geotechnical and environmental consultants

ground&water

Phase II Site Investigation Report

Land adj. to Church Lane, Climping, West Sussex, BN17 5GG

On behalf of Foreman Homes

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Issue	Prepared By	Checked By	Verified By
v.1.02	[redacted]		
	Alex Stratford BSc (Hons) MSc Geotechnical and Geoenvironmental Engineer	Miltiadis Mellios MSc(Eng) CGeol FGS MIEnvSc GMICE Principal Engineer	Francis Williams MGeol (Hons) FGS CEnv CGeol Director

Site Investigations | Environmental Consultants | Geotechnical Engineers

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

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EXECUTIVE SUMMARY	
PROPOSED DEVELOPMENT	At the time of reporting, August 2024, the proposed development was understood to comprise the construction of 300 residential housing plots comprising a mixture of residential flats, terraced, semi-detached and detached properties with associated garden and soft landscaping areas garages and new roads and supporting infrastructure. A pumping station is to be constructed on the eastern portion of the site. There will be 9 attenuation ponds mainly across the eastern and central area of the site. A new roundabout and road junction will be installed on the south-eastern corner of the site.
GEOLOGY AND HYDROGEOLOGY	The British Geological Survey (BGS) maps and DEFRA online maps for the area suggest that the western portion of the site was located on the superficial River Terrace Deposits (Sand Silt and Clay) with the eastern portion of the site located on the Raised Beach Deposits. Both are classified as Secondary A superficial aquifers, overlying the Lewes nodular chalk, Seaford chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk Formations, classified as a Principal Aquifer. Based on this, it was anticipated that groundwater would be found at shallow to moderate depths within the Raised Beach deposits and River Terrace deposits. The main groundwater table though is expected at depth within the chalk formations.
VOLUME CHANGE POTENTIAL	Foundations should be designed in accordance with soils of medium volume change potential.
FOUNDATION DESIGN	Based on the previous section, foundations should bypass any Made Ground/Topsoil and soft spots/loose granular soils, before extending 300mm below the proved depth of root penetration. Therefore, foundations would be constructed at varying depths across the site on competent, moisture stable soils of the River Terrace Deposits but in certain areas across the site a piled foundation solution is required.
SUB-SURFACE CONCRETE	According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-1 could be used for sub-surface concrete in contact with the Topsoil, River Terrace Deposits, Raised beach Deposits and Chalk Formations. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-1.
CONTAMINATION	Chemical laboratory testing of the Topsoil and River Terrace Deposits did not reveal any elevated levels of determinands above the guideline levels for a 'Residential With Homegrown Produce' land-use scenario.

	In addition, the intrusive investigation did not reveal any visual or olfactory evidence to suggest any hydrocarbon-type contamination in the trial holes excavated on the site. The chemical laboratory results have verified that no elevated concentrations of aliphatic/aromatic hydrocarbons (C5-C35) or BTEX compounds are present in the soils underlying the site. Given the low levels of determinands noted during the chemical laboratory testing, it was considered that no remediation was required within the soils for the end users of the site. However, it is recommended that further soil sampling be undertaken across the site on more samples to confirm this risk assessment as at this stage only a small number of samples have been tested.
REMEDIATION	Given the low levels of determinands noted during the chemical laboratory testing, it was considered that no remediation was required within the soils for the end users of the site. An Asbestos Management Strategy should be put in place so that any potential asbestos containing materials are identified and removed from the site in a suitable manner to prevent cross-contamination. It is recommended that further soil sampling be undertaken across the site to confirm this risk assessment as at this stage only a small number of samples have been tested. A nominal 100mm capping of clean topsoil is required in all areas of proposed soft landscaping to act as a suitable growing medium.

1. INTRODUCTION

1.1. General

Ground and Water Limited were instructed by Forman Homes on the 17th May 2024 to conduct a Phase 2 Site investigation and additional site investigation works on the site at Land adj. to Church Lane, Climping, West Sussex, BN17 5GG. The scope of the investigation was detailed within the fee proposal QU0370, dated the 22nd April 2024.

1.2. Aims of the Investigation

The aim of this report was to supply the client and their designers with information regarding the ground conditions underlying the site to assist them in preparing an appropriate scheme for development.

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

A contamination assessment was to be undertaken following chemical laboratory testing on soil samples recovered from the site to enable recommendations for the safe redevelopment of the site and the protection of site workers, end-users and the public from any potential contamination identified.

This Site Investigation Report must be read in conjunction with the **Geotechnical Desk Study and Chalk Dissolution Report** referenced GWPR5903/DS/February 2024 and the first phase of site investigation works GWPR5921/July 2024. A full contamination desk study has not been undertaken on site and was not within the remit of this report.

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

1.3. Conditions and Limitations

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

Reference has been made to a historical site investigation by another company. Ground and Water Limited cannot be held liable for any shortcomings.

This report has superseded the previously issued reports, GWPR5921/July 2024 and GWPR6003/July 2024.

1.4. Technical Glossary

Generic technical terms and their description can be viewed within the glossary provided within Appendix B.

2. SITE SETTING

2.1. Site Location

The site comprised a ~254,600m^2 roughly rectangular shaped plot of land, with a north-east to south-west orientation, situated along the northern side of the A259 road and the western side of Church Lane. The site was located to the south-west of the village center of Climping within the county of West Sussex. A site location plan has been provided within Figure 1.

The national grid reference for the centre of the site was approximately TQ 00062 02007.

2.2. Site Description

The site comprised undeveloped agricultural fields with dense woodland located along the western and southern boundaries. The A259 road is located to the south of the site, Church Lane to the east and Yapton Road to the west. A housing development was located to the north of the site. A view of the site development area has been provided within Figure 2, with an aerial view of the site provided in Figure 3.

2.3. Proposed Development

At the time of reporting, August 2024, the proposed development was understood to comprise the construction of 300 residential housing plots comprising a mixture of residential flats, terraced, semi-detached and detached properties with associated garden and soft landscaping areas garages and new roads and supporting infrastructure. A pumping station is to be constructed on the eastern portion of the site. There will be 9 attenuation ponds mainly across the eastern and central area of the site. A new roundabout and road junction will be installed on the south-eastern corner of the site. The proposed development plan can be viewed in figure 4.

2.4. Historical Mapping

The site formed part of a larger undeveloped area of undeveloped agricultural land with two residential properties recorded on the far northern and western parts of the site from the earliest available map (1876). The village of Climping was recorded to the north-east of the site. The 1912 plan showed the building on the northern portion of the site had been demolished but no other significant changes were recorded on site or to the site environs. The 1937 plans show a number of houses had been built to the north/north-west of the site, but no other significant changes were recorded. The land directly to the north had plant nurseries and greenhouses constructed on it at some time between the late 1960's and early 1970's. Between 1975 and 1994 the residential house on the north-western corner of the site had been demolished but the rest of the site remained unchanged and undeveloped. A works was noted approximately 250m north of the site associated with Rudford Industrial estate. Between 1973 and 1994 the industrial estate increased in size with new works buildings and units and an electricity sub-station building 200m north and 225m north-west of the site. The 11981 plans show the Ford Aerodrome located approximately 300m north of the site. This is the first plan it is recorded on, but the site was likely used as a WWII airbase and hence was not recorded on any maps. The green houses and nurseries just to the north of the site were demolished and replaced by residential houses between 2001-2010. No other significant changes were noted on site or to the site environs up to the present day (2024).

Historical maps, obtained from GroundSure, can be viewed within Appendix C.

2.5. Geology, Hydrogeology and Hydrology

The British Geological Survey (BGS) maps and DEFRA online maps for the area suggest that the western portion of the site was located on the superficial River Terrace Deposits (Sand Silt and Clay) with the eastern portion of the site located on the Raised Beach Deposits. Both are classified as Secondary A superficial aquifers, overlying the Lewes nodular chalk, Seaford chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk Formations, classified as a Principal Aquifer. Based on this, it was anticipated that groundwater would be found at shallow to moderate depths within the Raised Beach deposits and River Terrace deposits. The main groundwater table though is expected at depth within the chalk formations.

The nearest surface water feature was observed to be an issue stream associated with the River Arun located 150m east of the site with the River Arun itself located 650m north-east of the site.

Examination of the Environment Agency records showed that the site fell within a Flood Zone 1 (an area with a low probability of fluvial or coastal flooding). The site was not protected by flood defences or benefiting from flood storage.

A BGS borehole record in similar geology ~180m north-east of the site (ref.: TQ00SW120) noted slightly silty gravelly Clay (likely Topsoil) to 0.50m bgl, overlying a sandy gravelly Clay with small chalk fragments to 1.60m bgl. An off white, grey putty chalk with sandy clay was recorded below to 3.00m bgl with a moderately hard off white to white chalk to the base of the borehole at 6.00m bgl. Groundwater was encountered at 3.00m bgl and rose to 2.40m bgl overnight.

2.6. Radon

A review of the freely available UK Health Security Agency radon database, UK Radon, indicated that the site was located within a 1km grid square, where the maximum radon potential of <1% was recorded. Basic radon protection measures are required in areas where more than 3% of houses are at or above the Action Level.

The site was in an area where a risk assessment was not required.

Therefore, no radon protection measures are required for properties across the site.

2.7. Internet Search (Site Setting)

2.7.1. Available Unexploded Ordnance (UXO) Map Review

A review of the data available on www.zeticauxo.com/ revealed the site was located within a low -risk area associated with unexploded ordnance (UXO), as indicated by having <15 bombs dropped per 1000 acres. A total of 1No. known Luftwaffe Bombing Target site was located ~900m north of the site.

2.7.2. Historical Landfill Tool Review

A review of the data available on www.groundsure.io/ revealed that no areas of Historical or authorised Landfilling were located within a 500m radius of the site.

2.8. Previous site investigation works

A stage 2 Site Investigation was undertaken by Your Environment in February 2019, the report is referenced in Appendix K.

As part of the site works 15No. Windowless sampler boreholes were drilled on site in January 2019. The windowless sampler boreholes were drilled to depths of 4.45m bgl. The general ground conditions comprised a topsoil which was recorded to depths of up to 0.75m bgl comprising a sandy clay. Underlying the topsoil was a sandy silty gravelly Clay recorded to the base of the boreholes in WS3, WS8, WS11 and WS15. Underlying the clays a gravelly sand was recorded to depths of between 1.68 and 4,45m bgl in WS4, WS5, WS7 and WS12. Underlying the superficial deposits the chalk was recorded at depths of between 1.80-3.50m bgl to the base of the boreholes in WS1, WS2, WS6, WS9, WS10, WS13 and WS14. SPT tests undertaken at 1.20m bgl in the clays recorded N values of 8-12 equating to medium undrained shear strength. SPT's at 2.00m bgl recorded N values of 9-60, 7 to 45 at 3.00m bgl and 40-46 at 4.00m bgl.

Groundwater was recorded at depths of between 2.00-3.10m bgl in boreholes WS1, WS2, WS3, WS5, WS7, WS13.

Concrete classification testing recorded water-soluble sulphate concentrations of between 10-16mg/l with pH values of 7.2 to 7.8.

Geotechnical testing results of samples taken on site recorded moisture contents of between 16-28% and modified plasticity indexes of between 6%-26%.

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3. SITE WORKS

3.1. Scope of Works

Site works were undertaken between the 13th March and 28th March 2024 and comprised the drilling of 6No. Windowless Sampler Boreholes (WS1 – WS5 and WS7) to depths of between 3.00 – 5.00m bgl with Standard Penetration Tests at 1.00m intervals.

Combined Ground-gas and Groundwater Monitoring Well Construction					
Trial Hole	Depth of Installation (m bgl)	Thickness of slotted piping with gravel filter pack (m)	Depth of plain piping with bentonite seal (m bgl)	Response Zone (m bgl)	Piping internal diameter (mm)
WS1	5.00	4.00	1.00	1.00 – 5.00	50
WS2	5.00	4.00	1.00	1.00 – 5.00	50
WS3	3.00	2.00	1.00	1.00 – 3.00	50
WS4	5.00	4.00	1.00	1.00 – 5.00	50
WS5	4.00	3.00	1.00	1.00 – 4.00	50
WS7	5.00	4.00	1.00	1.00 – 5.00	50

In addition, 12No. Trial pits referenced BRE1-BRE12 were excavated to depths of between 0.50-1.50m bgl for BRE365 soakaway testing. A further 23No. trial pits referenced CBR1-CBR23 were excavated to depths of between 1.80-2.20m bgl.

