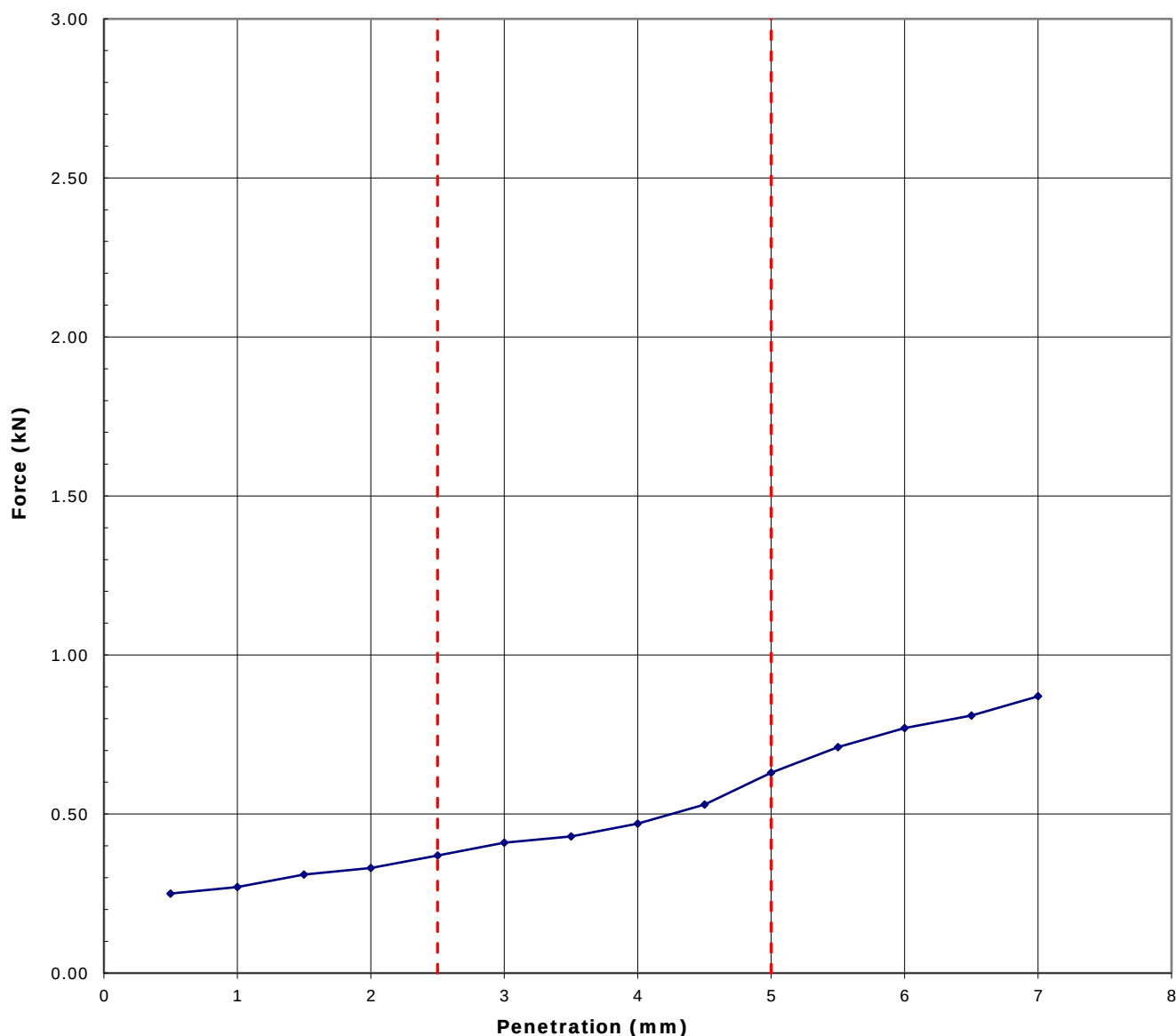
CBR value (%) 2.7

Surcharge: 10kPa

Test date: 04/01/2019

Certificate date: 10/01/2019

Determination of California Bearing Ratio
(In accordance with: BS1377:1990, Part 4, Clause 7)



Location ID:	CBR1 (Base)	Stratum at test depth:	MADE GROUND: dark brown / black silty very clayey topsoil with occasional gravel. Gravel is fine to coarse subangular brick, flint and masonry. Occasional live roots.
Depth:	0.50m		
Moisture content:	22.7%		
Bulk Density	1.943mg/m ³	Preparation: Method 5 - re-mould sample by dynamic compaction with 2.5kg hammer. Sample not soaked.	
Dry Density	1.573mg/m ³		

CBR results				
Penetration (mm)	Test force (kN)	Standard force (kN)	CBR (%)	Notes
2.5	0.37	13.2	2.8	
5.0	0.63	20.0	3.2	

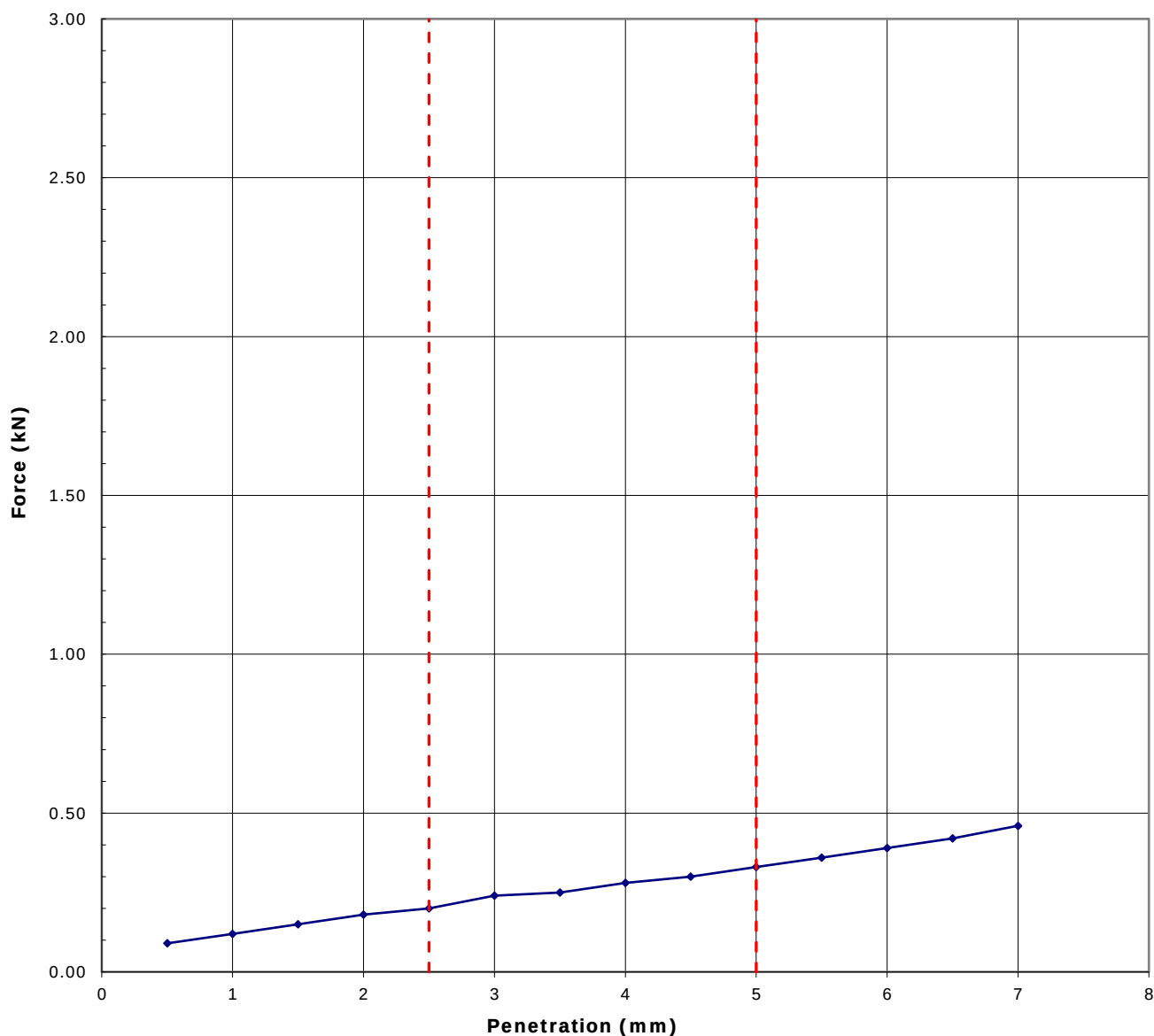
CBR value (%) 3.2

Surcharge: 10kPa

Test date: 04/01/2019

Certificate date: 10/01/2019

Determination of California Bearing Ratio
(In accordance with: BS1377:1990, Part 4, Clause 7)



Location ID:	CBR2 (Top)	Stratum at test depth: MADE GROUND: dark brown slightly sandy clayey silty topsoil with occasional gravel. Gravel is fine to coarse subangular brick and flint. Rare live roots.
Depth:	0.50m	
Moisture content:	28.4%	
Bulk Density	1.846mg/m ³	Preparation: Method 5 - re-mould sample by dynamic compaction with 2.5kg hammer. Sample not soaked.
Dry Density	1.442mg/m ³	

CBR results				
Penetration (mm)	Test force (kN)	Standard force (kN)	CBR (%)	Notes
2.5	0.20	13.2	1.5	
5.0	0.33	20.0	1.7	

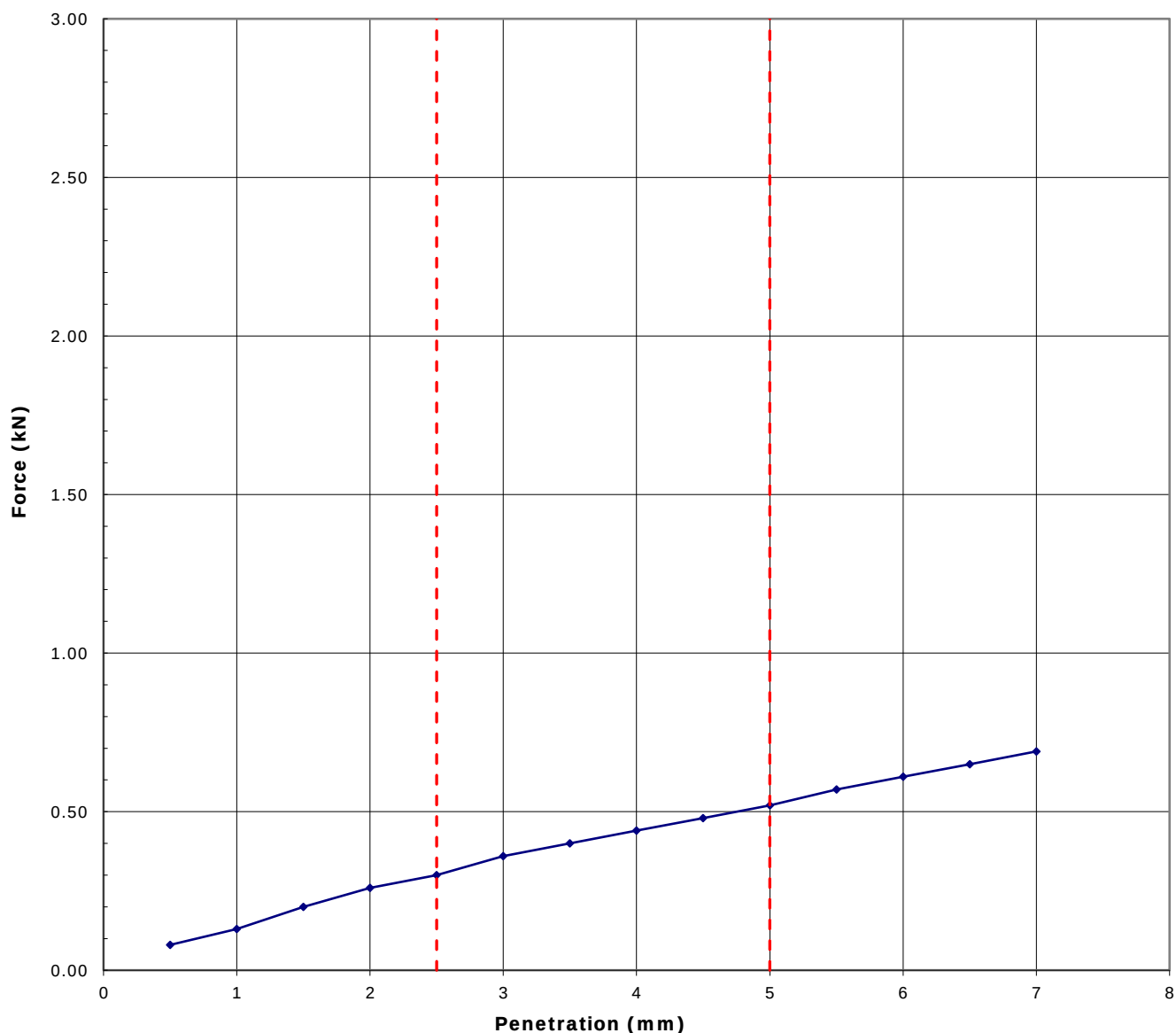
CBR value (%) 1.7

Surcharge: 10kPa

Test date: 04/01/2019

Certificate date: 10/01/2019

**Determination of California Bearing Ratio
(In accordance with: BS1377:1990, Part 4, Clause 7)**



Location ID:	CBR2 (Base)	Stratum at test depth:	MADE GROUND: dark brown slightly sandy clayey silty topsoil with occasional gravel. Gravel is fine to coarse subangular brick and flint. Rare live roots.
Depth:	0.50m		
Moisture content:	27.6%		
Bulk Density	1.846mg/m ³	Preparation:	Method 5 - re-mould sample by dynamic compaction with 2.5kg hammer. Sample not soaked.
Dry Density	1.442mg/m ³		

CBR results				
Penetration (mm)	Test force (kN)	Standard force (kN)	CBR (%)	Notes
2.5	0.30	13.2	2.3	
5.0	0.52	20.0	2.6	

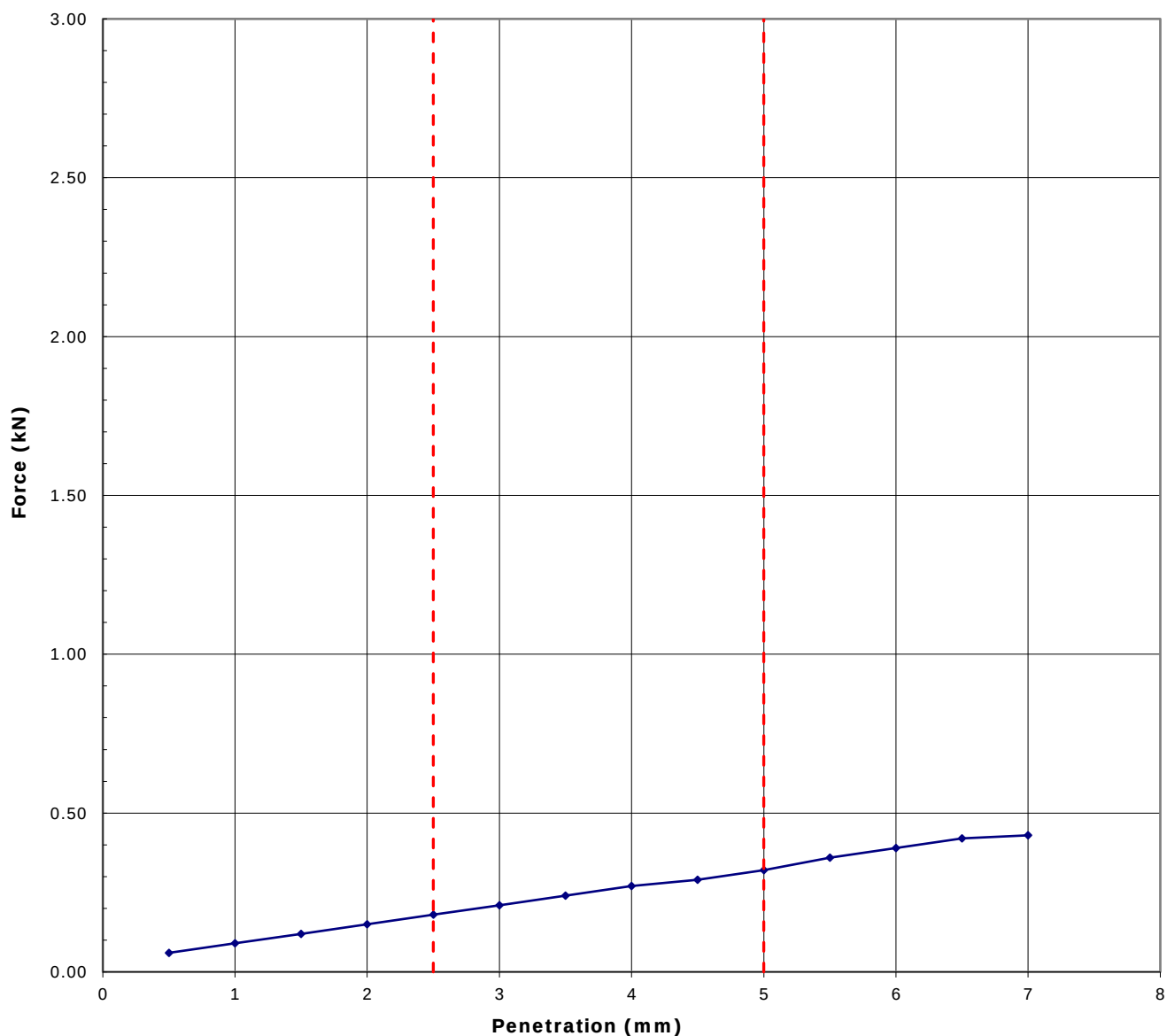
CBR value (%) 2.6

Surcharge: 10kPa

Test date: 04/01/2019

Certificate date: 10/01/2019

Determination of California Bearing Ratio
(In accordance with: BS1377:1990, Part 4, Clause 7)



Location ID:	CBR3 (Top)	Stratum at test depth:	MADE GROUND: dark brown / black slightly clayey silty sandy topsoil with occasional gravel. Gravel is fine to coarse subangular brick and masonry. Occasional live roots.
Depth:	0.50m		
Moisture content:	28.8%		
Bulk Density	1.837mg/m ³	Preparation: Method 5 - re-mould sample by dynamic compaction with 2.5kg hammer. Sample not soaked.	
Dry Density	1.425mg/m ³		

CBR results				
Penetration (mm)	Test force (kN)	Standard force (kN)	CBR (%)	Notes
2.5	0.18	13.2	1.4	
5.0	0.32	20.0	1.6	

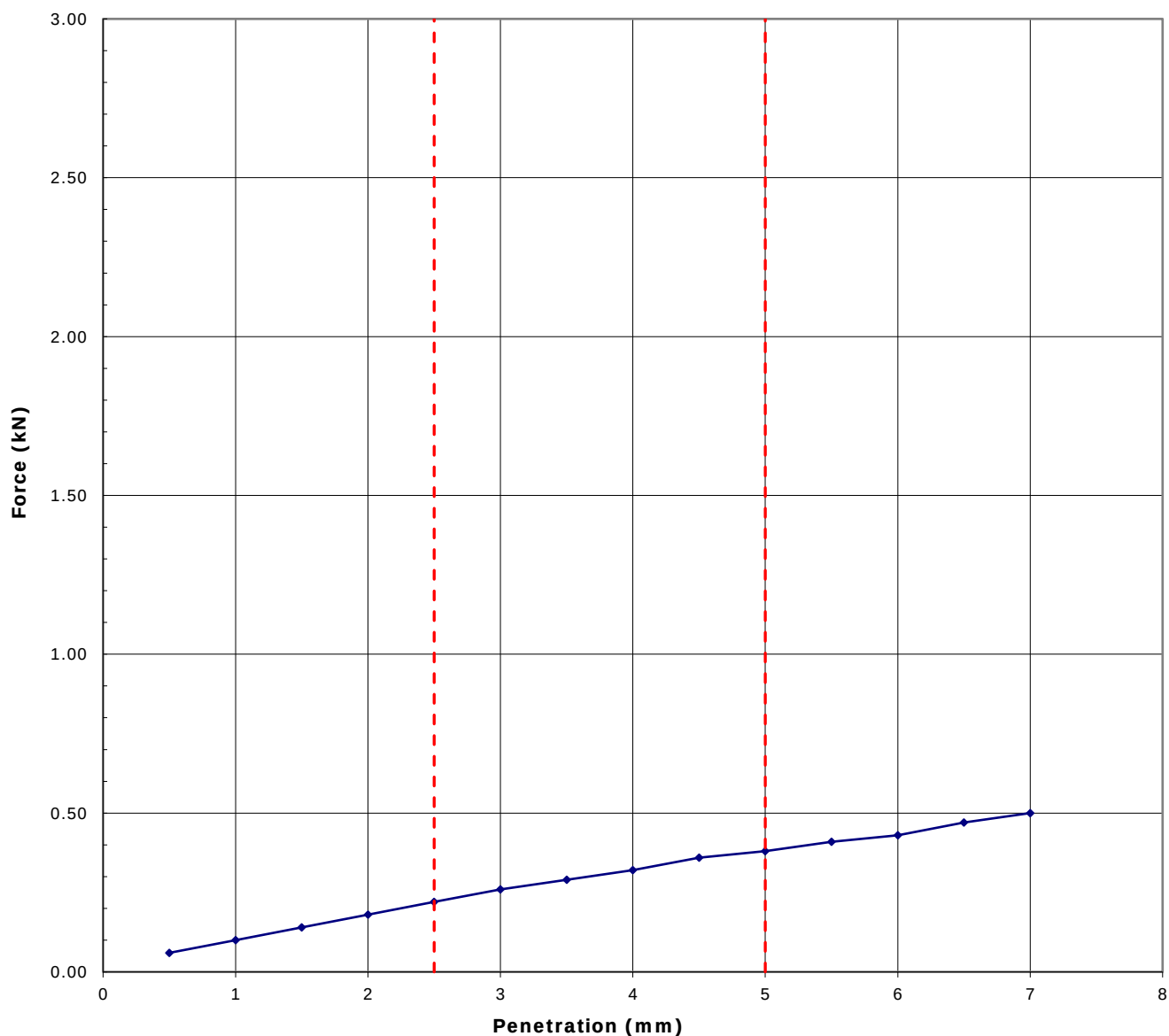
CBR value (%) 1.6

Surcharge: 10kPa

Test date: 04/01/2019

Certificate date: 10/01/2019

**Determination of California Bearing Ratio
(In accordance with: BS1377:1990, Part 4, Clause 7)**



Location ID:	CBR3 (Base)	Stratum at test depth:	MADE GROUND: dark brown / black slightly clayey silty sandy topsoil with occasional gravel. Gravel is fine to coarse subangular brick and masonry. Occasional live roots.
Depth:	0.50m		
Moisture content:	29.0%		
Bulk Density	1.837mg/m ³	Preparation: Method 5 - re-mould sample by dynamic compaction with 2.5kg hammer. Sample not soaked.	
Dry Density	1.425mg/m ³		