34No. CPT holes were drilled between the 13th and 15th March 2024.

The trial hole location plan for the WS, BRE and CBR's can be seen within Figure 5 with the CPT locations shown in figure 6.

7No. Cable Percussion boreholes (BH1-BH7) were drilled to depths of 20.00m bgl between the 21st May 2024 and 6th June 2024. Standard Penetration Tests were undertaken at 1.00m intervals from 1.20-5.20m bgl and then at 1.50m intervals below to the base of the boreholes.

The Borehole location plan can be seen in figure 7.

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

As a further precautionary measure, the borehole was hand excavated to 1.20m below the local ground level (bgl) and scanned with a Cable Avoidance Tool (CAT scanner) to minimise the risk to services.

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

3.2. Sampling Procedures

Small disturbed samples and environmental samples were recovered from the trial holes at the depths shown on the trial hole records. Soil samples were generally retrieved from each change of strata

and/or at specific areas of concern. Samples were also taken at approximately 0.5m intervals during broad homogenous soil horizons.

A selection of samples were despatched to a laboratory for both geotechnical and chemical testing purposes.

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4. ENCOUNTERED GROUND CONDITIONS

4.1. Soil Conditions

The trial holes were logged by a Ground and Water Limited representative, generally in accordance with BS EN 14688 'Geotechnical Investigation and Testing – Identification and Classification of Soil'. The chalk samples were logged in accordance with CIRIA 574.

The ground conditions encountered within the trial holes constructed on the site did generally conform to that anticipated from examination of the geology map. A capping of Topsoil was noted to overlie the superficial River Terrace Deposits and Raised Beach Deposits and the bedrock Lewes Nodular chalk formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk and Portsdown Chalk Formation.

The succession of conditions and description of soils encountered in the trial holes in descending order is tabulated below.

Summary of Strata Encountered (WS1-WS5, WS7)			
Strata	**Top Depth (m bgl)**	**Base Depth (m bgl)**	**Thickness (m)**
TOPSOIL: Dark brown gravelly sandy CLAY. Sand is fine.to medium Gravel is fine to coarse sub-angular flint.	GL	0.20	0.20
RIVER TERRACE DEPOSITS: Dark brown gravelly sandy CLAY. Sand is fine. Gravel is fine to coarse sub-angular flint.	0.20	1.50 – >3.00	1.30 – >2.80
RAISED BEACH DEPOSITS: Dark brown slightly gravelly SAND. Sand is fine. Gravel is fine to sub-angular to sub-rounded flint.	2.00	3.00 – >5.00	1.00 – >3.00
LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION (WS2, WS4, WS5): Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574).	1.50-3.00	>4.00->5.00	>2.00->3.50

Summary of Strata Encountered (BRE1-BRE12)			
Strata	**Top Depth (m bgl)**	**Base Depth (m bgl)**	**Thickness (m)**
TOPSOIL: Dark brown gravelly sandy CLAY. Sand is fine.to medium Gravel is fine to coarse sub-angular flint.	GL	0.20-0.30	0.20-0.30
RIVER TERRACE DEPOSITS: Dark brown gravelly sandy CLAY. Sand is fine. Gravel is fine to coarse sub-angular flint.	0.20-0.70	>0.50 – >1.50	>0.30 – >1.30
RIVER TERRACE DEPOSITS: Greyish brown slightly gravelly silty fine SAND. Gravel is fine and medium sub-angular of flint.	0.30	0.70	0.40

Summary of Strata Encountered (CBR1-CBR23)			
Strata	**Top Depth (m bgl)**	**Base Depth (m bgl)**	**Thickness (m)**
TOPSOIL: Dark brown gravelly sandy CLAY. Sand is fine.to medium Gravel is fine to coarse sub-angular flint.	GL	0.20-0.50	0.20-0.50
RIVER TERRACE DEPOSITS: Dark brown gravelly sandy CLAY/ gravelly clayey SAND. Sand is fine. Gravel is fine to coarse sub-angular flint.	0.20-0.50	0.80 – >2.20	0.60 – >2.00
RAISED BEACH DEPOSITS: Dark brown slightly gravelly SAND. Sand is fine. Gravel is fine to sub-angular to sub-rounded flint.	0.80-1.00	>2.00 – >2.20	>1.00 – >1.40

LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FOIRMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION (CBR2 Only): Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574).	1.80	>2.20	>0.40

Summary of Strata Encountered (BH1-BH7)			
Strata	**Top Depth (m bgl)**	**Base Depth (m bgl)**	**Thickness (m)**
TOPSOIL: Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.	GL	0.30-0.40	0.30-0.40
RIVER TERRACE DEPOSITS: Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium subangular Flint and chalk.	0.30-0.40	3.20 – 5.20	2.80 – 4.90
RIVER TERRACE DEPOSITS: Brown, grey, yellow, gravelly clayey SAND. Sand is fine to coarse. Gravel is fine to medium subangular flint.	3.70 – 4.60	5.20 – 6.70	1.40 – 2.10
LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION: Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). Bands of dark grey cobbles of Flint throughout.	3.20-6.70	>20.00	>13.30->16.80

For details of the composition of the soils encountered at particular points, reference must be made to the individual trial hole logs within Appendix D of this report. The trial hole location plan for the WS, BRE and CBR's can be seen within Figure 5 with the CPT locations shown in figure 6 and the cable percussion boreholes shown in figure 7.

4.2. Roots Encountered

A summary of the depth of root penetration can be viewed below.

Summary of Root Penetration	
Trial Hole	**Fresh Root Depth (m bgl)**
WS1	0.60
WS2	0.80
WS3	1.00
WS4	0.80
WS5	1.00
WS7	0.20
BRE1	0.30
BRE2	0.20
BRE3	0.30
BRE4	0.40
BRE5	0.30
BRE6	0.20
BRE7	0.30
BRE8	0.30
BRE9	0.40
BRE10	0.20

BRE11	0.20
BRE12	0.20
CBR1	0.50
CBR2	0.20
CBR3	0.40
CBR4	0.30
CBR5	0.40
CBR6	0.30
CBR7	0.30
CBR8	0.20
CBR9	0.20
CBR10	0.40
CBR11	0.40
CBR12	0.30
CBR13	0.20
CBR14	0.20
CBR15	0.30
CBR16	0.40
CBR17	0.30
CBR18	0.40
CBR19	0.20
CBR20	0.40
CBR21	0.40
CBR22	1.00
CBR23	>2.00
BH1	0.50
BH2	1.20
BH3	0.80
BH4	1.00
BH5	0.40
BH6	1.00
BH7	1.70

It must be noted that the chance of determining actual depth of root penetration through a narrow diameter borehole is low. Roots may be found to greater depths at other locations on the site, particularly close to trees and/or trees that have been removed both within the site and its close environs.

4.3. Groundwater Conditions

Groundwater strikes were recorded in multiple trial pits across the site. The groundwater strikes are tabulated below.

Summary of Groundwater strikes	
Trial Hole	**Groundwater strike Depth (m bgl)**
WS1	2.80
WS2	2.80
WS3	Dry
WS4	3.00
WS5	2.50
WS7	3.00

BRE1	1.50
BRE2	Dry
BRE3	Dry
BRE4	1.00
BRE5	1.40
BRE6	0.50
BRE7	0.50
BRE8	1.10
BRE9	1.30
BRE10	1.40
BRE11	1.00
BRE12	0.50
CBR1	Dry
CBR2	Dry
CBR3	Dry
CBR4	1.30
CBR5	1.50
CBR6	1.40
CBR7	1.30
CBR8	1.70
CBR9	1.70
CBR10	1.40
CBR11	1.50
CBR12	1.40
CBR13	1.50
CBR14	1.50
CBR15	1.50
CBR16	1.50
CBR17	1.00
CBR18	1.20
CBR19	1.50
CBR20	1.10
CBR21	0.80
CBR22	0.55
CBR23	0.50

Groundwater Strikes during Drilling		
Trial Hole	**Groundwater reading (m bgl)**	**Depth after 20 minutes (m bgl)**
BH1	6.10	5.80
BH2	4.60	4.40
BH3	5.30	5.10
BH4	3.30	3.10
BH5	6.40	6.10
BH6	4.60	4.50
BH6	6.60	6.10
BH7	5.60	5.50

Changes in groundwater level occur for a number of reasons including seasonal effects and variations in drainage. The Windowless sampling and trial pit investigation was undertaken in March 2024 when groundwater levels are likely to be at their annual maximum (highest elevation).

The Cable Percussion borehole investigation was undertaken in May/June 2024 when groundwater levels are likely to be falling to their annual minimum (lowest elevation). Exact groundwater levels may only be determined through long term measurements from monitoring wells installed on-site.

Groundwater monitoring was undertaken on three occasions to date. The results can be seen tabulated below.

Groundwater Observations			
Date	**Trial Hole**	**Water Level**	**Final Well Depth**
23/04/2024	WS1	2.90	3.80
	WS2	2.80	2.90
	WS3	Dry	1.90
	WS4	3.00	3.90
	WS5	2.40	3.40
	WS7	2.80	3.70
16/05/2024	WS1	2.50	3.80
	WS2	2.60	2.90
	WS3	1.50	1.90
	WS4	2.80	3.90
	WS5	1.80	3.40
	WS7	2.80	3.70
04/06/2024	WS1	2.90	3.70
	WS2	2.50	2.60
	WS3	Dry	1.90
	WS4	3.10	4.00
	WS5	2.70	3.50
	WS7	2.10	2.20
25/06/2024	WS1	3.20	3.70
	WS2	Dry	2.60
	WS3	Dry	1.90
	WS4	3.40	4.00
	WS5	2.90	3.50
	WS7	Dry	2.20
01/07/2024	WS1	3.05	3.70
	WS2	Dry	2.60
	WS3	Dry	1.90
	WS4	3.10	4.00
	WS5	2.63	3.50
	WS7	Dry	2.20

4.4. Obstructions

A possible obstruction or dense soils was recorded in WS3 and WS5 resulting in early termination of the borehole.

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

5. IN-SITU AND LABORATORY TESTING

5.1. In-situ Strength Testing

Standard Penetration Tests (SPTs) were undertaken as part of the site investigation. The results of the SPT's have not been amended to consider hammer efficiency, rod lengths and overburden pressure in accordance with Eurocode 7. The test results are presented on the borehole logs within Appendix D. An interpretation of the in-situ geotechnical testing results is given in the table below.

Interpretation of In-situ Geotechnical Testing Results WS Holes					
Strata	**SPT "N" Blow Counts/Equivalent SPT "N Value from DP**	**Equivalent Undrained Shear Strength (Cu) (kPa)**	**Soil Type**		**Trial Hole/s**
			Granular (Density)	**Cohesive (Cu)**	
Soft spots within River Terrace Deposits (Cohesive)	5 – 8	25 – 40	-	Low to Medium	WS1/1.00 – 1.45m bgl WS3/1.00- 1.45m bgl WS5/1.00- 1.45m bgl WS7/1.00- 1.45m bgl
River Terrace Deposits (Cohesive)	10-14	50-70	-	Medium	WS2/1.00- 1.45m bgl WS3/2.00- 2.45m bgl WS4/1.00- 1.45m bgl
Loose Raised Beach Deposits (Granular)	0-8	-	Very Loose to medium dense	-	WS1/3.00- 5.45m bgl WS4/2.00- 2.45m bgl
Raised Beach Deposits (Granular)	11-50	-	Medium dense to extremely dense	-	WS1/2.00- 2.45m bgl WS7/2.00- 5.45m bgl
Chalk	2-46	-	-	-	WS2/2.00 – >5.45m bgl WS4/3.00- 5.45m bgl WS5/2.00- 4.45m bgl

Interpretation of In-situ Geotechnical Testing Results Cable Percussion Boreholes					
Strata	SPT "N" Blow Counts/Equivalent SPT "N Value from DP	Equivalent Undrained Shear Strength (Cu) (kPa)	Soil Type		Trial Hole/s
			Granular (Density)	Cohesive (Cu)	
Soft spots within River Terrace Deposits (Cohesive)	3– 8	25 – 40	-	Low to Medium	BH1/1.20 – 2.65m bgl BH2/1.20- 3.65m bgl BH3/1.20- 2.65m bgl BH4/1.20- 2.65m bgl BH5/1.20- 3.65m bgl BH6/1.20- 4.65m bgl BH7/1.20- 2.65m bgl BH7/4.20- 4.65m bgl
River Terrace Deposits (Cohesive)	9-12	50-70	-	Medium	BH1/3.20- 3.65m bgl BH2/4.20- 4.65m bgl BH3/3.20- 3.65m bgl BH5/4.20- 4.65m bgl BH7/3.20- 3.65m bgl
River Terrace Deposits (Granular)	12-13	-	Medium dense	-	BH1/4.20- 4.65m bgl BH2/5.20- 5.65m bgl
Chalk	6-50 for 150mm	-	-	-	BH1/5.20 – >20.45m bgl BH2/6.70- >20.45m bgl BH3/6.50- >20.45m bgl BH4/3.20- >20.45m bgl BH5/5.20- >20.45m bgl BH6/6.50- >20.45m bgl BH7/5.20- >20.45m bgl

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

The CPT report produced by In-Situ Site Investigation can be viewed in Appendix E.

5.2. Geotechnical Laboratory Testing

A programme of geotechnical laboratory testing, scheduled by Ground and Water Limited and carried out by an accredited geotechnical testing laboratory was undertaken on samples recovered. Details of the specific tests used in each case are given below.

Standard Methodology for Laboratory Geotechnical Testing March 2024 Investigation		
Test	**Standard**	**Number of Tests**
Atterberg Limit Tests	BS1377:2016:Part 2:Clauses 3.2, 4.3 & 5	14
Particle Size Distribution Tests	BS1377:2016:Part 2:Clause 9	2
Determination of Saturation Moisture Content of Chalk	BS1377:2016:Part 2:Clause 3.3	2
Soaked CBR Test	BS 1377:1990 - Part 4 : 7.3	10
Water Soluble Sulphate and pH Test	BS1377:2018:Part 3:Clause 5	2
BRE Special Digest 1 Tests	BRE Special Digest 1 "Concrete in Aggressive Ground (BRE, 2005).	3

Standard Methodology for Laboratory Geotechnical Testing May/June 2024 Investigation		
Test	**Standard**	**Number of Tests**
Atterberg Limit Tests	BS1377:2016:Part 2:Clauses 3.2, 4.3 & 5	18
BRE Special Digest 1 Tests	BRE Special Digest 1 "Concrete in Aggressive Ground (BRE, 2005).	20

5.2.1. Atterberg Limit Testing

A précis of Atterberg limit testing undertaken can be seen tabulated below. The test results are presented within Appendix F.

Atterberg Limit Tests Results Summary March 2024							
Stratum	**Moisture Content (%)**	**Passing 425 µm sieve (%)**	**Modified PI (%)**	**Soil Class**	**Consistency Index (Ic)**	**Volume Change Potential**	
						BRE	**NHBC**
River Terrace Deposits	16-24	93-96	11.28-25.92	CL-CI	Firm to Very Stiff	Low to Medium	Low to Medium
• **NP – Non-plastic** • **BRE Volume Change Potential refers to BRE Digest 240 (based on Atterberg results)** • **Soil Classification based on British Soil Classification System.** • **Consistency Index (Ic) based on BS EN ISO 14688-2:2018.**							

Atterberg Limit Tests Results Summary July 2024							
Stratum	**Moisture Content (%)**	**Passing 425 µm sieve (%)**	**Modified PI (%)**	**Soil Class**	**Consistency Index (Ic)**	**Volume Change Potential**	
						BRE	**NHBC**
River Terrace Deposits	13-26	84-96	13.44-28.80	CL-CI	Stiff to Very Stiff	Low to Medium	Low to Medium

- **NP – Non-plastic**
- **BRE Volume Change Potential refers to BRE Digest 240 (based on Atterberg results)**
- **Soil Classification based on British Soil Classification System.**
- **Consistency Index (Ic) based on BS EN ISO 14688-2:2018.**

5.2.2. Moisture Deficit Assessment

The results of the Atterberg Limit tests were analysed to determine the Liquidity Index of the samples, to give an indication as to whether the samples recovered showed a moisture deficit as well assessing their degree of consolidation. Liquid Limit analyses was undertaken to assess whether there were any potentially significant moisture deficits within the samples tested.

No potential moisture deficits were recorded in any of the samples tested.

5.2.3. Particle Size Distribution Testing

The results of particle size distribution (PSD) testing undertaken show that the two samples tested have volume change potential in accordance with BRE240 but not NHBC Standards Chapter 4.2. The results of the PSD testing can be viewed within Appendix F and summarised overleaf.

Particle Size Distribution Results Summary			
Stratum	**Range Passing 63µm Sieve (%)**	**Volume Change Potential**	
		BRE	**NHBC**
WS4/2.50m bgl Brown slightly fine to medium gravelly silty clayey fine to coarse SAND	24	Yes	No
WS7/4.00m bgl Brown silty/clayey fine to coarse SAND	30	Yes	No

- **Volume Change Potential refers to BRE Digest 240 (based on Grading test results).**
- **Shrinkability refers to NHBC Standards Chapter 4.2 (based on Grading test results).**
- **BRE 240 states that a soil has a volume change potential when the clay fraction exceeds 15%. Only the silt and clay combined fraction are determined by sieving therefore the volume change potential is estimated from the percentage passing the 63µm sieve.**
- **NHBC Standards Chapter 4.2 states that a soil is shrinkable if the percentage of silt and clay passing the 63µm sieve is greater than 35% and the Plasticity Index is greater than 10%.**

5.2.4. Determination of Saturation Moisture Content and density of Chalk

The results of saturation moisture content testing undertaken are tabulated below. The results can be seen in Appendix F.

Summary of Saturation Moisture Content Test Results					
Stratum	**Moisture Content (%)**	**Saturation Moisture Content (%)**	**Bulk Density (Mg/m^3)**	**Dry Density (Mg/m^3)**	**CIRIA Dry Density Classification**
WS2/5.00m bgl	26	26	2.00	1.60	Medium Density
WS5/2.50m bgl	19	20	2.10	1.77	High Density

- **Density in accordance with CIRIA 574 Chapter 3.0, Table 3.7**

6. ENGINEERING CONSIDERATIONS

6.1. Chalk Dissolution Risk Assessment

The presence of dissolution features on-site can prove problematic, as they often provide inconsistency within the underlying geology. Often formed during glacial and periglacial conditions, the depth and width of these features can vary substantially, often providing inconsistency in geological strength data.

If a dissolution feature is suspected, a geotechnical engineer and structural engineer should be contacted for suitable engineering designs, based on further works identifying and classifying the area the feature occupies.

The Groundsure datasheets revealed the following information which may be pertinent to this risk assessment. The Groundsure Geoinsight report can be found in Appendix C.

- The site was classified as having very low risk of ground dissolution of soluble rocks.
- No natural cavities were noted within a 500m radius of the site.
- No records of Britpits were noted within a 500m radius of the site.
- 9 records of surface ground workings were noted between 122-202m from the site. These were mainly ponds (west) a sewage works (south-east) and a graveyard (north-east).
- No records of underground workings, Historical Mineral planning areas, No coal mining, mining cavities or JPB mining areas were noted within a 500m radius of the site.
- The historical mapping review undertaken in this report confirmed the findings of the Groundsure datasheets discussed above.
- The site was within a location where LIDAR was available for review, LIDAR data recorded two circular depression features one on the southern boundary and one on the northern portion of the site. The depression on the southern boundary however is within the existing tree line and maybe relating to a heap or vegetation. The rest of the site recorded no anomalies.
- The Edmonds Procedure (Edmonds, C.N., 2001. Predicting natural cavities in chalk. Geological Society, London, Engineering Geology Special Publications, 18(1), pp.29-38.); highlighted a moderately low anticipated subsidence hazard classification.

As a result of the desk-based review of the site, the geology would show a moderately low risk. Based on collective information to date and the relatively incompetent ground encountered to a moderate depth, the risk is considered to be generally moderately low, subject to further testing.

However, the Lidar data did record a circular feature on the northern portion of the site that should be investigated further.

The CPT trial holes recorded the top of the chalk head at variable depths across the site between 1.50-3.00m bgl in the Windowless sampler holes and 2.20-5.80m bgl in the CPT holes with no chalk recorded in the CPT or WS holes on the north-eastern portion of the site. Superficial soils comprising clays and sands were recorded above. A general trend of increasingly competent chalk with depth was identified. Soil strength across the site varied significantly within the superficial soils with areas of soft

spots where very low to low undrained shear strength was recorded and areas where high to very high undrained shear strength was recorded.

Further works should be undertaken on the western portion of the site which at the time of reporting was part of an archaeological no dig zone.

Soil Characteristics and Foundation Considerations

A summary of the soil characteristics following the intrusive site investigation and laboratory testing and the relevant foundation considerations has been provided below. The following information from the ground investigation was considered pertinent to the design of foundations.

- Foundations should be taken through any Topsoil and either into, or onto a suitable underlying natural stratum of adequate bearing characteristics.
- Foundations should be designed in accordance with soils of medium volume change potential.
- Given the presence of cohesive soils at shallow depth, special foundation precautions may be required to prevent possible future shrinkage/swelling of the soils affecting the integrity of the faces of foundations (underfloor void diameter/compressible material/void formers etc.). A compressible layer must be provided to accommodate potential seasonal movement, based on NHBC guidance.
- The design of each structural element (slab/piles/beams) should be designed in accordance with the appropriate volume change potential of the respective bearing stratum. Special foundation precautions may be required to prevent possible future shrinkage/swelling of the soils affecting the integrity of the faces of foundations and/or structural element (underfloor void diameter/compressible material/void formers etc.).
- The loads of proposed foundations should not exceed the allowable bearing capacity of the soils they are founding upon.
- If soft spots are encountered, they should be bypassed.
- Care should be taken not to overdig foundations as this may stress underlying soft spots, should they be present.
- Foundations must not be placed within fresh root penetrated and/or desiccated soils with volume change potential. It is recommended that foundations are taken at least 300mm into non-fresh root penetrated strata if the soils have volume change potential, or into soils of no volume change potential.
- The influence of trees on or surrounding the site will need to be taken into account in final design (NHBC Standards Chapter 4. 2) (tree rings).
- Any water ingress must be prevented from entering foundation trenches and excavations must be kept dry and either concreted or blinded as soon after excavation as possible. If water were allowed to accumulate within the excavation for even a short period of time, an increase in heave occur. The shear strength will also be reduced, resulting in lower bearing capacities, resulting in increased settlements. Instability issues may arise within the foundation trenches, in case of perched water being present.
- Live roots were noted to a maximum depth of >2.00m bgl. However roots were generally recorded between 0.20-1.00m bgl. Roots may be encountered at greater depths within the

vicinity of trees.

- Groundwater strikes were recorded in multiple trial pits across the site at depths of between 0.50-3.00m bgl.
- Fine sensitive soils were noted to 3-4m bgl across the entire site where SPT's from the Windowless sampling recorded N values of 5 or less.
- Trial Pits and windowless sampler boreholes were noted to be unstable during their excavation due to the presence of shallow groundwater coupled with loose granular soils.

6.2. Shallow Foundations

Based on the previous section, foundations should bypass any Made Ground/Topsoil and soft spots/loose granular soils, before extending 300mm below the proved depth of root penetration. Therefore, foundations would be constructed at varying depths across the site on competent, moisture stable soils of the River Terrace Deposits but in certain areas across the site a piled foundation solution is required due to low strength soils.

The following bearing capacities can be calculated for traditional strip foundations at 0.90 - 2.00m bgl. In areas where the bearing capacities are below 70kN/m^2 a piled foundation solution was considered to be necessary. (settlements will be limited to below 25mm).