CBR results				
Penetration (mm)	Test force (kN)	Standard force (kN)	CBR (%)	Notes
2.5	0.22	13.2	1.7	
5.0	0.38	20.0	1.9	

CBR value (%) 1.9

Surcharge: 10kPa

Test date: 04/01/2019

Certificate date: 10/01/2019



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russell.jarvis@dets.co.uk

DETS Report No: 19-00061

Site Reference: Mallinson Sports Centre, Highgate School, London, N6 4PH

Project / Job Ref: 9916A/MR

Order No: 9916A/MR

Sample Receipt Date: 04/01/2019

Sample Scheduled Date: 04/01/2019

Report Issue Number: 1

Reporting Date: 10/01/2019

Authorised by:

Russell Jarvis
Associate Director of Client Services

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Soil Analysis Certificate						
DETS Report No: 19-00061	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Soil Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Mallinson Sports Centre, Highgate School, London, N6 4PH	TP / BH No	WS1	WS1	WS2	WS2	WS3
Project / Job Ref: 9916A/MR	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 9916A/MR	Depth (m)	0.85	2.00	1.60	2.95	1.30
Reporting Date: 10/01/2019	DETS Sample No	380544	380545	380546	380547	380548

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.0	7.4	7.4	7.1	7.4
Total Sulphate as SO ₄	mg/kg	< 200	NONE	< 200	1357	< 200	< 200	< 200
Total Sulphate as SO ₄	%	< 0.02	NONE	< 0.02	0.14	< 0.02	< 0.02	< 0.02
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	18	12	< 10	< 10	15
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.02	0.01	< 0.01	< 0.01	0.01
Total Sulphur	%	< 0.02	NONE	< 0.02	0.04	< 0.02	< 0.02	< 0.02

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

Subcontracted analysis (S)



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Soil Analysis Certificate						
DETS Report No: 19-00061	Date Sampled	None Supplied	None Supplied	None Supplied		
Soil Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Mallinson Sports Centre, Highgate School, London, N6 4PH	TP / BH No	WS3	WS4	WS4		
Project / Job Ref: 9916A/MR	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 9916A/MR	Depth (m)	4.80	2.50	3.80		
Reporting Date: 10/01/2019	DETS Sample No	380549	380550	380551		

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/a	MCERTS	7.2	6.5	8.3	
Total Sulphate as SO ₄	mg/kg	< 200	NONE	1213	1093	1176	
Total Sulphate as SO ₄	%	< 0.02	NONE	0.12	0.11	0.12	
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	213	30	327	
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.21	0.03	0.33	
Total Sulphur	%	< 0.02	NONE	0.73	0.04	0.78	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

Subcontracted analysis (S)



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 19-00061

Soil Consultants Ltd

Site Reference: Mallinson Sports Centre, Highgate School, London, N6 4PH

Project / Job Ref: 9916A/MR

Order No: 9916A/MR

Reporting Date: 10/01/2019

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 380544	WS1	None Supplied	0.85	12.8	Brown sandy clay with stones
^ 380545	WS1	None Supplied	2.00	18.2	Brown sandy clay
^ 380546	WS2	None Supplied	1.60	15.4	Brown sandy clay
^ 380547	WS2	None Supplied	2.95	16.3	Brown sandy clay
^ 380548	WS3	None Supplied	1.30	15.7	Brown sandy clay with stones
^ 380549	WS3	None Supplied	4.80	16.9	Grey sandy clay
^ 380550	WS4	None Supplied	2.50	15.7	Brown sandy clay
^ 380551	WS4	None Supplied	3.80	17.6	Grey sandy clay

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

Insufficient Sample ^{I/S}

Unsuitable Sample ^{U/S}

^ no sampling date provided; unable to confirm if samples are within acceptable holding times



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 19-00061

Soil Consultants Ltd

Site Reference: Mallinson Sports Centre, Highgate School, London, N6 4PH

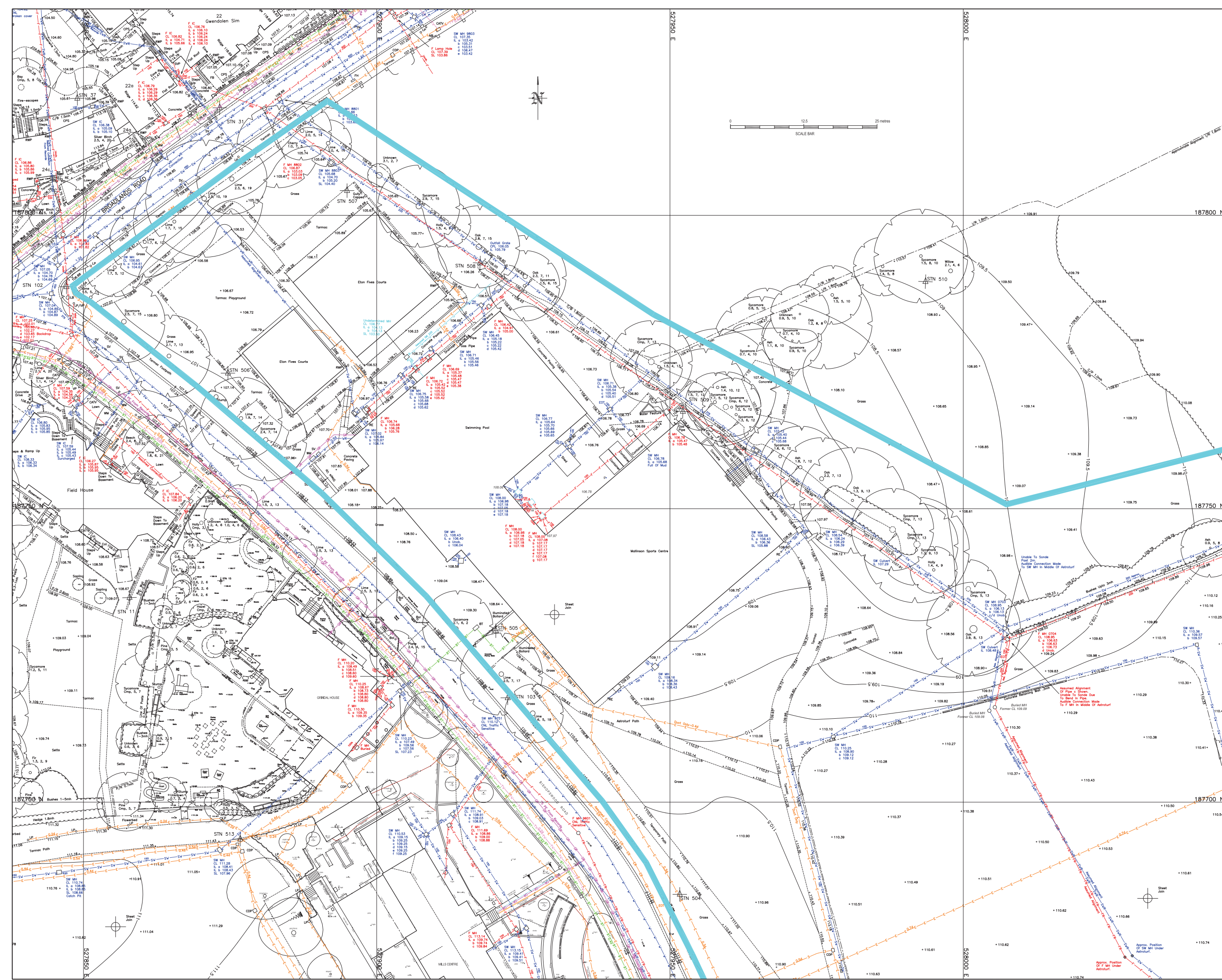
Project / Job Ref: 9916A/MR

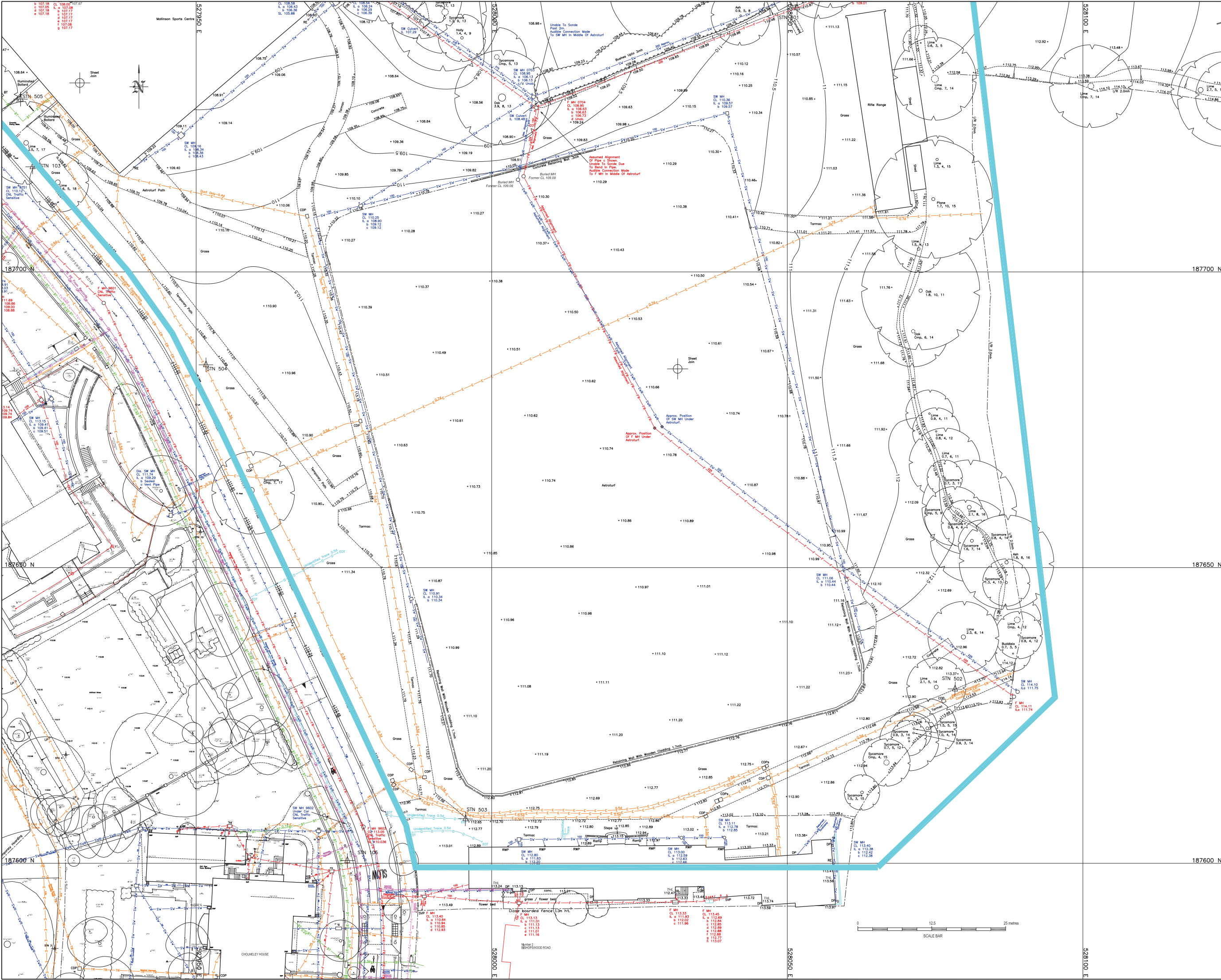
Order No: 9916A/MR

Reporting Date: 10/01/2019

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

D Dried
AR As Received

[illegible]



CONTROL SHEET

Survey datum: British 1936

Boundary zone: +432

Contours: 1m

Deep water: 1m

LEVEL DATA

Spot levels: +432

Contours: 1m

Deep water: 1m

TREES

1:6.7 (Chapman's), spread (indicated) height

1:6.7 (Chapman's), spread (indicated) height

1:6.7 (Chapman's), spread (indicated) height

OVERHEAD CABLES

1:6.7 (Chapman's), spread (indicated) height

1:6.7 (Chapman's), spread (indicated) height

1:6.7 (Chapman's), spread (indicated) height

ABBREVIATIONS

AV: Air valve

AV: Air valve

AV: Air valve

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AV: Air valve

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FEATURES

Fence shown as: 1m

Fence shown as: 1m

Fence shown as: 1m

ABBREVIATIONS

AV: Air valve

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IMPORTANT NOTES

The client and contractor have been advised that the survey data is not intended to be used for any purpose other than the design of the proposed works.

The client and contractor have been advised that the survey data is not intended to be used for any purpose other than the design of the proposed works.

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UNDERGROUND SERVICES - TRACED

TV: TV

TV: TV

TV: TV

UNDERGROUND SERVICES - NOT TRACED

TV: TV

TV: TV

TV: TV

SHEET LAYOUT

1

2

NOTES

1. Survey data is shown as a line that approximates to the O.S. National Grid with an origin at Station 1, with coordinates derived from the O.S. National Grid.

2. Levels are related to the O.S. National Grid datum.

3. The drawing has been prepared from a survey conducted by the client during December 2007 and surveying by Randall Surveys LLP between November 2010 and December 2010.

4. The drawing has been prepared from a survey conducted by the client during December 2007 and surveying by Randall Surveys LLP between November 2010 and December 2010.

5. The underground service records referenced are from November 2010.

PLAN PRODUCTION BY

RANDALL SURVEYS LLP

Land and Hydrographic Surveyors

Architectural Building Surveyors

Underground Services Location

PROJECT NAME

HIGHGATE SCHOOL - SPORTS CENTRE

DRAWING TITLE

EXISTING SITE & SERVICE LAYOUT

SCALE: 1:200

DRAWN: JLV

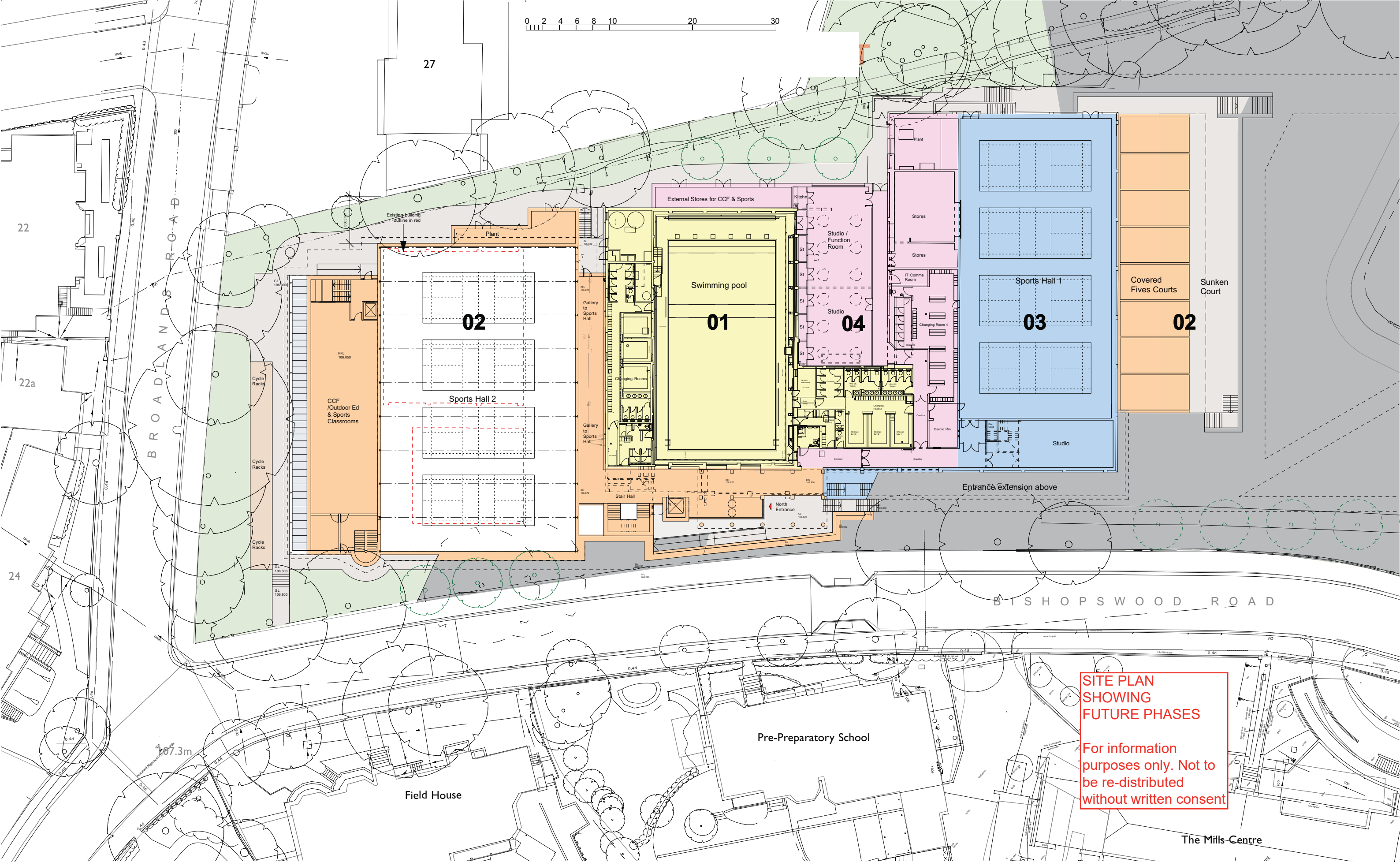
PAPER SIZE: A0

DATE: January 2016

CHECKED: DRD

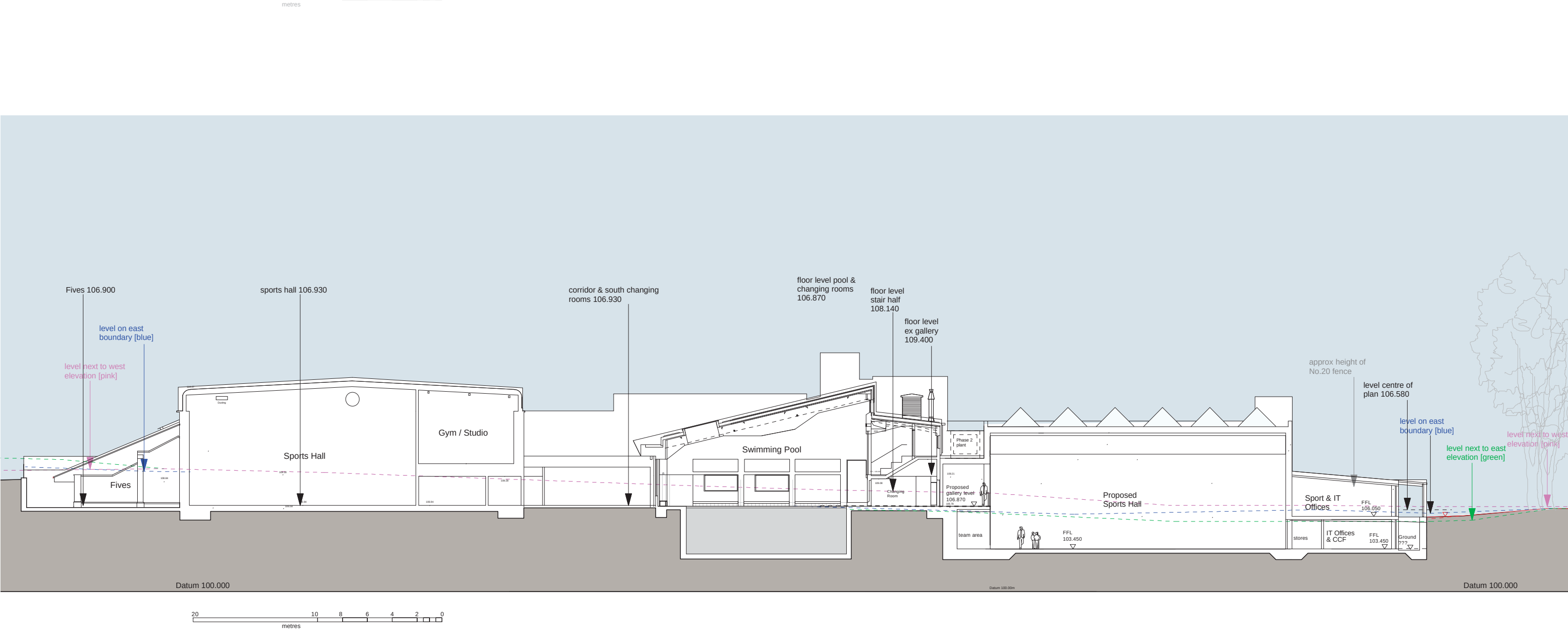
REVISION:

Dwg No. 13849/JV/2



**SITE PLAN
SHOWING
FUTURE PHASES**

For information
purposes only. Not to
be re-distributed
without written consent



MSC Development with North extension north-south section / part elevation
[combined section/elevation for design development only]

ed tooveyarchitects

studio 401 royle building
31 wenlock road
london n1 7sh
07880 725763
edtoovey@yahoo.co.uk

Revisions:

PRELIMINARY DRAFT ISSUE

- Always take site measurements
to verify dimensions
- Refer to M&E Engineers
drawings for all services

Highgate School MSC 4-Phase Future Development

Long Section: Phase 2 extension to north

August 2018

Drwg No. 1182 / GS / 01

Scale 1:300 @ A3

KEY

⊕ Dynamic sampler boreholes (WS1)

⊗ TRLs / CBRs (CBR1)

Site &
Location

**Mallinson Sports Centre, Highgate School,
Bishopswood Road, London N6 4PH**

Report No:
9916A / MR

Site Plan



0 20m
Scale = 1:500@A3

Location Plan



SITE LOCATION

[Contains Ordnance Survey data © Crown copyright and database right 2016]

FACTUAL REPORT ON GROUND PRELIMINARY INVESTIGATION

PROPOSED DEVELOPMENT:

MALLINSON SPORTS CENTRE PHASE 2

HIGHGATE SCHOOL, BISHOPSWOOD ROAD, LONDON N6 4NY



Client: **HIGHGATE SCHOOL**
North Road, Highgate
London N6 4AY

Consulting Engineers: **PRINGUER-JAMES CONSULTING ENGINEERS**
Overseas House, Elm Grove
London SW19 4HE

Report ref: **10930/OS**

Date: **22nd February 2024**

FACTUAL REPORT ON PRELIMINARY GROUND INVESTIGATION**PROPOSED DEVELOPMENT:****MALLINSON SPORTS CENTRE PHASE 2****HIGHGATE SCHOOL, BISHOPSWOOD ROAD, LONDON N6 4NY****DOCUMENT ISSUE STATUS:**

Issue	Date	Description	Author	Checked/approved
Rev 0	22/02/2024	First issue	Oana Stanciu BSc, FSG	John Bartley BSc, MSc, FGS, CGeol

This investigation has been undertaken within the constraints of the client's instruction/contract, together with those set out in the 'General information, limitations and exceptions' section at the end of this report. The SCL 'Standard Terms of Appointment' are also included at the end of this report and these identify the contractual arrangements for the investigation. Conclusions or recommendations made in this report are limited to those which can be reasonably based upon the research and/or intrusive investigation work carried out. Any comments which rely on third-party information which has been provided to us are made in good faith and on the assumption that such information is accurate. SCL have not carried out independent validation of any third-party information.

Soil Consultants Ltd (SCL) has prepared this Report for the Client in accordance with the Terms of Appointment under which our services were performed. With respect to third parties, no other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by us. This Report may not be relied upon by any other party without the prior and express written agreement of SCL.