Plots	Nearest SI Location	Revised Founding Depth (m bgl)	Bearing Capacity 0.60m wide Foundation (kN/m^2)	Bearing Capacity 1.00m wide Foundation (kN/m^2)	Bearing Strata
245 - 248	DCP149	0.90	220	190	River Terrace Deposits
232 - 238	DCP148	0.90	120	105	River Terrace Deposits
239	DCP110	0.90	180	155	River Terrace Deposits
242 - 244	DCP110	0.90	180	155	River Terrace Deposits
256 - 259	DCP110	0.90	180	155	River Terrace Deposits
249 - 255	DCP111	0.90	155	160	River Terrace Deposits
260 - 261	DCP122	1.50	90	120	River Terrace Deposits
260 - 261		2.00	175	165	River Terrace Deposits
211 - 224	DCP119	2.00	90	95	River Terrace Deposits
29 - 39	DCP132	0.90	235	285	River Terrace Deposits

40 - 41	DCP130	0.90	85	110	River Terrace Deposits
80 - 82	DCP130	0.90	85	110	River Terrace Deposits
189 - 197	DCP118	0.90	125	135	River Terrace Deposits
208 - 210	DCP118	0.90	125	135	River Terrace Deposits
197 - 208	DCP107	0.90	105	85	River Terrace Deposits
		1.50	60	115	River Terrace Deposits
		2.00	180	220	River Terrace Deposits
166 - 173	DCP104	0.90	130	270	River Terrace Deposits
109 - 120	DCP104	0.90	130	270	River Terrace Deposits
105 - 108	DCP128	0.90	110	100	River Terrace Deposits
121 - 129	DCP128	0.90	110	100	River Terrace Deposits
140	DCP128	0.90	110	100	River Terrace Deposits
144 - 147	DCP128/DCP129	0.90	70	130	River Terrace Deposits

The Development plan showing areas that require shallow foundations and areas that need to be piled can be seen in figures 9 and 10. The pile calculations and plot numbers required to be piled is shown in section 6.3 of this report.

Based off Bowles values for sub-grade reaction (see table below) and the ground conditions encountered, values for a loam or clay (moist) to clay with sand should be used. Bearing capacities of between 80-90kN/m^2 will have k_s values of around 50000 kN/m^2/m increasing to 80000-100,000 kN/m^2/m with harder clays and sands.

Soil Description	**K_s kN/m^2/m**
Humus Soil or peat	5000-15000
Recent Embankment	10000-20000
Fine or slightly compacted soil	15000-30000
Well compacted sand	50000-100000
Very well compacted sand	100000-150000
Loam or clay (moist)	30000-60000
Loam or clay (dry)	80000-100000

Clay with sand	80000-100000
Crushed stone with sand	100000-150000
Coarse crushed stone	200000-250000
Well compacted crushed stone	200000-300000

Additional Comments
A number of comments and recommendations has been provided below.

- It is prudent to avoid having a foundation spanning across materials of different consistency, like clay and gravel, in order to avoid potential differential settlements. If unavoidable, foundations must be reinforced to allow for such potential differential movement. It should be noted that differential settlement may also occur between strip and isolated pad foundations.
- Foundation excavations must be carefully bottomed out and any loose soil or soft spots removed prior to the foundation concrete or blinding being placed. Failure to ensure that foundation excavations are suitably bottomed out could result in additional settlements.
- Inspection of foundation excavations, prior to concreting, must be made by a competent and suitably qualified person to check for soft spots and to check for the presence of roots.
- Foundations must not be cast over foundations of former structures and/or other hard spots.
- Given soils of volume change potential were encountered, a suspended slab is required.
- Isolated Pad Foundations must be at least 1.5 times the width of the widest pad apart to keep to the anticipated settlements.
- Final designs for the foundations should be carried out by a suitably qualified Engineer based on the findings of this investigation and with reference to the anticipated loadings, serviceability requirements for the structure and the developments proximity to former, present, and proposed trees. Where trees are mentioned in the text this means existing trees, recently removed trees (approximately 15 years to full recovery on cohesive soils) and those planned as part of the site landscaping.

It must be mentioned that it was assumed that excavations will be kept dry and either concreted or blinded as soon after excavation as possible. If water were allowed to accumulate on the formation for even a short time not only would an increase in heave occur resulting from the soil increasing in volume by taking up water, but also the shear strength and hence the bearing capacity would also be reduced.

Groundwater was noted in the majority of the trial holes and CPT holes at depths of between 0.50-3.00m bgl. It should be noted that groundwater strikes may have been obscured by the drilling process.

It was considered likely that the excavation would encounter groundwater or significant perched water within the Topsoil and clayey Sand/ sand Clay of the River Terrace Deposits, especially after periods of prolonged rainfall or during winter, therefore dewatering is likely to be required. The excavation of trial trenches should also be considered to determine the practicality of excavation foundation trenches. The advice of a reputable dewatering contractor, familiar with the type of

ground and groundwater conditions encountered on this site, should be sought prior to finalising the design of the foundations.

Given the results of the investigation if dewatering of shallow groundwater cannot be achieved on site a piled foundation scheme would be necessary across the entire site. The Piled foundation design solution is commented on below.

6.3. Groundwater

Rainwater which falls on the site during winter months is likely to be sitting on top or might percolate down through the topsoil and sub-surface geology. It's likely that some near surface water and surface water has caused the flooding problems in the trial holes across the southern portion of the site, but this does not necessarily represent the saturated aquifer level.

The saturated aquifer level is at worst likely to be between 1.50-2.00m bgl as shown within the monitoring wells installed, within the trial pits referenced CBR1-16 and the groundwater strikes recorded within the cable percussion boreholes and therefore this should be used in the design. However, this in itself could be water percolating in sand bands, trying to find its way deeper into the saturated aquifer in the chalk. Pits CBR17-23 were excavated along the southern portion of the site and recorded shallow perched water similar to the soakaway testing pits also excavated in this area. The surface water "ponds" are likely to have formed during the winter months due to the water having nowhere to percolate through due to clay rich topsoil, subsoils and superficial deposits. These ponds have since disappeared during the summer months.

6.4. Piled Foundation

Given the results of the ground investigation, a piled/minipile foundation system was deemed more suitable for certain areas of the site. Groundwater might also play a role in decision making for the rest of the site as well.

It is proposed that plots 1-28, 42-79, 83-104, 130-139, 141-143, 148-165, 174-188, 225-231, 240-241 and 262-300 will all be required to be piled.

The construction of a piled/minipile foundation is a specialised job and the advice of a reputable contractor familiar with the type of ground encountered on this site, should be sought prior to finalising the foundation design. The actual pile working load will depend on the particular type of pile and method of installation adopted.

In general, for the cumulative pile capacity calculations, shaft friction over desiccated levels should be ignored and piles should not be terminated within desiccated soils where moisture recovery following could occur.

A number of deep boreholes to ~20.00m bgl were therefore undertaken to confirm ground conditions and assist in pile design.

PileDesigns Geotechnical Expertise have provided a technical note providing pile capacities for 300mm, 350mm and 4500mm diameter auger bored piles. The results can be viewed in Appendix L.

Piling Groundwater Risk Assessment

Given the geology at the site, piling is the preferred method for foundations for some parts of the site. As these may extend into the aquifer beneath the site, the potential for pathways to be present need to be considered.

Review of the Wilson and Mortimer paper *Piled foundations and pathways for ground gas migration in the UK* (ICE publishing – Environmental Geotechnics), indicates that any preferential pathways for ground gases or contaminated water created by piles needs consideration for ground conditions and the nature of the pile utilised.

An important consideration is the nature of the pile, whether it is a displacement or replacement pile. For there to be a preferential pathway for the movement of groundwater, a continuous open annulus is required around the piles installed. An open annulus will not form around piles during installation except for driven H and I piles. Cast in-situ piles are driven or bored and filled with wet concrete. The pressure exerted on the wet concrete will seal up any annulus around the pile, sealing any pathway.

The Environment Agency recommend that CFA piling is undertaken on any site where contamination may be expected.

Based on the above, the use of CFA piles or other cast in-situ piles should be adopted, which will not result in the downward migration of contamination within the groundwater.

6.5. Foundation design Depths

Based on the above sections 6.2 and 6.3 the table below provides the plot numbers and the corresponding founding depths as well as the founding geological formation.

Plot Number	Minimum founding depth (m bgl)	Founding Geological Formation
1	Piled	Likely Chalk
2	Piled	Likely Chalk
3	Piled	Likely Chalk
4	Piled	Likely Chalk
5	Piled	Likely Chalk
6	Piled	Likely Chalk
7	Piled	Likely Chalk
8	Piled	Likely Chalk
9	Piled	Likely Chalk
10	Piled	Likely Chalk

11	Piled	Likely Chalk
12	Piled	Likely Chalk
13	Piled	Likely Chalk
14	Piled	Likely Chalk
15	Piled	Likely Chalk
16	Piled	Likely Chalk
17	Piled	Likely Chalk
18	Piled	Likely Chalk
19	Piled	Likely Chalk
20	Piled	Likely Chalk
21	Piled	Likely Chalk
22	Piled	Likely Chalk
23	Piled	Likely Chalk
24	Piled	Likely Chalk
25	Piled	Likely Chalk
26	Piled	Likely Chalk
27	Piled	Likely Chalk
28	Piled	Likely Chalk
29	0.90	River Terrace Deposits
30	0.90	River Terrace Deposits
31	0.90	River Terrace Deposits
32	0.90	River Terrace Deposits
33	0.90	River Terrace Deposits
34	0.90	River Terrace Deposits
35	0.90	River Terrace Deposits
36	0.90	River Terrace Deposits

37	0.90	River Terrace Deposits
38	0.90	River Terrace Deposits
39	0.90	River Terrace Deposits
40	0.90	River Terrace Deposits
41	0.90	River Terrace Deposits
42	Piled	Likely Chalk
43	Piled	Likely Chalk
44	Piled	Likely Chalk
45	Piled	Likely Chalk
46	Piled	Likely Chalk
47	Piled	Likely Chalk
48	Piled	Likely Chalk
49	Piled	Likely Chalk
50	Piled	Likely Chalk
51	Piled	Likely Chalk
52	Piled	Likely Chalk
53	Piled	Likely Chalk
54	Piled	Likely Chalk
55	Piled	Likely Chalk
56	Piled	Likely Chalk
57	Piled	Likely Chalk
58	Piled	Likely Chalk
59	Piled	Likely Chalk
60	Piled	Likely Chalk
61	Piled	Likely Chalk
62	Piled	Likely Chalk

63	Piled	Likely Chalk
64	Piled	Likely Chalk
65	Piled	Likely Chalk
66	Piled	Likely Chalk
67	Piled	Likely Chalk
68	Piled	Likely Chalk
69	Piled	Likely Chalk
70	Piled	Likely Chalk
71	Piled	Likely Chalk
72	Piled	Likely Chalk
73	Piled	Likely Chalk
74	Piled	Likely Chalk
75	Piled	Likely Chalk
76	Piled	Likely Chalk
77	Piled	Likely Chalk
78	Piled	Likely Chalk
79	Piled	Likely Chalk
80	0.90	River Terrace Deposits
81	0.90	River Terrace Deposits
82	0.90	River Terrace Deposits
83	Piled	Likely Chalk
84	Piled	Likely Chalk
85	Piled	Likely Chalk
86	Piled	Likely Chalk
87	Piled	Likely Chalk
88	Piled	Likely Chalk

89	Piled	Likely Chalk
90	Piled	Likely Chalk
91	Piled	Likely Chalk
92	Piled	Likely Chalk
93	Piled	Likely Chalk
94	Piled	Likely Chalk
95	Piled	Likely Chalk
96	Piled	Likely Chalk
97	Piled	Likely Chalk
98	Piled	Likely Chalk
99	Piled	Likely Chalk
100	Piled	Likely Chalk
101	Piled	Likely Chalk
102	Piled	Likely Chalk
103	Piled	Likely Chalk
104	Piled	Likely Chalk
105	0.90	River Terrace Deposits
106	0.90	River Terrace Deposits
107	0.90	River Terrace Deposits
108	0.90	River Terrace Deposits
109	0.90	River Terrace Deposits
110	0.90	River Terrace Deposits
111	0.90	River Terrace Deposits
112	0.90	River Terrace Deposits
113	0.90	River Terrace Deposits
114	0.90	River Terrace Deposits

115	0.90	River Terrace Deposits
116	0.90	River Terrace Deposits
117	0.90	River Terrace Deposits
118	0.90	River Terrace Deposits
119	0.90	River Terrace Deposits
120	0.90	River Terrace Deposits
121	0.90	River Terrace Deposits
122	0.90	River Terrace Deposits
123	0.90	River Terrace Deposits
124	0.90	River Terrace Deposits
125	0.90	River Terrace Deposits
126	0.90	River Terrace Deposits
127	0.90	River Terrace Deposits
128	0.90	River Terrace Deposits
129	0.90	River Terrace Deposits
130	Piled	Likely Chalk
131	Piled	Likely Chalk
132	Piled	Likely Chalk
133	Piled	Likely Chalk
134	Piled	Likely Chalk
135	Piled	Likely Chalk
136	Piled	Likely Chalk
137	Piled	Likely Chalk
138	Piled	Likely Chalk
139	Piled	Likely Chalk
140	0.90	River Terrace Deposits