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Fieldwork, in-situ testing and monitoring

- ✚ Foreword
- ✚ Standard Penetration Test results
- ✚ SPT hammer calibration certificates
- ✚ Window sample borehole records

Ground profiles

- ✚ Plot of SPT 'N' value versus depth
- ✚ Hand vane profile versus depth

Plans, drawings & photographs

- ✚ Site Plan
- ✚ Location Plan

1.0 INTRODUCTION

Consideration is being given to the construction of a new sports pitch which will be created by a cut and fill operation. In connection with the proposed works, Soil Consultants Ltd (SCL) were commissioned by Pringuer-James Consulting Engineers Ltd (PJCE), on behalf of the client, Highgate School, to carry out a preliminary ground investigation to identify the ground sequence and groundwater conditions. Previous ground investigations have been undertaken by SCL for the Mallinson Sports Centre buildings to the west of the current area of interest (Reports refs: 9916/JRCB, 22/02/16 and 9916A/MR, 06/02/19).

This report describes the intrusive investigation undertaken and provides a summary of the ground conditions encountered. Neither geotechnical nor environmental/contamination testing were requested within the specified scope of investigation.

2.0 SITE DESCRIPTION

A summary description of the site and its general setting is as follows:

Element	Description
Site location and setting	- The site is located in London Borough of Haringey, approximately 500m south from Highgate town centre - Development area is within the grounds of Mallinson Sports Centre, Highgate school - NGR 528020 , 187765
Site dimensions	The site is roughly rectangular in shape measuring – about 60m (NW-SE) x 50m (SE-NE)
Site boundaries	- The site is encircled by mature trees - Mallinson Sports Centre building and Bishopswood Road are present to the west - An all-weather sports pitch is present to the south of the site, beyond a line of mature trees and green areas - The rear gardens of residential properties which front onto Broadlands Road are present to the north - A copse of densely planted mature trees forms the eastern site boundary
Site description	The site comprises an open sloping grassed area
Topography and site levels	- Topographical information supplied (Randall Surveys LLP, Ref: 13849/JV/1, Jan 2016) - Spot levels indicate that the site slopes down gently to the west from a maximum of about +110mOD on the eastern boundary down to about +108mOD in the west

Element	Description
Existing vegetation within site and adjacent properties	 Mature trees on all boundaries including oak, sycamore willow and ash. Tree heights vary with the highest being about 18m tall

The current site features are shown on the Site Plan and Site Photographs which are included in the Appendix.

3.0 EXPLORATORY WORK

The ground investigation was carried out in February 2024 and is described below.

3.1 Constraints of investigation

At the time of the investigation a large proportion of the site area was waterlogged with pooled water on the ground surface. Due to the very soft nature of the ground, access was limited and it was not possible to undertake BH01 and BH02.

The investigation was carried out in accordance with the requirements of PJCE at the specified locations.

3.2 Dynamic sampler boreholes

Three dynamic sampler boreholes (BH03, BH04, BH05) were completed using operated equipment under the supervision of an experienced geo-environmental engineer. In-situ Standard Penetration Testing (SPT) were carried out at appropriate intervals. The hammer Energy Ratio (E_r) for the SPT equipment used was 64%; the relevant test certificate is appended.

4.0 GROUND CONDITIONS

Reference to published BGS data indicates that the site is underlain by the Claygate Member resting upon the London Clay. Beneath variable made ground/superficial soils, the investigation encountered an upper layer of essentially brown/grey mottled silty sandy clay overlying grey to dark grey clay silty sandy clay. For the purposes of this discussion, we have identified the upper mottled clay layer as the Claygate Member and the underlying darker clay as the London Clay. In fact, both of these sub-units are incorporated under the parent unit of the London Clay Formation.

Detailed descriptions of the soils are included on the appended borehole logs. A summary of the ground sequence is as follows:

Stratum	Depth to base	Description and properties
Topsoil	0.20m	➤ Dark brown clayey topsoil
Made ground	Between 0.35m and 0.40mbgl	➤ Dark brown silty sandy gravelly clay ➤ Variable amounts of brick, slate, clinker and ceramic tile fragments ➤ Assessed as being of soft consistency
Superficial Deposits	Between 1.00m and 1.20mbgl	➤ Orange/brown silty sandy gravelly clay ➤ Variable silt, sand and gravel content ➤ Occasional to frequent live rootlets ➤ Assessed as being of soft or firm consistency ➤ SPT N value of 10 indicates medium strength
Claygate Member	Between 2.70m and 3.50mbgl	➤ Brown, grey and orange silty sandy to very sandy clay ➤ Locally grades to clayey sand ➤ Locally laminated ➤ Assessed as soft to firm consistency ➤ SPT N values (between 9 and 14) and hand vane results generally indicate medium strength clay
London Clay	>5.45mbgl (extended below base of boreholes)	➤ Grey silty sandy to very sandy clay ➤ Locally grades to clayey sand ➤ Assessed as being of firm to stiff consistency ➤ SPT N values (between 15 and 20) indicate high strength clay
Groundwater:	➤ Encountered at 0.8mbgl within the inspection pit of BH03 ➤ Strata generally appeared 'damp' below about 1.20m ➤ End of drilling rest levels at depths of between 1.52m and 2.50mbgl	



GENERAL INFORMATION, LIMITATIONS AND EXCEPTIONS

Unless otherwise stated, our Report should be construed as being a Ground Investigation Report (GIR) as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report (GDR) as defined in EN1997-2. Any 'design' recommendations which are provided are for guidance only and are intended to allow the designer to assess the results and implications of our investigation/testing and to permit preliminary design of relevant elements of the proposed scheme.

The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access and space limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique we have adopted a practical technique to obtain indicative soil parameters and any interpretation is based upon our engineering experience and relevant published information.

The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during our investigation. In addition, Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata between the exploratory points, below the maximum depth of the investigation or where site conditions have changed since the exploratory work; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report. We will provide an indication of the strata configuration within the site based upon exploratory holes undertaken. Any strata boundaries shown will relate to the principal layers but it should be noted that these boundaries could be gradational and the depths identified would then not be definitive. The boundary depths/levels are given for guidance only.

Comments made relating to groundwater or ground-gas are based upon observations made during our investigation unless otherwise stated. Groundwater and ground-gas conditions may vary with time from those reported due to factors such as seasonal effects, atmospheric effects and and/or tidal conditions. We recommend that if monitoring installations have been included as part of our investigation, continued monitoring should be carried out to maximise the information gained.

Specific geotechnical features/hazards such as (but not limited to) areas of root-related desiccation and dissolution features in chalk/soluble rock can exist in discrete localised areas - there can be no certainty that any or all of such features/hazards have been located, sampled or identified. Where a risk is identified the designer should provide appropriate contingencies to mitigate the risk through additional exploratory work and/or an engineered solution.

Where a specific risk of ground dissolution features has been identified in our Report (anything above a 'low' risk rating), reference should be made to the local building control to establish whether there are any specific local requirements for foundation design and appropriate allowances should be incorporated into the design. If such a risk assessment was not within the scope of our investigation and where it is deemed that the ground sequence may give rise to such a risk (for example near-surface chalk strata) it is recommended that an appropriate assessment should be undertaken prior to design of foundations.

Where spread foundations are used, we recommend that all excavations are inspected and approved by suitably experienced personnel; appropriate inspection records should be kept. This should also apply to any structures which are in direct contact with the soil where the soil could have a detrimental effect on performance or integrity of the structure.

Ground contamination often exists in small discrete areas - there can be no certainty that any or all such areas have been located, sampled or identified.

The findings and opinions conveyed in this Report may be based on information from a variety of sources such as previous desk studies, investigations or chemical analyses. Soil Consultants Limited cannot and does not provide any guarantee as to the authenticity, accuracy or reliability of such information from third parties; such information has not been independently verified unless stated in our Report. No liability will be accepted for changes to the ground and groundwater conditions which occur post investigation.

Our Report is written in the context of an agreed scope of work between Soil Consultants Ltd and the Client and should not be used in any different context. In light of additional information becoming available, improved practices and changes in legislation, amendment or re-interpretation of the assessment or the Report in part or in whole may be necessary after its original publication.

Unless otherwise stated our investigation does not include an arboricultural survey, asbestos survey, ecological survey or flood risk assessment and these should be deemed to be outside the scope of our investigation.

We will identify tree and plant species if possible, but a suitably qualified arboriculturalist/botanist should be consulted to provide definitive identification.

Where reference to 'topsoil' is made, this should be construed as any turf (if present) plus any obvious organic-rich/humic layer of soil beneath, which may or may not contain roots/rootlets. Unless otherwise requested, we do not provide a detailed description, undertake sampling/testing for classification purposes or provide a specific classification. The thickness of the 'topsoil' identified on our exploratory hole records is indicative only and should not be used for detailed volume or site strip calculations.

STANDARD TERMS OF APPOINTMENT OF SOIL CONSULTANTS LTD FOR GEOTECHNICAL SERVICES

- 1 Unless previously withdrawn, our offer remains valid for a period of sixty days from date of offer. If an instruction is given after the sixty days we reserve the right to reasonably adjust any cost associated with the project to reflect any variance on the original offer. In placing an instruction to proceed with exploratory work, whether directly from the Client or Client's representative, the Client is deemed to have accepted our Terms of Appointment.
- 2 Our offer is on the basis that free, unhindered access and working conditions are available and that the investigation can be completed in one visit, if applicable. Delays beyond our control will incur additional charges. If additional works outside our offer are required to facilitate the investigation these will be advised and any costs will be passed on to the Client.
- 3 In our quotation we will provide an estimate of any mobilisation period following an instruction to proceed. This estimate will be accurate at the time of quotation, but it should be noted that the mobilisation period may vary at a later date due to factors such as sub-contractor availability and workload.
- 4 In commissioning this work, the Client has a responsibility for the health, safety and welfare of operatives invited to undertake work on their site. The Client shall indemnify us in respect of any failure to fulfil their obligations in connection with all relevant and current Health and Safety Regulations.
- 5 The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access, space and budgetary limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique, or where a non-compliant technique has been specified, we will adopt practical and appropriate techniques to obtain indicative soil parameters.
- 6 Unless otherwise stated, our Report should be construed as being a Ground Investigation Report (GIR) as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report (GDR) as defined in BS EN1997-2. Any interpretation which is provided is for guidance only and must not be regarded as design or design recommendation.
- 7 Where excavation is required as part of the exploratory work, the Client shall provide drawings or plans showing accurate and complete locations of all underground services and structures. In performing our service, we shall take reasonable precautions to avoid damage to underground services or structures. We will not be responsible for any damage caused to underground services or structures and will not be liable for any claims for damage, expenses arising or losses unless the location of all underground services or structures are accurately shown on drawings and those plans have been provided to us in good time prior to commencement of the exploratory work. Risk to the Client can be further reduced by undertaking a scan of the site using a specialist underground scanning service which would be intended to identify traceable services at shallow depth.
- 8 With some sites, especially those in certain areas of London and other large towns and cities, there may be a risk of unexploded ordnance (UXO) being present. Unless otherwise stated our offer is on the basis that the Client or their representative provides a preliminary UXO risk assessment for the site. It should be noted that if the site is deemed to be in an area of risk then further measures will be required. These would normally comprise either a more detailed risk assessment and/or specialist site attendance by an EOD engineer. These measures can be commissioned either by the Client or Soil Consultants Ltd. If the Client requires, we would be pleased to obtain a preliminary risk assessment at cost+10%.
- 9 The Client will supply a site plan (to a rational scale), an indication of the scope and type of the proposed development and an indication of any relevant structural loading information.
- 10 Should the Client terminate the contract after instruction, we reserve the right to recover costs associated to work carried out between the time of instruction and the point of termination. Cancellation fees, and material costs shall be charged at cost plus 20% (+VAT). Engineer/technician time shall be charged at £95+VAT per hour and principal consultant/director time shall be charged at £125+VAT per hour.