141	Piled	Likely Chalk
142	Piled	Likely Chalk
143	Piled	Likely Chalk
144	0.90	River Terrace Deposits
145	0.90	River Terrace Deposits
146	0.90	River Terrace Deposits
147	0.90	River Terrace Deposits
148	Piled	Likely Chalk
149	Piled	Likely Chalk
150	Piled	Likely Chalk
151	Piled	Likely Chalk
152	Piled	Likely Chalk
153	Piled	Likely Chalk
154	Piled	Likely Chalk
155	Piled	Likely Chalk
156	Piled	Likely Chalk
157	Piled	Likely Chalk
158	Piled	Likely Chalk
159	Piled	Likely Chalk
160	Piled	Likely Chalk
161	Piled	Likely Chalk
162	Piled	Likely Chalk
163	Piled	Likely Chalk
164	Piled	Likely Chalk
165	Piled	Likely Chalk
166	0.90	River Terrace Deposits

167	0.90	River Terrace Deposits
168	0.90	River Terrace Deposits
169	0.90	River Terrace Deposits
170	0.90	River Terrace Deposits
171	0.90	River Terrace Deposits
172	0.90	River Terrace Deposits
173	0.90	River Terrace Deposits
174	Piled	Likely Chalk
175	Piled	Likely Chalk
176	Piled	Likely Chalk
177	Piled	Likely Chalk
178	Piled	Likely Chalk
179	Piled	Likely Chalk
180	Piled	Likely Chalk
181	Piled	Likely Chalk
182	Piled	Likely Chalk
183	Piled	Likely Chalk
184	Piled	Likely Chalk
185	Piled	Likely Chalk
186	Piled	Likely Chalk
187	Piled	Likely Chalk
188	Piled	Likely Chalk
189	0.90	River Terrace Deposits
190	0.90	River Terrace Deposits
191	0.90	River Terrace Deposits
192	0.90	River Terrace Deposits

193	0.90	River Terrace Deposits
194	0.90	River Terrace Deposits
195	0.90	River Terrace Deposits
196	0.90	River Terrace Deposits
197	0.90/1.50/2.00	River Terrace Deposits
198	0.90/1.50/2.00	River Terrace Deposits
199	0.90/1.50/2.00	River Terrace Deposits
200	0.90/1.50/2.00	River Terrace Deposits
201	0.90/1.50/2.00	River Terrace Deposits
202	0.90/1.50/2.00	River Terrace Deposits
203	0.90/1.50/2.00	River Terrace Deposits
204	0.90/1.50/2.00	River Terrace Deposits
205	0.90/1.50/2.00	River Terrace Deposits
206	0.90/1.50/2.00	River Terrace Deposits
207	0.90/1.50/2.00	River Terrace Deposits
208	0.90/1.50/2.00	River Terrace Deposits
209	0.90	River Terrace Deposits
210	0.90	River Terrace Deposits
211	2.00	River Terrace Deposits
212	2.00	River Terrace Deposits
213	2.00	River Terrace Deposits
214	2.00	River Terrace Deposits
215	2.00	River Terrace Deposits
216	2.00	River Terrace Deposits
217	2.00	River Terrace Deposits
218	2.00	River Terrace Deposits

219	2.00	River Terrace Deposits
220	2.00	River Terrace Deposits
221	2.00	River Terrace Deposits
222	2.00	River Terrace Deposits
223	2.00	River Terrace Deposits
224	2.00	River Terrace Deposits
225	Piled	Likely Chalk
226	Piled	Likely Chalk
227	Piled	Likely Chalk
228	Piled	Likely Chalk
229	Piled	Likely Chalk
230	Piled	Likely Chalk
231	Piled	Likely Chalk
232	0.90	River Terrace Deposits
233	0.90	River Terrace Deposits
234	0.90	River Terrace Deposits
235	0.90	River Terrace Deposits
236	0.90	River Terrace Deposits
237	0.90	River Terrace Deposits
238	0.90	River Terrace Deposits
239	0.90	River Terrace Deposits
240	Piled	Likely Chalk
241	Piled	Likely Chalk
242	0.90	River Terrace Deposits
243	0.90	River Terrace Deposits
244	0.90	River Terrace Deposits

245	0.90	River Terrace Deposits
246	0.90	River Terrace Deposits
247	0.90	River Terrace Deposits
248	0.90	River Terrace Deposits
249	0.90	River Terrace Deposits
250	0.90	River Terrace Deposits
251	0.90	River Terrace Deposits
252	0.90	River Terrace Deposits
253	0.90	River Terrace Deposits
254	0.90	River Terrace Deposits
255	0.90	River Terrace Deposits
256	0.90	River Terrace Deposits
257	0.90	River Terrace Deposits
258	0.90	River Terrace Deposits
259	0.90	River Terrace Deposits
260	1.50/2.00	River Terrace Deposits
261	1.50/2.00	River Terrace Deposits
262	Piled	Likely Chalk
263	Piled	Likely Chalk
264	Piled	Likely Chalk
265	Piled	Likely Chalk
266	Piled	Likely Chalk
267	Piled	Likely Chalk
268	Piled	Likely Chalk
269	Piled	Likely Chalk
270	Piled	Likely Chalk

271	Piled	Likely Chalk
272	Piled	Likely Chalk
273	Piled	Likely Chalk
274	Piled	Likely Chalk
275	Piled	Likely Chalk
276	Piled	Likely Chalk
277	Piled	Likely Chalk
278	Piled	Likely Chalk
279	Piled	Likely Chalk
280	Piled	Likely Chalk
281	Piled	Likely Chalk
282	Piled	Likely Chalk
283	Piled	Likely Chalk
284	Piled	Likely Chalk
285	Piled	Likely Chalk
286	Piled	Likely Chalk
287	Piled	Likely Chalk
288	Piled	Likely Chalk
289	Piled	Likely Chalk
290	Piled	Likely Chalk
291	Piled	Likely Chalk
292	Piled	Likely Chalk
293	Piled	Likely Chalk
294	Piled	Likely Chalk
295	Piled	Likely Chalk
296	Piled	Likely Chalk

297	Piled	Likely Chalk
298	Piled	Likely Chalk
299	Piled	Likely Chalk
300	Piled	Likely Chalk

6.6. Further site Investigation works

The depression area located on the north-eastern corner of the site should also be targeted with further site investigation works. Chalk depths across the north-east corner of the site were highly variable and in some instances no chalk was recorded within the CPT holes (up to 6.00m bgl). Further CPT holes or trial holes should be undertaken on this area to confirm the ground conditions and chalk depths.

The western portion of the site had limited site investigation works undertaken on it due to the presence of Archaeological no dig zones. Once these archaeological no digs zones have been removed, it is recommended that further site investigation works be undertaken in these areas as well as across the site to help further delineate the areas of piled foundations and shallow strip foundations.

6.7. Excavations and Stability

Shallow excavations in the Topsoil and River Terrace Deposits are likely to be marginally stable at best. Long, deep excavations, through these strata and into the underlying Raised Beach Deposits/River Terrace Deposits and underlying chalk are likely to become unstable.

Unsupported earth faces formed during excavation may be liable to collapse without warning and suitable safety precautions should therefore be taken to ensure that such earth faces are adequately supported before excavations are entered by personnel.

6.8. Sub-Surface Concrete Design Shallow Foundations

Concrete to be placed in contact with soil or groundwater must be designed in accordance with the recommendations of Building Research Establishment Special Digest 1, 2005, *'Concrete in Aggressive Ground'* considering the pH of the soils. For the classification given below, the "mobile" and "natural" case was adopted given the geology encountered and the use of the site.

Topsoil

The water-soluble sulphates in the Topsoil was noted to be between 11.7-18.3mg/l, with a pH of between 7.8-7.9, from chemical laboratory testing.

According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-1 could be used for sub-surface concrete in contact with the Topsoil. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-1.

River Terrace Deposits

The water-soluble sulphates in the River Terrace Deposits were noted to be between 12-13.8mg/l, with a pH of between 7.5-8.4, from chemical laboratory testing.

According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-1 could be used for sub-surface concrete in contact with the River Terrace Deposits. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-1.

Raised Beach Deposits

The water-soluble sulphates in the Raised Beach Deposits were noted to be 9.83-52.1mg/l, with a pH of 8.4-9.1, from chemical laboratory testing.

According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-1 could be used for sub-surface concrete in contact with the Raised Beach Deposits. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-1.

Lewes nodular chalk, Seaford chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk Formation

The water-soluble sulphates in the chalk were noted to be between 13.8-339mg/l, with a pH of between 8.3-8.9, from chemical laboratory testing.

According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-1 could be used for sub-surface concrete in contact with the chalk. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-1.

6.9. Sub-Surface Concrete Design Piled Foundations

Concrete to be placed in contact with soil or groundwater must be designed in accordance with the recommendations of Building Research Establishment Special Digest 1, 2005, *'Concrete in Aggressive Ground'* considering the pH of the soils. For the classification given below, the "mobile" and "natural" case was adopted given the geology encountered and the use of the site.

River Terrace Deposits

The water-soluble sulphates in the River Terrace Deposits were noted to be between <10-20mg/l, with a pH of between 8.3-9.0, from chemical laboratory testing.

According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-1 could be used for sub-surface concrete in contact with the River Terrace Deposits. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-1.

Lewes nodular chalk, Seaford chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk Formation

The water-soluble sulphates in the chalk were noted to be between <10-95mg/l, with a pH of between 8.8-9.1 from chemical laboratory testing.

According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-1 could be used for sub-surface concrete in contact with the chalk. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-1.

6.10. Roads and Hardstanding Design

This section provides information relating to the construction of roads and hardstanding, for each strata encountered.

6.10.1. Anticipated CBR Values and Frost Susceptibility

Topsoil

Roads and hardstanding should bypass Topsoil given the likely low strength, high compressibility and general variability.

River Terrace Deposits

(From literature / equilibrium method / Suction Method)

Roads and hardstanding constructed on the cohesive River Terrace Deposits should be designed based on a CBR value of 4.0%. This is based on reference to Table C1 of TRL1132 and average construction conditions. Based on wet conditions a CBR of 2.5% should be adopted, with dry conditions a CBR of 4.5% being applicable. Given the site encountered significant groundwater based on the equilibrium/suction method a design CBR value of >2.5% should be used.

These clay-based soils (poorly drained) with plasticity indexes generally greater than 20% might be non-frost susceptible, however due to the granular content should be treated as frost susceptible.

The results of the California Bearing Ratio (CBR) testing undertaken on samples at 0.50m bgl can be seen in the following table. The CBR testing was undertaken upon bulk disturbed samples under laboratory-soaked conditions. The results can be viewed in Appendix F.

California Bearing Ratio Results Summary				
Sample	**Moisture content (%)**	**Bulk Density (Mg/m^3)**	**Dry Density (Mg/m^3)**	**CBR Value (%)**
CBR1/0.50m bgl	17	2.01	1.72	1.40
CBR5/0.50m bgl	16	2.06	1.78	1.80
CBR7/0.50m bgl	18	2.05	1.74	0.99
CBR9/0.50m bgl	20	2.04	1.69	0.88
CBR10/0.50m bgl	19	1.99	1.67	2.30
CBR11/0.50m bgl	18	2.00	1.69	0.72
CBR13/0.50m bgl	15	1.88	1.64	0.86
CBR17/0.50m bgl	19	2.04	1.71	0.75
CBR21/0.50m bgl	17	2.00	1.71	1.40
CBR23/0.50m bgl	18	2.01	1.71	0.58

Based on the soaked CBR test results a design CBR value of 0.89% should be used (average value of 1%). It should be noted that the soaked CBR values are likely to produce the lowest CBR values as the samples are submerged in water for 4 days.

6.10.2. In-Situ California Bearing Ratio Tests by Dynamic Cone Penetrometer

In-situ California Bearing Ratio (CBR) testing by dynamic cone penetrometer (DCP) was undertaken to determine the CBR values of the soils underlying the site to shallow depth in accordance with BS1377 Part 9: 2016: 4.3 and a summary of the results is tabulated below. The full test results are presented in Appendix J.