-
- 11 The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during the investigation. In addition Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata both between the exploratory points and/or below the maximum depth of the investigation; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report.
- 12 We will provide an indication of the strata configuration within the site based upon exploratory holes undertaken. Any strata boundaries shown will relate to the principal layers but it should be noted that these boundaries could be gradational and the depths identified would then not be definitive. The boundary depths/levels are given for guidance only.
- 13 If and when instructed, an agreed number of contamination tests will be carried out to give an outline assessment of potential contaminants. In some circumstances it may be necessary to recommend further monitoring, contamination testing and assessment and the scope of this work would be agreed with the Client. Notwithstanding this additional scope, local regulatory authorities may have specific requirements which need to be addressed. Unless otherwise agreed or stated our reporting will constitute neither a Quantitative Risk Assessment nor a Remediation Statement or Strategy.
- 14 Our reports are counter-checked by one of our suitably qualified and experienced engineers/geologists.
- 15 Notwithstanding anything to the contrary contained in these terms, our liability under or in connection with these terms whether in contract or in tort, in negligence, for breach of statutory duty or otherwise (other than in respect of personal injury or death) shall not exceed the sum equivalent to ten times our contract fee or £100,000 whichever is less in the aggregate for geotechnical and environmental matters unless otherwise agreed.
- 16 Without prejudice to any other exclusion or limitation of liability, damages, loss, expense or costs our liability for any claim or claims under this agreement be further limited to such sum as it would be just and equitable for us to pay having regard to the extent of our responsibility for the loss or damage giving rise to such claim or claims ("the loss and damage") and on the assumptions that:
- (a) All other consultants, contractors, sub-contractors, project managers or advisers engaged in connection with the Project have provided contractual undertakings to the Client on terms no less onerous than those set out in the original contracts in respect of the carrying out of their obligations in connection with the Project; and
 - (b) There are no exclusions of or limitations of liability nor joint insurance or co-insurance provisions between the Client and any other party referred to in this clause and any such other party who is responsible to any extent for the loss and damage is contractually liable to the Client for the loss and damage; and
 - (c) All such other consultants, contractors, sub-contractors, project managers or advisers have paid to the Client such proportion of the loss or damage which it would be just and equitable for them to pay having regard to the extent of their responsibility for the loss and damage.
- 17 Further and notwithstanding anything to the contrary contained in this agreement and without prejudice to any provision in this agreement whereby liability is excluded or limited to a lesser amount, our liability under or in connection with this agreement whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for any claim shall not exceed the amount, if any, recoverable by us by way of indemnity against the claim in question under professional indemnity insurance taken out by us and in force at the time that the claims or (if earlier) circumstances that may give rise to the claim is or are reported to the insurers in question. The limitation shall not apply if no such amount is recoverable due to us having been in breach of our obligations or the terms of any insurance maintained in accordance therewith or having failed to report any such claim or circumstances to the Insurers in question timeously.
-

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- 18 Whilst our investigation may include asbestos screening/quantification on selected samples, this must not be deemed to constitute a full asbestos survey or be taken as sufficient to definitively identify the presence or quantity of asbestos within or on the ground. We will not accept responsibility if asbestos is encountered during any subsequent construction or development works and in placing a contract with us the Client accepts this condition. Where the fabric of a building is to be disturbed, the Client shall provide an appropriate asbestos survey to us prior to exploratory work and make adequate provision to allow the implementation of sufficient and appropriate protective/remedial measures for the work to progress safely.
- 19 Where our report refers to 'topsoil', this should be construed as any turf (if present) plus any obvious organic rich/humic layer of soil beneath, which may or may not contain roots/rootlets. Unless otherwise requested, we do not provide a detailed description, undertake sampling/testing for classification purposes or provide a specific classification. The thickness of the 'topsoil' identified on our exploratory hole records is indicative only and should not be used for detailed volume or site strip calculations; if this type of classification is required, this should be identified to us at an early stage and the method of sampling, testing and classification agreed.
- 20 The Client agrees that they shall not bring any claim personally against any director/employee of Soil Consultants Ltd or consultant to us in respect of loss or damage suffered by the Client arising out of this contract.
- 21 Our appointment shall be under simple agreement and our liability under this contract or in tort shall be for a period of six years from date of appointment.
- 22 Our reports are non-assignable and are prepared for the benefit of the Client. No reliance can be assumed by others without written agreement from Soil Consultants Ltd. We will provide a letter of reliance at our discretion and this will be subject to payment of our fee, which will be 10% of contract value, subject to a minimum fee of £1,250 plus VAT. The terms of our letter of reliance are non-negotiable and the beneficiary should be aware that the information shall only apply to the scheme for which the report was originally produced and the original rights and benefits will apply.
- 23 A VAT invoice (at current rate) will be presented in respect of the work undertaken. Payment of our account is to be made within twenty-eight days of issue of our invoice unless otherwise agreed. On no account shall payment be on a 'pay-when-paid' basis. The information contained within our report remains the property of Soil Consultants Ltd and no reliance may be assumed by any party with an interest in the project until payment has been received in full. After one calendar month interest shall be chargeable at 10% above the Bank of England Rate and compensation claimed in accordance with 'Late Payments of Commercial Debts (Interest) Act 1998 and subsequent revisions. If the debt is referred to a debt collection agency then we have the right to recover associated fees under the terms of our contract.

APPENDIX

Fieldwork, in-situ testing and monitoring

-  Foreword
-  Standard Penetration Test results
-  SPT hammer calibration certificates
-  Window sample borehole records

Ground profiles

-  Plot of SPT 'N' value versus depth
-  Hand vane profile versus depth

Plans, drawings & photographs

-  Site Plan
-  Location Plan

FOREWORD FOR DYNAMIC SAMPLER BOREHOLES (WINDOWLESS) - GUIDANCE NOTES

GENERAL

The borehole records are compiled from the driller's description of the strata encountered, an examination of the samples by our geotechnical engineer and the results of in-situ and laboratory tests. Based on these data, the report presents an opinion on the configuration of strata within the site. However, such reasonable assumptions are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes.

BORING METHODS

The dynamic sampler technique uses 1m long tubes containing a rigid plastic liner. These are driven into the ground by a falling hammer, then withdrawn and the liner removed. The borehole commences using a large diameter tube (usually 100mm) with each succeeding tube reducing usually by 10mm in diameter to assist the extraction of the tube from the ground. Thus, it is theoretically possible to obtain a total continuous sample of the soil for examination or testing. Casing can be utilised as required. The technique allows the ground conditions to be reasonably well established although disturbance of the ground is inevitable, particularly some "softening" of the upper zone of clay immediately beneath a granular soil. The presence of thin layers of different soils within a stratum may not always be detected.

GROUND WATER

The depth at which ground water was struck is entered on the borehole records. However, this observation may not indicate the true water level at that time. Due to the speed of boring and the relatively small diameter of the borehole, natural ground water may be present at a depth higher than the water strike. Moreover, ground water levels are subject to variations caused by changes in the local drainage conditions and by seasonal effects. When a moderate inflow of water does take place, boring is suspended for at least 10 minutes to enable a more accurate short-term water level to be achieved. An estimate of the rate of inflow is also given. This is a relative term and serves only as a guide to the probable flow of water into an excavation.

Further observations of the water level made during the progress of the borehole are shown including end of shift and overnight readings and the depth at which water was sealed off by the borehole casing, if applicable.

SAMPLES

Small disturbed samples can be recovered from the lining tubes for subsequent laboratory testing, including moisture content, index property tests and contamination analyses.

IN-SITU TESTING

Standard Penetration Test (SPT): this test is performed in accordance with the procedure given in BS EN ISO 22476-3:2005. The individual blow count record for each test is given on a separate table. The 'N' value is normally the number of blows to achieve a penetration of 0.3m following a seating distance of 0.15m and is quoted at the mid-depth of the test zone. However if a change of stratum occurs within the test zone then a revised 'N' value can be calculated to assess one layer in particular. In hard strata full penetration may not be obtained. The presence of groundwater and particularly Where groundwater can affect the test and the measured values may not represent the true in-situ density of the soil.

Hand Shear Vane: provides the shear strength of cohesive soils, values reported in kPa

Pocket Penetrometer: provides an estimate of the unconfined compression strength, values reported in kg/cm²

Mallinson Sports Centre Phase 2						Borehole No: BH03		
Highgate School, Bishopswood Road, London N6 4NY								
Client: Highgate School				Coordinates: 528008E, 187768N		Sheet 1 of 1		
Engineer: Pringuer-James Consulting Engineers Ltd				Ground Level: +109.10mOD		Report No: 10930/OS		
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation
	Type	Depth (m)		Depth (m)	Level (m)			
BH commenced: 16/02/2024				0.20	108.90		Grass over dark brown, clayey, silty sandy TOPSOIL with occasional flint gravel and frequent live rootlets.	
				0.35	108.75		MADE GROUND: Soft to firm, dark brown, clayey silty slightly sandy gravelly clay. Gravel is angular to rounded, fine to coarse flint with brick, slate and clinker fragments. Frequent live rootlets.	
Water depth in inspection pit: 0.80m							Firm, orange mottled light orange grey, silty sandy slightly gravelly CLAY. Gravel is angular to rounded, fine to medium flint, locally coarse. Frequent live rootlets, occasional manganese staining and rare relict rootlets.	
Inspection pit to 1.00m	SPT/C	1.00	N=11	1.00	108.10		Soft to firm, orange brownish mottled grey silty, very sandy CLAY.	1
BH dia: 100mm reducing with depth	HV	1.50	30					
Strata appeared damp below about 1.20m	HV	1.80	35					
	SPT/C	2.00	N=11					2
							Between 2.60m and 2.80m,: brown laminated grey.	
	SPT/C	3.00	N=14				Below 2.80m: dark grey laminated brown, locally grading to very clayey sand, with rare relict rootlets.	3
				3.50	105.60		Stiff, fissured, grey, silty sandy CLAY with occasional partings of light grey fine sand. Locally very sandy.	
							Below 3.70m, frequent partings of black pyritic fine sand.	
	SPT/C	4.00	N=16				Between 4.00m and 4.50m: grey clayey silty sand (very damp).	4
	SPT/C	5.00	N=16					5
BH complete: 16/02/2024				5.45	103.65		End of hole at 5.45m	
BH depth: 5.45m								6
Water at end of drilling: 1.52m								
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler
Remarks: Coordinates and ground level interpolated from Randall Surveys LLP drawing (Ref: 38489/JV/1, Jan 16)								Borehole No: BH03