In-situ CBR Test Results Summary										
Test Location	Layer 1		Layer 2		Layer 3		Layer 4		Layer 5	
	Thickness (mm)	In-situ CBR (%)	Thickness (mm)	In-situ CBR (%)	Thickness (mm)	In-situ CBR (%)	Thickness (mm)	In-situ CBR (%)	Thickness (mm)	In-situ CBR (%)
CBR1	110mm	2%	360mm	5%	90mm	8%	135mm	11%	95mm	16%
CBR2	50mm	5%	110mm	2%	215mm	4%	145mm	7%	250mm	12%
CBR3	270mm	3%	95mm	8%	150mm	26%	145mm	43%	160mm	34%
CBR4	265mm	5%	130mm	8%	200mm	15%	125mm	28%	115mm	23%
CBR5	20mm	13%	105mm	7%	165mm	3%	230mm	13%	320mm	26%
CBR6	205mm	2%	205mm	5%	130mm	12%	110mm	21%	170mm	36%
CBR7	250mm	4%	35mm	7%	15mm	17%	445mm	19%	115mm	35%
CBR8	210mm	1%	90mm	3%	170mm	4%	280mm	6%	40mm	20%
CBR9	215mm	1%	80mm	3%	55mm	4%	415mm	5%	50mm	15%
CBR10	240mm	2%	145mm	5%	274mm	6%	71mm	11%	125mm	30%
CBR11	175mm	3%	185mm	5%	205mm	11%	55mm	14%	220mm	19%
CBR12	175mm	1%	125mm	4%	360mm	6%	90mm	8%	90mm	17%
CBR13	355mm	1%	75mm	3%	115mm	4%	150mm	7%	155mm	10%
CBR14	210mm	1%	420mm	5%	170mm	18%	-	-	-	-
CBR15	425mm	3%	350mm	6%	-	-	-	-	-	-
CBR16	290mm	2%	80mm	6%	140mm	3%	110mm	7%	190mm	12%
CBR17	220mm	1%	125mm	4%	295mm	5%	165mm	14%	-	-
CBR18	280mm	2%	225mm	4%	115mm	6%	190mm	12%	-	-
CBR19	320mm	1%	90mm	3%	180mm	4%	190mm	12%	-	-
CBR20	430mm	3%	50mm	5%	90mm	8%	70mm	11%	170mm	14%
CBR21	350mm	3%	100mm	5%	80mm	9%	105mm	15%	195mm	20%
CBR22	335mm	2%	165mm	4%	150mm	5%	160mm	14%	-	-
CBR23	80mm	6%	195mm	4%	165mm	11%	300mm	15%	110mm	24%

Based on the DCP test results a CBR value of 2.90% for the top 250mm, 4.8% for the top 400mm and 8.6% for the top 550mm can be used. Based on the TRL and Atterberg test results a value of 2.5% can be used for the design CBR value which is closer to the DCP tests and the top end of the soaked CBR tests.

6.11. Surface Water Disposal

Soakaway testing in accordance with BRE365 was undertaken within BRE1, BRE2, BRE3, and BRE9, with the results tabulated below. Due to the slow infiltration rates and groundwater ingresses within test locations BRE1, BRE3 and BRE9 no infiltration rate could be calculated for these trial pits.

Soakage Testing Results						
Trial Hole	Test Number	Depth (m bgl)	Start Depth (m bgl)	Finish Depth (m bgl)	Time Taken (mins)	Infiltration Rate (m/sec)
BRE2	1	1.05	0.45	1.05	144	3.33 x 10^-5
	2	1.05	0.63	1.05	73	4.84 x 10^-5

	3	1.05	0.70	1.05	1043	3.27 x 10^-6

Soakaways tests were not possible in BRE4-BR8 and BRE10-BRE12 due to the shallow groundwater ingresses. Photographs showing the groundwater conditions on site can be seen in figure 8.

Soakaway pits were excavated on Monday 18th March 2024 and were left 1-2 days before testing was started. Trial Pits BRE1, BRE2, BRE3 and BRE9 recorded no water in them, and soakaway testing was undertaken in these trial pits. BRE2 recorded infiltration rates of between 4.84 x 10^-5 and 3.27 x 10^-6. No infiltration rate could be calculated for BRE1, BRE3 or BRE9 as the water levels did not move during the test. On the day of excavation, the weather conditions were overcast but on the Tuesday it was raining. Ground conditions back in March were very wet, with a number of large "ponds" on site where surface water had collected. This was more obvious on the southern portion of the site where the ground underfoot was saturated.

Soakaways tests were not possible in BRE4-BR8 and BRE10-BRE12 due to the shallow water ingresses. The table below shows the initial water strike and then the water level 2 days after the initial excavation.

Soakaway Test Pit	Initial Water Strike (m bgl)	Final water level (m bgl)
BRE4	1.00	0.60
BRE5	1.40	0.95
BRE6	0.50	0.24
BRE7	0.50	0.24
BRE8	1.10	0.35
BRE10	1.40	0.49
BRE11	1.00	0.00 (at ground level)
BRE12	0.50	0.30

The water ingresses into the pits were considered to be from perched water within the topsoil and upper soils of the River Terrace Deposits and would have been affected by some surface water and rainwater. The water level rise would have been from this near surface water migrating into and collecting in the pits rather than from surface water ingress from rainfall.

As the Civil Designers will know, drainage systems need to work all year round, especially during the winter months, when soils are saturated and saturated aquifer levels are higher.

To test this we do BRE365 tests, which are pits filled with water. Even if the pits were filled with shallow near surface water then it did not drain away. Neither did the majority of the pits which remained initially dry. Therefore, unfortunately, the testing has proved soakaways are unlikely to work during

the winter months. This is due to higher saturated aquifer levels and due to the saturated nature of the near surface soils.

Any soakaways should be located sufficiently away from buildings and infrastructure, in order to prevent undermining of foundations.

The submission of a Sustainable Urban Drainage Scheme (SUDS) is likely to be required for this site due to the proposed development increasing the amounts of hardstanding.

Consultation with the Environment Agency must be sought regarding any use that may have an impact on groundwater resources, abstractions and surface water features/watercourses.

It should be noted that water discharge into the chalk may worsen / create dissolution features. Therefore, soakaways should be remote from structures and undertaken in accordance with available guidance.

A number of published information sources make reference to an appropriate distance at which a soakaway should be sited in relation to any building foundations in the vicinity:

- The British Standard BS8301 :1985 "Code of practice for building drainage" (1985), suggests that: "A soakaway is not desirable nearer to a building than about 5 metres nor in such a position that the ground below foundations is likely to be adversely affected."
- The Building Research Establishment Digest 365 "Soakaway design" (1991), suggests that "Soakaways should not normally be constructed closer than 5m to building foundations. In chalk or other soil and fill material subject to modification or instability, the advice of a specialist geotechnologist should be sought as to the advisability and siting of a soakaway".

In addition, the distance a soakaway is located from any foundations can be informed by both the soakaway type and chalk density present at the site.

- The Kent County Council Soakaway Design Guide (July 2000) states that "Highway soakaways shall be situated the following minimum distances from dwellings (measured from the outside edge of the soakaway): (1) 5 metres for conventional perforated soakaway; (2) 10 metres for deep bored soakaway. In addition, adjacent soakaways of a similar type shall also be spaced a minimum of 10 metres apart.
- CIRIA 574 states that soakaways should be sited at least 5-10m away from any structure, depending on the chalk density. Where the chalk present is of low or unknown density, soakaways should be sited at least 10m from any foundations, and where the chalk is of medium density or higher, any foundations should be sited at least 5m from any foundations. Saturated moisture content testing of the chalk on site indicated that the chalk was classified as medium/high density and therefore soakaways could be located within 5m of any structure. However testing on site proved soakaways were not a viable option.

7. CONTAMINATION RISK ASSESSMENT

7.1. Results of the Preliminary Risk Assessment

At the time of reporting no Desk Study has been undertaken non the site.

In the UK, the assessment of risk from contamination follows the source-pathway-receptor (SPR) approach. For a risk to be present there must be a source of contamination, a receptor or receptors, and a pathway for contaminants to migrate or be absorbed. If there is a linkage between any given source and receptor, then a quantitative risk assessment is used to assess the significance or impact of the pollutant linkage.

7.2. Sampling Locations

The synopsis for the trial hole locations and their final depth can be seen tabulated below. The trial hole location plan for the WS, BRE and CBR's can be seen within Figure 5 with the CPT locations shown in figure 6 and the cable percussion boreholes shown in figure 7. The table also indicates whether any locations targeted a source of contamination as well as the proposed end-use. The proposed development can be seen in Figure 4.

Trial Hole Location Synopsis		
Trial Hole/Final Depth	**Sampling Strategy**	**Proposed End-Use**
WS1/5.00m	Random	Pond
WS2/5.00m	Random	Pond
WS3/3.00m	Random	Pond
WS4/5.00m	Random	Pond
WS5/4.00m	Random	Pond
WS7/5.00m	Random	Pond
BRE1/1.50m	Random	Road Network
BRE2/1.00m	Random	Road Network
BRE3/0.50m	Random	Road Network
BRE4/1.00m	Random	Road Network
BRE5/1.50m	Random	Road Network
BRE6/0.50m	Random	Road Network
BRE7/0.50m	Random	Road Network
BRE8/1.50m	Random	Road Network
BRE9/1.50m	Random	Road Network
BRE10/1.50m	Random	Road Network
BRE11/1.00m	Random	Road Network
BRE12/0.50m	Random	Road Network
CBR1/2.00m	Random	Road Network
CBR2/2.20m	Random	Road Network
CBR3/2.00m	Random	Road Network
CBR4/2.00m	Random	Road Network
CBR5/2.00m	Random	Road Network
CBR6/2.00m	Random	Road Network
CBR7/2.00m	Random	Road Network
CBR8/2.10m	Random	Road Network
CBR9/2.00m	Random	Road Network
CBR10/2.10m	Random	Road Network

CBR11/2.20m	Random	Road Network
CBR12/2.10m	Random	Road Network
CBR13/2.00m	Random	Road Network
CBR14/2.20m	Random	Road Network
CBR15/2.20m	Random	Road Network
CBR16/2.20m	Random	Road Network
CBR17/2.00m	Random	Road Network
CBR18/2.10m	Random	Road Network
CBR19/2.10m	Random	Road Network
CBR20/2.20m	Random	Road Network
CBR21/1.80m	Random	Road Network
CBR22/2.00m	Random	Road Network
CBR23/2.00m	Random	Road Network

The investigation area totals approximately 254,600m^2 and with forty-one sampling locations, given an unknown hotspot shape, the sampling density means that a hotspot with an area of approximately 9315m^2 and a radius of approximately 30.72m would be encountered (CLR 4).

7.3. Soil Risk Assessment

Sampling depths were chosen to reflect the receptor of concern (e.g. human health, controlled waters and vegetation). Samples where olfactory or visual evidence of contamination was present underwent targeted scheduling. The remaining samples were scheduled under a random strategy. The receptors relevant to the sampling depths are tabulated below.

Summary of Receptors per Sample Depth	
Depth	**Receptors**
Shallow Samples (< 0.75m bgl)	• End Users (Residents/Future site visitors) • Construction workers during development • Site operatives during maintenance works • Neighbours and public • Vegetation within soft landscaped areas (shallow rooted) • Secondary A aquifer (River Terrace Deposits and Raised Beach Deposits) • Buried Concrete • Receiving landfill
Moderate Samples (0.75 – 1.50m bgl)	• Construction workers during development • Site operatives during maintenance works • Vegetation within soft landscaped areas (deep rooted) • Secondary A aquifer (River Terrace Deposits and Raised Beach Deposits) • Buried Concrete • Receiving landfill • Underground services (water pipes)
Deep Samples (> 1.50m bgl)	• Construction workers during development • Secondary A aquifer (River Terrace Deposits and Raised Beach Deposits) • Principal Aquifer (Underlying Chalk) • Buried Concrete • Receiving landfill

Chemical laboratory testing, scheduled by Ground and Water Limited, and carried out by I2 Laboratories UK Limited, was undertaken on 3 samples of the topsoil and 2 samples of the River Terrace Deposits. The samples were subjected to a combination of analysis that comprised:

- Asbestos screen;
- Semi-metals and heavy metals incl. Arsenic, Cadmium, Chromium (incl. Hexavalent Chromium), Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc;
- Polycyclic Aromatic Hydrocarbons (PAH's) incl. Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene;
- Speciated TPH including full aliphatic/aromatic split;
- BTEX compounds (Benzene, Toluene, Ethylbenzene, Xylene) and MTBE – used as marker compounds for Volatile Organic Compounds (VOCs);

A breakdown of the number of tests undertaken for each determinand is discussed in further sections. The chemical laboratory results are presented in Appendix G.