Mallinson Sports Centre Phase 2							Borehole No: BH05	
Highgate School, Bishopswood Road, London N6 4NY								
Client: Highgate School					Coordinates: 528038E, 187755N		Sheet 1 of 1	
Engineer: Pringuer-James Consulting Engineers Ltd					Ground Level: +110.00mOD		Report No: 10930/OS	
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation
	Type	Depth (m)		Depth (m)	Level (m)			
BH commenced: 16/02/2024				0.20	109.80		Grass over dark brown, clayey, silty sandy TOPSOIL with occasional flint gravel and frequent live roots and rootlets.	
				0.40	109.60		MADE GROUND: Soft, dark brown, silty sandy gravelly clay. Gravel is angular to rounded, fine to coarse flint with brick, clinker and tile fragments. Frequent live roots and rootlets. Soft to firm, orange greyish, silty sandy gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. Frequent live rootlets and rare live roots to 0.70m. Occasional relict rootlets and manganese staining.	
Inspection pit to 1.00m	SPT/C	1.00	N=11	1.00	109.00		Firm, orange mottled grey, silty slightly sandy to sandy CLAY with occasional partings of yellow orangish brown silt (possible iron weathering).	1
BH dia. 100mm reducing with depth								
	HV	1.80	55					
	HV	1.90	60					
	SPT/C	2.00	N=9					2
	HV	2.50	60				Between 2.40m and 2.85m, is grey brown mottled orange	
	HV	2.85	50	2.85	107.15		At 2.80m, rare claystone.	
	SPT/C	3.00	N=16				Stiff, fissured, grey brownish, silty very sandy CLAY with occasional partings of light grey fine sand.	3
	SPT/C	4.00	N=16				Between 4.00m and 4.45m: grey silty sand (very damp).	4
							Below 4.60m, occasional partings of black pyritic fine sand.	
	SPT/C	5.00	N=20					5
BH complete: 16/02/2024								
BH depth: 5.45m								
Water at end of drilling: 2.5m				5.45	104.55		End of hole at 5.45m	6
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler
Remarks: Coordinates and ground level interpolated from Randall Surveys LLP drawing (Ref: 38489/JV/1, Jan 16)								Borehole No: BH05

Site & Location	Mallinson Sports Centre Phase 2 Highgate School, Bishopswood Road, London N6 4NY	Report No:	10930/OS
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STANDARD PENETRATION TEST SUMMARY

BH ID	Depth (m)	Test type	N value (Note b)	Blow-counts and penetration						Casing depth (m)	Water depth (m)	Remarks
				Seating blows		Test blows						
BH03	1.00	C	N=11	2	2	2	3	3	3		Dry	
BH03	2.00	C	N=11	2	2	2	2	3	4		Dry	
BH03	3.00	C	N=14	3	3	3	3	4	4		Dry	
BH03	4.00	C	N=16	3	3	4	4	4	4		Dry	
BH03	5.00	C	N=16	3	3	4	4	4	4		Dry	
BH04	1.00	C	N=10	2	2	2	2	3	3		Dry	
BH04	2.00	C	N=14	2	3	3	3	4	4		Dry	
BH04	3.00	C	N=15	3	3	3	4	4	4		Dry	
BH04	4.00	C	N=19	4	4	4	5	5	5		Dry	
BH04	5.00	C	N=16	4	4	4	4	4	4		Dry	
BH05	1.00	C	N=11	2	2	2	3	3	3		Dry	
BH05	2.00	C	N=9	2	2	2	2	2	3		Dry	
BH05	3.00	C	N=16	3	3	4	4	4	4		Dry	
BH05	4.00	C	N=16	3	4	4	4	4	4		Dry	
BH05	5.00	C	N=20	4	4	5	5	5	5		Dry	
	</											

a) Standard Penetration Test : BS EN ISO 22476:2005 Part 3

b) Where full penetration was not achieved, the total test blow-counts are reported

c) Hammer Energy Ratio, Er = 64%

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

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

SPT Hammer Ref: DART312
Test Date: 03/11/2023
Report Date: 08/11/2023
File Name: DART312.spt
Test Operator: NPB

Instrumented Rod Data

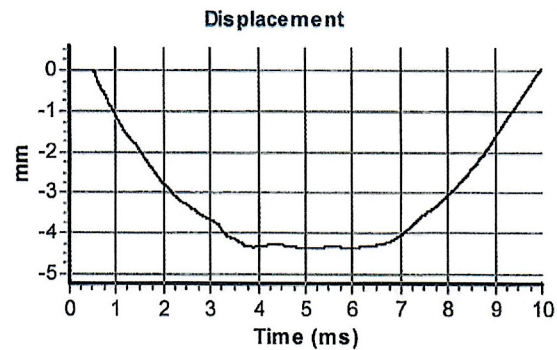
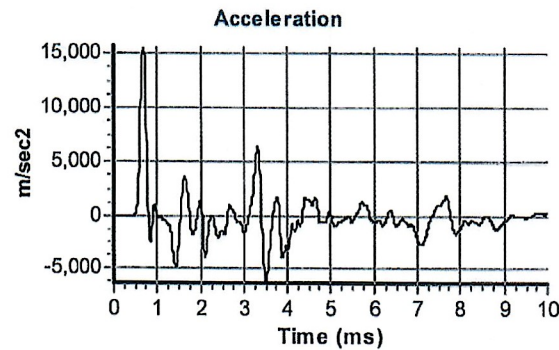
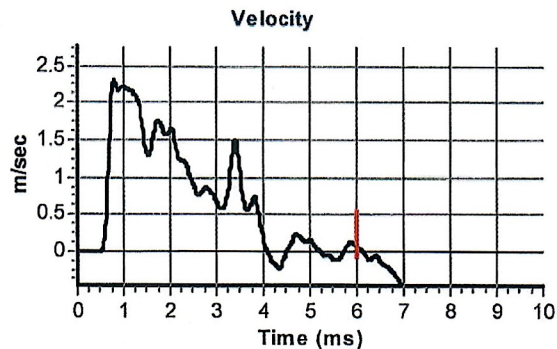
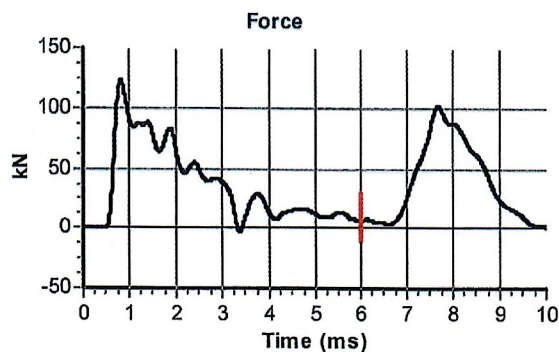
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.6
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 64786
Accelerometer No.2: 64789

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 14.7

Comments / Location

CHARLWOODS



Calculations

Area of Rod A (mm²): 983
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 302

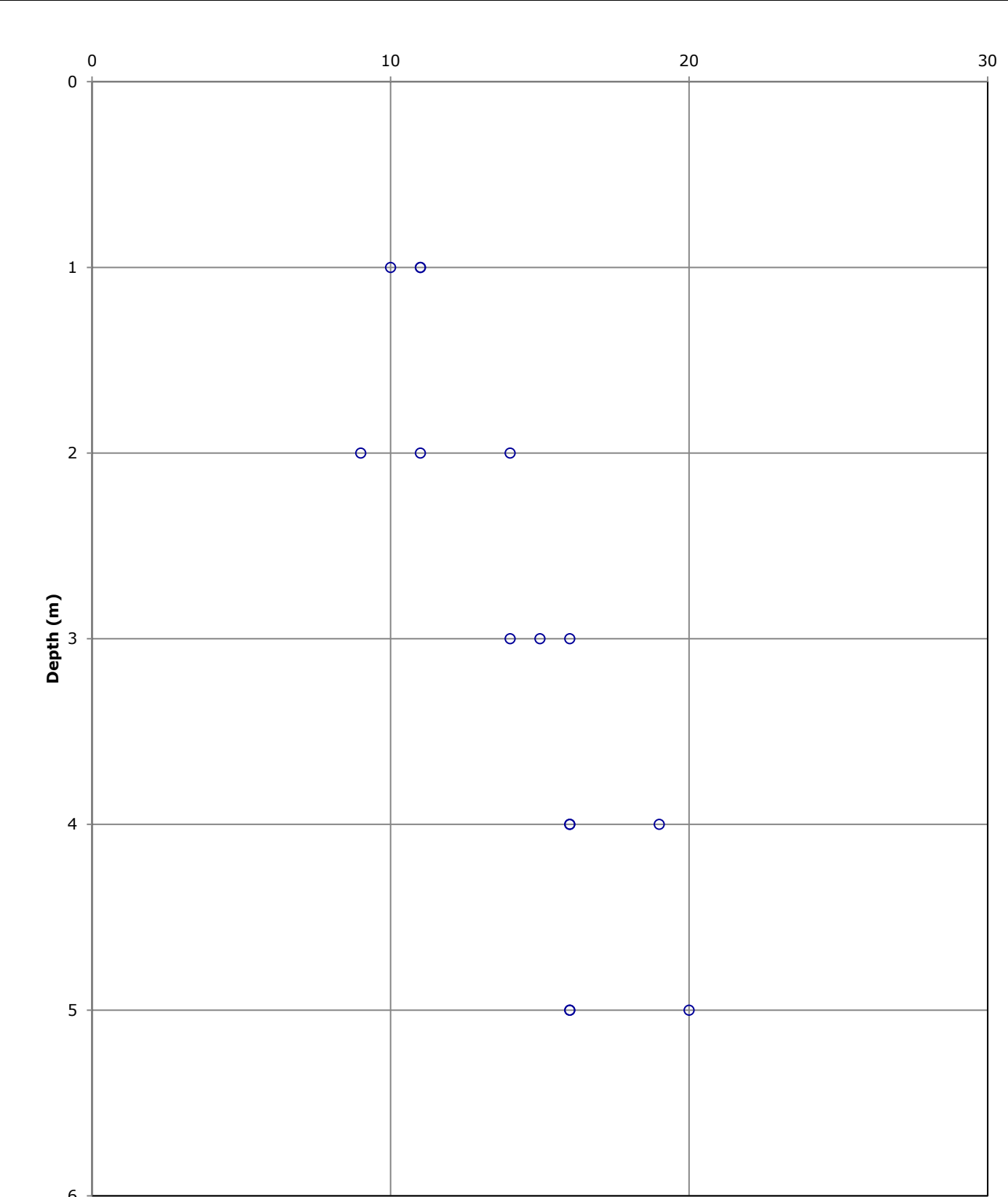
Energy Ratio E_r (%):