7.3.1. Soil Assessment Criteria and Results

At the time of reporting, August 2024, the proposed development was understood to comprise the construction of 300 residential housing plots comprising a mixture of residential flats, terraced, semi-detached and detached properties with associated garden and soft landscaping areas garages and new roads and supporting infrastructure. A pumping station is to be constructed on the eastern portion of the site. There will be 9 attenuation ponds mainly across the eastern and central area of the site. A new roundabout and road junction will be installed on the south-eastern corner of the site.

Proposed site plans are provided as Figure 4.

Based on the proposed development, the results of the chemical laboratory testing were compared to the Generic Assessment Criteria (GAC) for a ***'Residential with homegrown produce'*** land-use scenario, as this was considered the most appropriate land-use scenario.

Where a contaminant of concern's GAC varies according to the Soil's Organic Matter (SOM), the SOM recorded for each uncontaminated soil type was used to derive the appropriate GAC for each soil type. A SOM value of 1%, the most conservative value, was utilised.

A summary of the analytical results and the comparison to the determinands adopted screening value are presented in the table below and overleaf.

Soil Contamination Test Results and Screening Values					
Determinand	**Number of Samples**	**Minimum Concentration (mg/kg)**	**Maximum Concentration (mg/kg)**	**Adopted Screening Value (mg/kg)**	**Was the adopted screening value exceeded for relevant land-use scenario?**
INORGANICS					
Asbestos	5	ND	ND	ND	No
Cyanide (total)	5	< 1	< 1	24	No

Phenols	5	< 1	< 1	280	No
METALS					
Arsenic	5	8.7	15	37	No
Boron	5	<0.2	0.6	290	No
Cadmium	5	< 0.2	<0.2	11	No
Chromium (III)	5	29	33	910	No
Chromium (Hexavalent)	5	< 1.8	< 1.8	6	No
Copper	5	8	16	2,400	No
Lead	5	10	21	200	No
Mercury	5	<0.3	<0.3	1.2	No
Nickel	5	11	23	130	No
Selenium	5	< 1	< 1	250	No
Vanadium	5	30	48	410	No
Zinc	5	37	61	3,700	No
TOTAL PETROLEUM HYDROCARBONS (TPHs)					
Aliphatic >C5 - C6	2	< 0.02	< 0.02	42	No
Aliphatic >C6 - C8	2	< 0.02	< 0.02	100	No
Aliphatic >C8 - C10	2	< 0.05	< 0.05	27	No
Aliphatic >C10 - C12	2	< 1	< 1	130	No
Aliphatic >C12 - C16	2	< 2	<2	1,100	No
Aliphatic >C16 - C21	2	< 8	< 8	65,000	No
Aliphatic >C21 - C35	2	< 8	< 8		
Aliphatic >C35 – C44	2	<10	<10	65,000	No
Aromatic >C5 - C7	2	< 0.01	< 0.01	70	No
Aromatic >C7 - C8	2	< 0.01	< 0.01	130	No
Aromatic >C8 - C10	2	< 0.05	< 0.05	34	No
Aromatic >C10 - C12	2	< 1	< 1	74	No
Aromatic >C12 - C16	2	< 2	< 2	140	No
Aromatic >C16 - C21	2	<10	< 10	260	No
Aromatic >C21 - C35	2	< 10	< 10	1,100	No
Benzene	2	< 0.005	< 0.005	0.087	No
Toluene	2	< 0.005	< 0.005	130	No
Ethylbenzene	2	< 0.005	< 0.005	47	No
m,p-Xylene	2	< 0.005	< 0.005	56	No
o-Xylene	2	< 0.005	< 0.005	60	No
POLYCYCLIC-AROMATIC HYDROCARBONS					
Acenapthene	5	< 0.05	< 0.05	210	No
Acenapthylene	5	< 0.05	< 0.05	170	No
Anthracene	5	< 0.05	< 0.05	2,400	No
Benzo(a)anthracene	5	< 0.05	0.12	7.2	No
Benzo(a)pyrene	5	< 0.05	0.16	2.2	No
Benzo(b)fluoranthene	5	< 0.05	0.17	2.6	No
Benzo(ghi)perylene	5	< 0.05	0.13	320	No
Benzo(k)fluoranthene	5	< 0.05	0.10	77	No
Chrysene	5	< 0.05	0.16	15	No
Dibenzo(a,h)anthracene	5	< 0.05	< 0.05	0.24	No
Fluoranthene	5	< 0.05	0.28	280	No
Fluorene	5	< 0.05	< 0.05	170	No
Indeno(1,2,3-cd)pyrene	5	< 0.05	0.13	27	No
Naphthalene	5	< 0.05	< 0.05	2.3	No
Phenanthrene	5	< 0.05	0.09	95	No

Pyrene	5	< 0.05	0.27	620	No
MARKER FOR VOLATILE ORGANIC COMPOUND					
Methyl tert-butyl ether (MTBE)	2	< 0.005	< 0.005	49	No
The derivation of the Soil Assessment Criteria used within this report can be seen within Appendix H. The soil concentrations were typically compared to the LQM/CIEH Suitable for Use Levels (S4UL) (2014), based upon the assumption of 1% soil organic matter. A screening value for Lead is based on the Category 4 Screening Levels (C4SLs). Where no S4UL or C4SL is available for Cyanide, a SoBRA acute GAC is assigned. Where no S4UL or C4SL is available for MTBE, a CL:AIRE 2010 GAC is assigned. Where exceedances are noted, the trial hole and depth of sample is recorded.					

The proposed development includes areas of soft-landscaping, where shallow rooted vegetation may be exposed to aggressive ground conditions. The previous table compares the results of the laboratory analysis to GAC that is protective of Human Health and therefore different GAC is required for vegetation.

Soil Contamination Test Results and Screening Value					
Determinand	**Number of Samples**	**Minimum Concentration (mg/kg)**	**Maximum Concentration (mg/kg)**	**Adopted Screening Value (mg/kg)**	**Was the adopted screening value exceeded for relevant land-use scenario?**
Copper	5	8	16	100	No
Nickel	5	11	23	60	No
Zinc	5	37	61	200	No
The derivation of the Soil Assessment Criteria used within this report can be seen within Appendix H. The soil concentrations were compared to BS3882:2015 *Specification for Topsoil* and based on differing pH. For the purpose of conservatism, the pH of the soils have been assumed to be below 6 within this table. Where exceedances are noted, the trial hole and depth of sample is recorded.					

7.3.2. Soil Assessment

Chemical laboratory testing of the Topsoil and River Terrace Deposits did not reveal any elevated levels of determinands above the guideline levels for a 'Residential With Homegrown Produce' land-use scenario.

In addition, the intrusive investigation did not reveal any visual or olfactory evidence to suggest any hydrocarbon-type contamination in the trial holes excavated on the site. The chemical laboratory results have verified that no elevated concentrations of aliphatic/aromatic hydrocarbons (C5-C35) or BTEX compounds are present in the soils underlying the site.

Given the low levels of determinands noted during the chemical laboratory testing, it was considered that no remediation was required within the soils for the end users of the site. However, it is recommended that further soil sampling be undertaken across the site on more samples to confirm this risk assessment as at this stage only a small number of samples have been tested.

Asbestos

No asbestos has been identified during the testing; however, an **Asbestos Management Strategy** should be put in place so that any potentially asbestos containing materials are identified and removed from site in a suitable manner to prevent cross-contamination.

7.3.3. Water Supply Pipe Risk Assessment

As part of the proposed development, it is expected that new water supply pipes will be installed at the site. Water supply pipes have the potential to be exposed to contaminants in the ground that can lead to unacceptable concentrations within the drinking water. If a risk is identified, specialist pipes that are protective of the drinking water are required.

A pipe selection risk assessment should be submitted to the water supply company as part of the development based on the supplier's assessment criteria. An indication of whether there is likely to be a risk can be seen tabulated below, where the PE pipe thresholds are based on *UKWIR Contaminated Land Assessment Guidance, 2014*.

Pipe Selection Risk Assessment			
Determinand	**PE Pipe Threshold (mg/kg)**	**Laboratory Analysis Range (mg/kg)**	**Was the Threshold Exceeded?**
Total BTEX and MTBE	0.1	LOD	No
Total VOCs	0.5	N/A	No
Total SVOCs	2	N/A	No
Phenols	2	< 1	No
TPH EC5 – EC10 (aliphatics and aromatics)	2	LOD	No
TPH EC10 – EC16 (aliphatics and aromatics)	10	LOD	No
TPH EC16 – EC40 (aliphatics and aromatics)	500	LOD	No
Naphthalene	5	< 0.05	No

The results indicate that no determinands were above the threshold for the use of a PE pipe at the site.

7.4. Groundwater Risk Assessment

In the UK, the water environment is protected under a number of regulatory regimes, mainly governed by the Environment Agency. The Environment Agency is consulted when there may be a risk to Controlled Waters, or where a pollution incident has occurred historically. The Water Framework Directive is implemented in various guises covering groundwater, surface water and drinking water supply.

The soil samples analysed as part of the risk assessments in section 7.3 have been used to undertake a Level 1 (soils) Controlled Waters risk assessment. At Level 1 (soils), the conceptual site model and the determinand concentrations of the soils are used to indicate whether the concentrations are sufficient to impact the receptor. At this stage, dilution, dispersion and attenuation along the pathway are not considered.

The British Geological Survey (BGS) maps and DEFRA online maps for the area suggest that the western portion of the site was located on the superficial River Terrace Deposits (Sand Silt and Clay) with the eastern portion of the site located on the Raised Beach Deposits. Both are classified as Secondary A superficial aquifers, overlying the Lewes nodular chalk, Seaford chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk Formations, classified as a Principal Aquifer. Based on this, it was anticipated

that groundwater would be found at shallow to moderate depths within the Raised Beach deposits and River Terrace deposits. The main groundwater table though is expected at depth within the chalk formations.

The nearest surface water feature was observed to be an issue stream associated with the River Arun located 150m east of the site with the River Arun itself located 650m north-east of the site.

During the site investigation, Topsoil was encountered to 0.20-0.50m bgl, overlying sandy clay and gravelly Sand of the River Terrace Deposits and Raised Beach deposits overlying the chalk below. Groundwater strikes were noted at depths of between 0.50-3.00m bgl.

Comparison between the soil laboratory analysis and the derived Level 1 (soils) target concentrations indicate that Chromium, Nickel and Zinc are elevated and have the theoretical potential to pose a risk to Controlled Waters. It should be noted that a number of determinands at laboratory limit of detection exceed the target concentration for a Level 1 (soils) risk assessment, most notably PAHs. Where a determinand is identified at the laboratory limit of detection, no further assessment is considered necessary.

Given the Level 1 risk assessment does not consider dilution, dispersion or attenuation, and the conceptual site model shows the nearest receptor to be an issue stream, ~150m east of the site, it is not expected that the soils on-site represent an unacceptable risk to controlled water receptors. No further action is considered necessary.

The findings of this risk assessment should be agreed with the Environment Agency.

7.5. Ground Gas Risk Assessment

A review of freely available information prior to site works, including historical mapping and landfill registers, did not identify any source of ground gas on-site or within influencing distance of the site that warranted investigation through ground gas monitoring. However, a full Desk Study report is recommended to confirm this risk assessment.

7.5.1. Pragmatic Approach

An alternative approach to ground gas risk assessment considers the uncertainty from the measurement of ground gas concentrations and flow rates in monitoring wells for low-risk sites and removes the need for monitoring. Low risk sites typically comprise:

- Natural soils with high carbonate content (e.g. chalk);
- Natural soils that can produce gases (e.g. alluvium, peat etc.);
- Made Ground between 1.00m to 5.00m, with low organic content; and
- Areas of flooded mine workings, unless a building is to be within 20m of shaft or adit.

The method considers the gas generation potential of the soils from data that is not subject to external influences, for example atmospheric pressure can change the recorded flow and concentrations of ground gas during spot monitoring, or a rising groundwater level can displace ground gases in pore spaces. Determination of the characteristic situation is based on the total organic carbon (TOC) of the

soils, coupled with any organic-rich material identified within the borehole logs, such as wood gravels. TOC is easily analysed by the laboratory and can also be calculated by the equation outlined below.