64

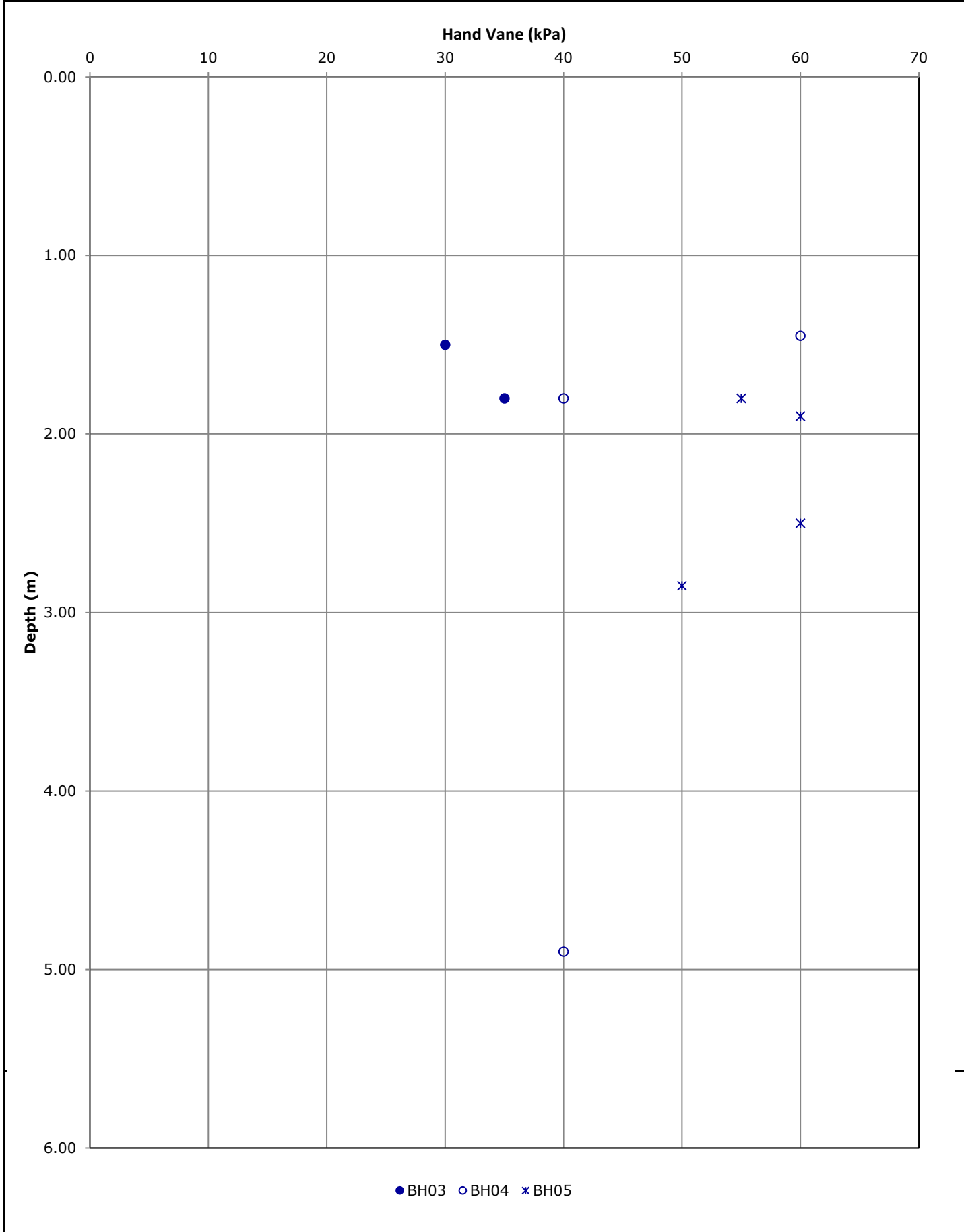
Signed: G Crane
Title: Technician

The recommended calibration interval is 12 months

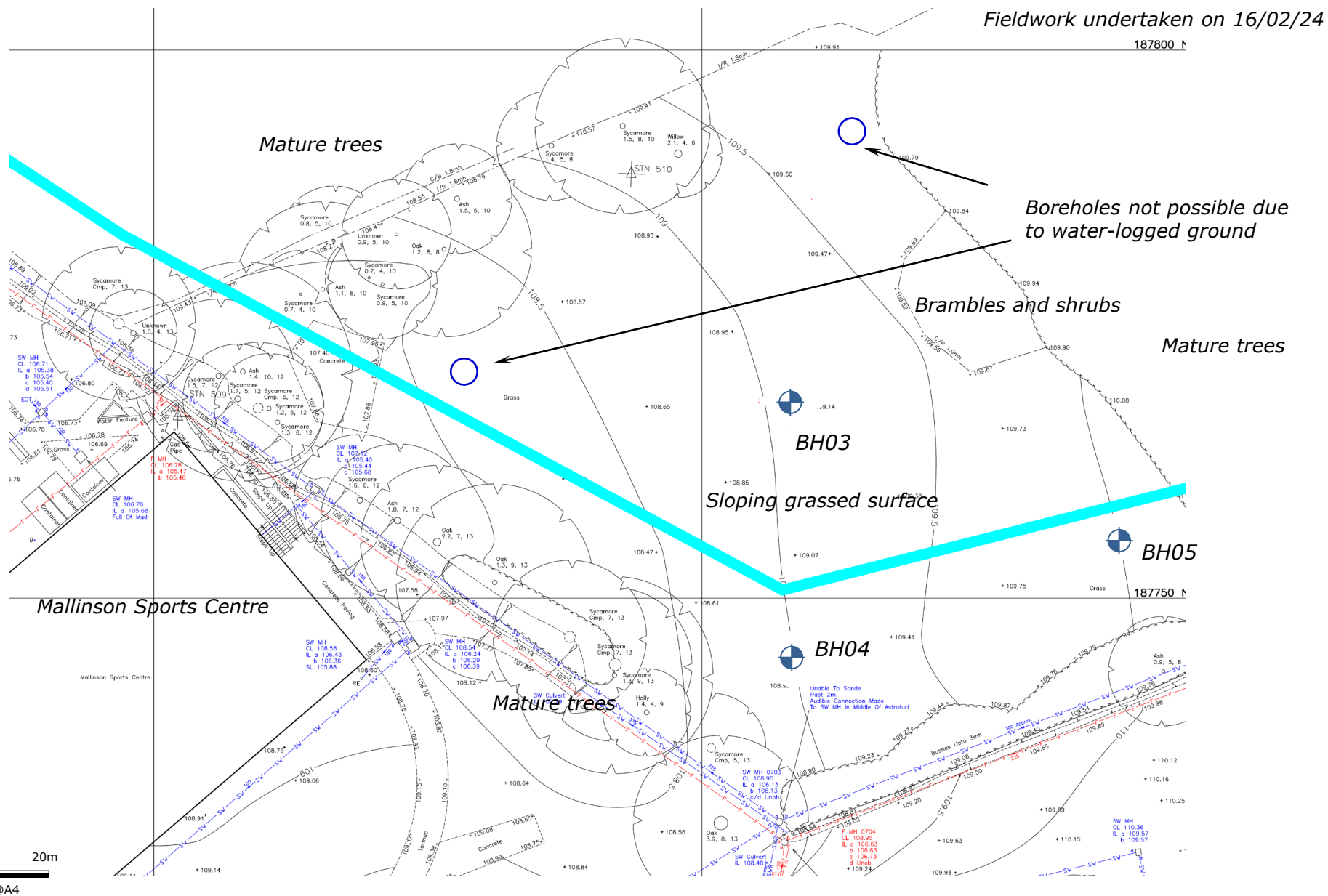
SPT-N vs depth



Hand Vane profile vs depth



Site Plan



Location Plan



SITE LOCATION

[Contains Ordnance Survey data © Crown copyright and database right 2024]

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Chiltern House, Earl Howe Road, Holmer Green
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e: mail@soilconsultants.co.uk

Harwich Office:

Haven House, Albemarle Street
Harwich, Essex CO12 3HL
t: 01255 241639
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Appendix D: Arboriculturist Letter



SJ Stephens Associates

ARBORICULTURAL, LANDSCAPE & MANAGEMENT CONSULTANTS

A-Squared Studio
One Westminster Bridge Road
London
SE1 7XW

Attn: Alex Corrigan

16th August 2024

Dear Alex,

**Re: Possible impact of tree removal relating to proposals for the Mallinson Sports Centre
and creation of a Flood Storage Basin at Highgate School**

The Tree Removal Plan attached shows tree removals proposed as part of this project.

A group of trees will be removed to create a flood storage basin. The closest tree to properties on Broadlands Road is 59m from the closest house and 16m from a tennis court. At this distance there is no possibility of tree removals having any adverse effect on the properties.

Two trees on Bishopswood Road and a small cherry on Broadlands Road will be removed. With the roads separating the trees from adjacent properties, there is no possibility of tree removals having any adverse effect on the properties, which in any case are owned by the school rather than third parties.

If you require any further information, please get in touch.

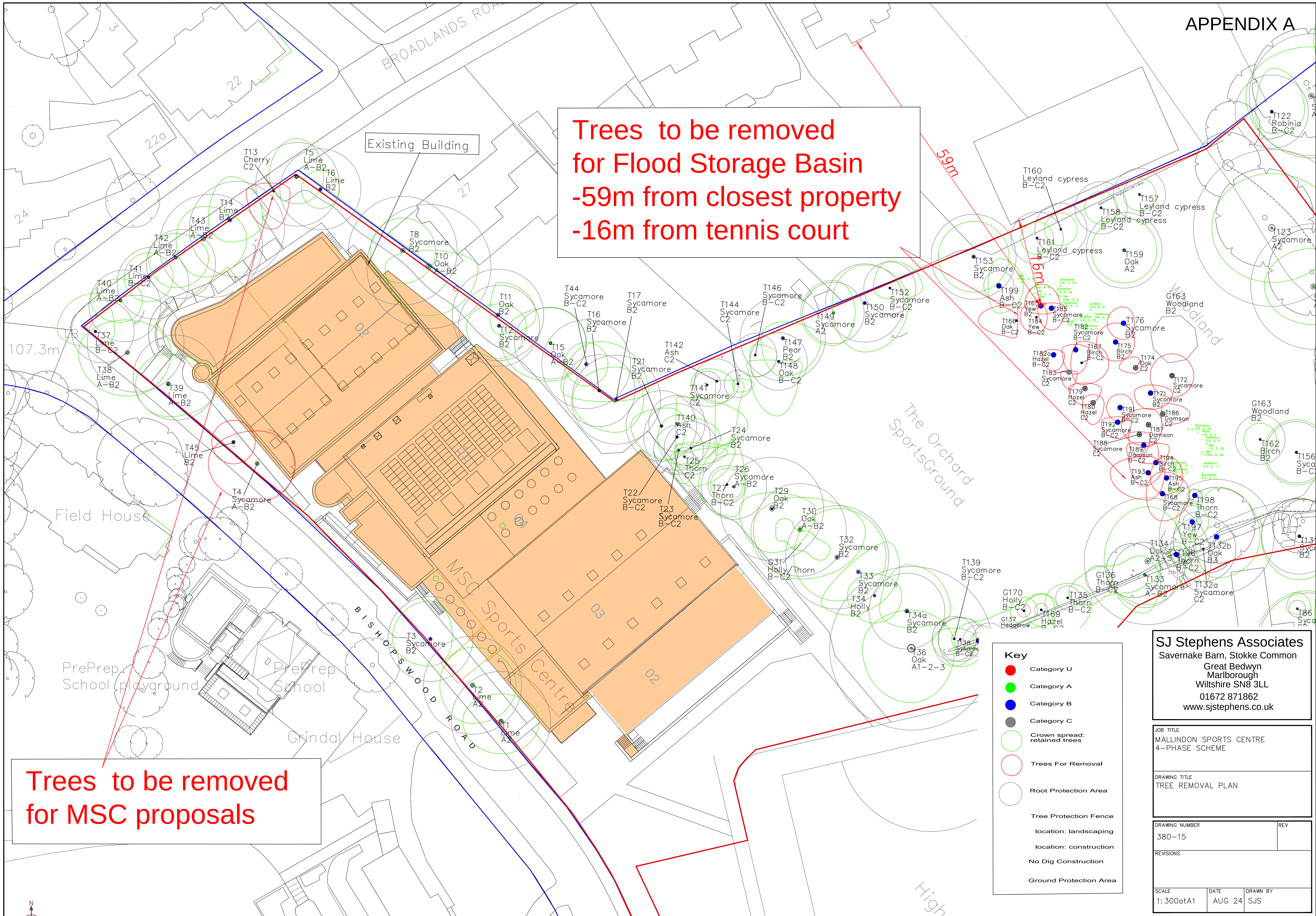
Yours sincerely,



Simon Stephens
Arboricultural Association Registered Consultant
MA Oxon, Dip Arb(RFS), MArborA. CEnv, MICF

Trees to be removed
for Flood Storage Basin
-59m from closest property
-16m from tennis court

Trees to be removed
for MSC proposals



Key

- Category U
- Category A
- Category B
- Category C
- Crown spread: retained trees
- Trees For Removal
- Root Protection Area
- Tree Protection Fence
- location: landscaping
- location: construction
- No Dig Construction
- Ground Protection Area

SJ Stephens Associates
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Great Bedwyn
Marlborough
Wiltshire SN8 3LL
01672 871862
www.sjstephens.co.uk

JOB TITLE
MALLINDON SPORTS CENTRE
4-PHASE SCHEME

DRAWING TITLE
TREE REMOVAL PLAN

DRAWING NUMBER
380-15

REVISIONS

SCALE
1:300atA1

DATE
AUG 24

DRAWN BY
SJS

Site Plan – Water monitoring boreholes