Total Organic Carbon (TOC) = 0.58 x Soil Organic Matter (SOM) = 1.33 x Degradable Organic Carbon (DOC)

As part of the ground investigation works, 3 Topsoil and 2 River Terrace Deposit samples were submitted to the laboratory for analysis, which identified TOC to vary between 0.2 and 1.0% in the Topsoil and River Terrace Deposits.

7.5.2. Data Quality

A review was made of the quality of the available data for the site, which can be viewed in the table below. CIRIA Report C665 (2007), BS 8485:2015+A1:2019 and BS 8576:2013 stress the need for risk assessments to be based on good quality data and give guidance as to best practice in this respect.

Review of Data Quality			
Data Type	**Current Understanding**	**UK Practice**	**Recommendation**
Geological and hydro-geological conditions	The CSM identified the site to be located on limited Made Ground (<0.50m), overlying both permeable and impermeable strata of the River Terrace Deposits and Raised Beach Deposits. Groundwater has been encountered at shallow depth during drilling but has not been identified during monitoring.	CIRA C665 & C659, Wilson and Card (1999) and BS 8485 recommend that geology and hydrogeology be fully understood.	The geological and hydrogeological model is understood to a standard that will not comprise the findings of the risk assessment. **No further action required.**
Soil Laboratory Analysis	A dataset of soil analysis from 5No. samples have identified a range of TOC concentrations between 0.20% and 1.00%.	CL:AIRE RB17 outlines an approach to ground gas risk assessment away from the influences that directly affect ground gas monitoring. It should typically be used on sites with limited sources identified in the CSM and Made Ground with average thickness <3m and maximum thickness <5m. TOC should be < 6%.	The TOC concentrations are below the limit of 6% in order to use the soil derived approach for the risk assessment. **No further action required.**

7.5.3. Risk Assessment

The intrusive investigation has revealed no Made Ground on site and a maximum thickness of Topsoil of 0.50m overlying the River Terrace Deposits and the Raised Beach Deposits comprising cohesive and granular soils.

Using the soil derived method, it is considered that a TOC value of <1% within soil is unlikely to pose an unacceptable risk from ground gases and the site can be characterised as Characteristic Situation CS1. Any value between 3 and 6% warrants classification as a Characteristic Situation CS3. Any value over 6% requires investigation through ground gas monitoring. Any site with Made Ground <1.00m bgl will have a limited gas generation potential from the organic carbon present and consideration should be given to this thickness within the risk assessment.

An alternative approach for ground gas risk assessment (CL:AIRE RB17) can be considered utilising measured concentrations from soil parameters that are independent of influencing factors such as atmospheric pressure and groundwater level. Total Organic Carbon (TOC) was tested on 5No. samples with the analytical results ranging between 0.20 and 1.00%. Furthermore, it is considered that a thickness of Made Ground of <0.80m would not generate sufficient ground gas to pose an unacceptable risk.

Based on the soil derived method outlined and the maximum TOC concentration encountered, the soils from site would warrant classification as **Characteristic Situation CS1**. It should be noted that this only represents the assessment from an on-site source.

7.6. Vapour Risk Assessment

In order to assess the potential for a vapour risk at the site, soil samples were sent to the laboratory for analysis (Appendix G). The testing suites included contaminants that may be present in the vapour phrase (Mercury, Napthalene, TPHs and markers for volatile Organic Compounds (VOCs)) taken within Topsoil samples, as well as samples from the River Terrace Deposits.

The samples did not identify any concentrations above the respective soil assessment criteria. In addition, BTEX and MTBE were at LOD.

8. CONTAMINATION RECOMMENDATIONS AND REMEDIATION STRATEGY

Given the low levels of determinands noted during the chemical laboratory testing, it was considered that no remediation was required within the soils for the end users of the site.

An Asbestos Management Strategy should be put in place so that any potentially asbestos containing materials are identified and removed from site in a suitable manner to prevent cross-contamination.

It is recommended that further soil sampling be undertaken across the site to confirm this risk assessment as at this stage only a small number of samples have been tested.

A nominal 100mm capping of clean topsoil is required in all areas of proposed soft landscaping to act as a suitable growing medium.

8.1.1. Water Supply Pipes

The Water Supply pipe risk assessment indicated that the use of PE pipes is appropriate at the site and no further measures are required.

8.2. Groundwater

Comparison between the soil laboratory analysis and the derived Level 1 (soils) target concentrations indicate that Chromium, Nickel and Zinc are elevated and have the potential to pose a risk to Controlled Waters. It should be noted that a number of determinands at laboratory limit of detection exceed the target concentration for a Level 1 (soils) risk assessment, most notably PAHs. Where a determinand is identified at the laboratory limit of detection, no further assessment is considered necessary.

Given the Level 1 risk assessment does not consider dilution, dispersion or attenuation, and the conceptual site model shows the nearest receptor to be an issue stream, ~150m east of the site, it is not expected that the soils on-site represent an unacceptable risk to controlled water receptors. No further action is considered necessary.

8.3. Ground Gas and Vapours

Based on risk assessment undertaken, the site warrants classification as **Characteristic Situation CS1**. The risk from vapours was considered to be low due to the very low concentrations of BTEX compounds (Benzene, Toluene, Ethylbenzene, Xylene) and MTBE, which are used as marker compounds for Volatile Organic Compounds (VOCs) and the low anticipated risk level.

8.4. Discovery Strategy

There may be areas of contamination that have not been identified during the course of the intrusive investigation (e.g. underground storage tanks). Such occurrences may be discovered during the construction phases for the redevelopment of the site.

Groundworkers should be instructed to report to the Site Manager any evidence for such contamination; this may comprise visual indicators, such as fibrous materials within the soil, discolouration, or odours and emission. Upon discovery advice must be taken from a suitably qualified person and then the Local Authority will need to be informed.

8.5. Imported Material

It is not envisaged that soils will be brought onto site as part of the development works, however, any soil which is to be imported onto the site must undergo chemical analysis to prove that it is suitable for the purpose for which it is intended.

The soil must be fit for purpose and must either be supplied with traceable chemical laboratory test certificates or be tested, prior to placing (ideally) and after placing, to ensure that the future receptors (human health and vegetation) cannot come into contact with compounds that could be detrimental to their health. The compounds that are to be tested for are those given in the Generic Assessment Criteria, which can be viewed in Appendix H of this report.

8.6. Waste Disposal

The excavation of foundations and other soils is likely to produce waste which will require classification and then recycling or removal from site.

Under the Landfill (England and Wales) Regulations 2002 (as amended), prior to disposal, all waste must be classified as either: Inert; Non-hazardous; or Hazardous.

The Environment Agency's Hazardous Waste Technical Guidance (WM3) document outlines the methodology for classifying wastes. Once classified the waste can be removed to the appropriately licensed facilities, with some waste requiring pre-treatments prior to disposal.

Following the investigation, 3No. samples of topsoil and 2No. samples of the River Terrace Deposits were submitted to the analytical laboratory to undergo a suite of testing for contamination testing, as discussed in the previous sections. Sampling depths were chosen to reflect the receptor of concern, human health, and typically comprised a surface or near surface sample and periodically to 1.00m bgl. Any horizon where olfactory or visual evidence of contamination was present was also sampled.

Based on a risk phase analysis of the chemical laboratory test results, in accordance with EC Hazardous Waste Directive and undertaken by Ground and Water Limited, all soil samples of Topsoil and River Terrace Deposits encountered on-site were NON-HAZARDOUS. The results of the assessment are given within Appendix I.

It is important to note that whilst we consider our in-house assessment tool to be an accurate interpretation of the requirements of WM3, therefore producing an initial classification in accordance with the guidance, this method classifies soils as either non-hazardous or hazardous and landfill operators have their own assessment tools and can often come to different conclusions. As a result, some landfill operators could refuse to take apparently suitable waste. It is recommended that the receiving landfill views the results of this assessment and the chemical laboratory results to determine their own classification.

In addition to the samples described above, 2No. samples of the topsoil were scheduled to undergo Waste Acceptance Criteria (WAC) testing with single batch leachate from samples with a range of depths. The results indicate that 2No. samples of the topsoil conformed to the Inert Waste Classification.

8.7. Duty of Care

Groundworkers must maintain a good standard of personal hygiene including the wearing of overalls, boots, gloves and eye protectors and the use of dust masks during periods of dry weather.

To prevent exposure to airborne dust by both the general public and construction personnel the site should be kept damp during dry weather and at other times when dust would be generated as a result of construction activities.

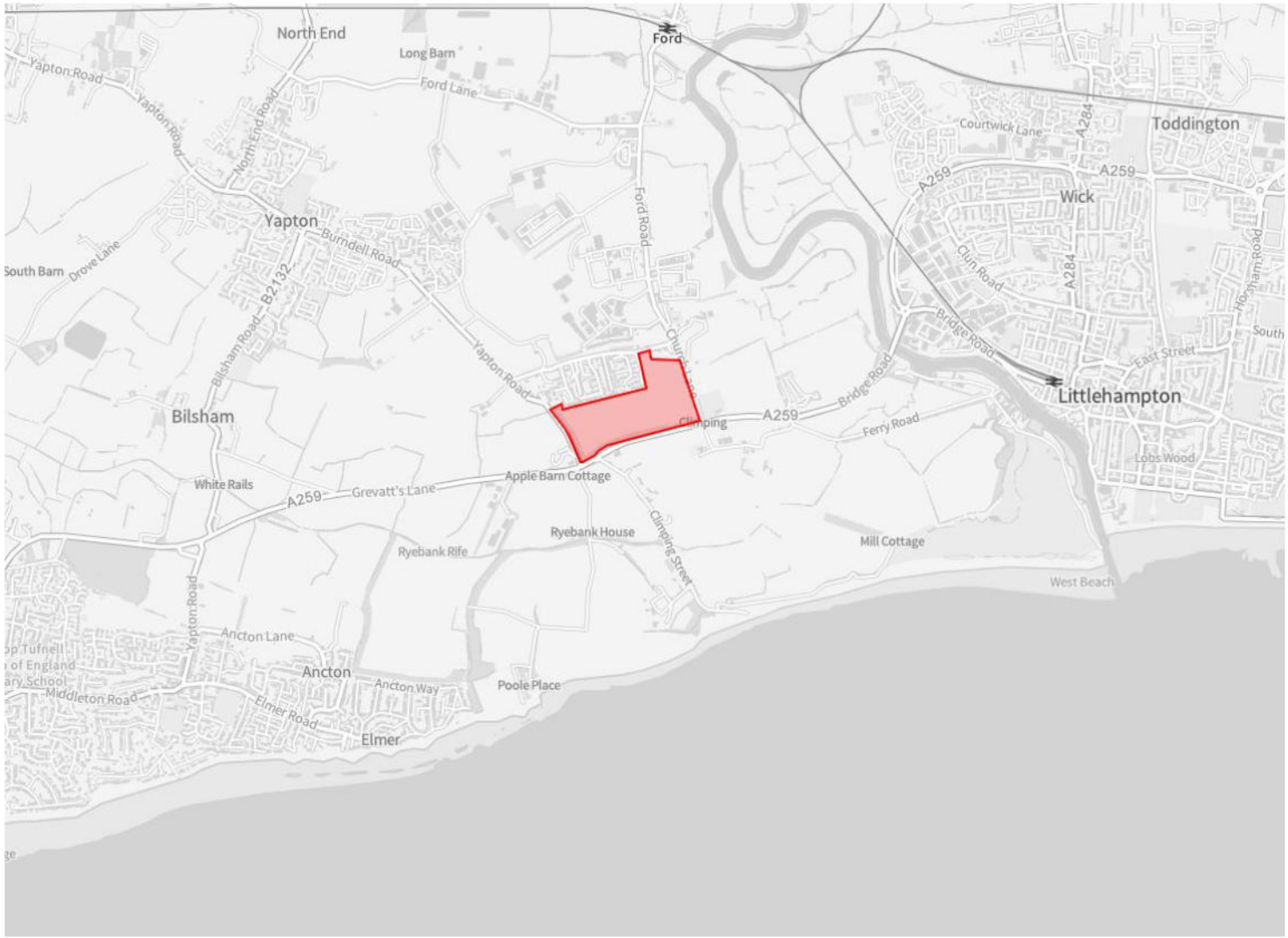
The site should be securely fenced at all times to prevent unauthorised access. Washing facilities should be provided and eating restricted to mess huts.

FIGURES

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

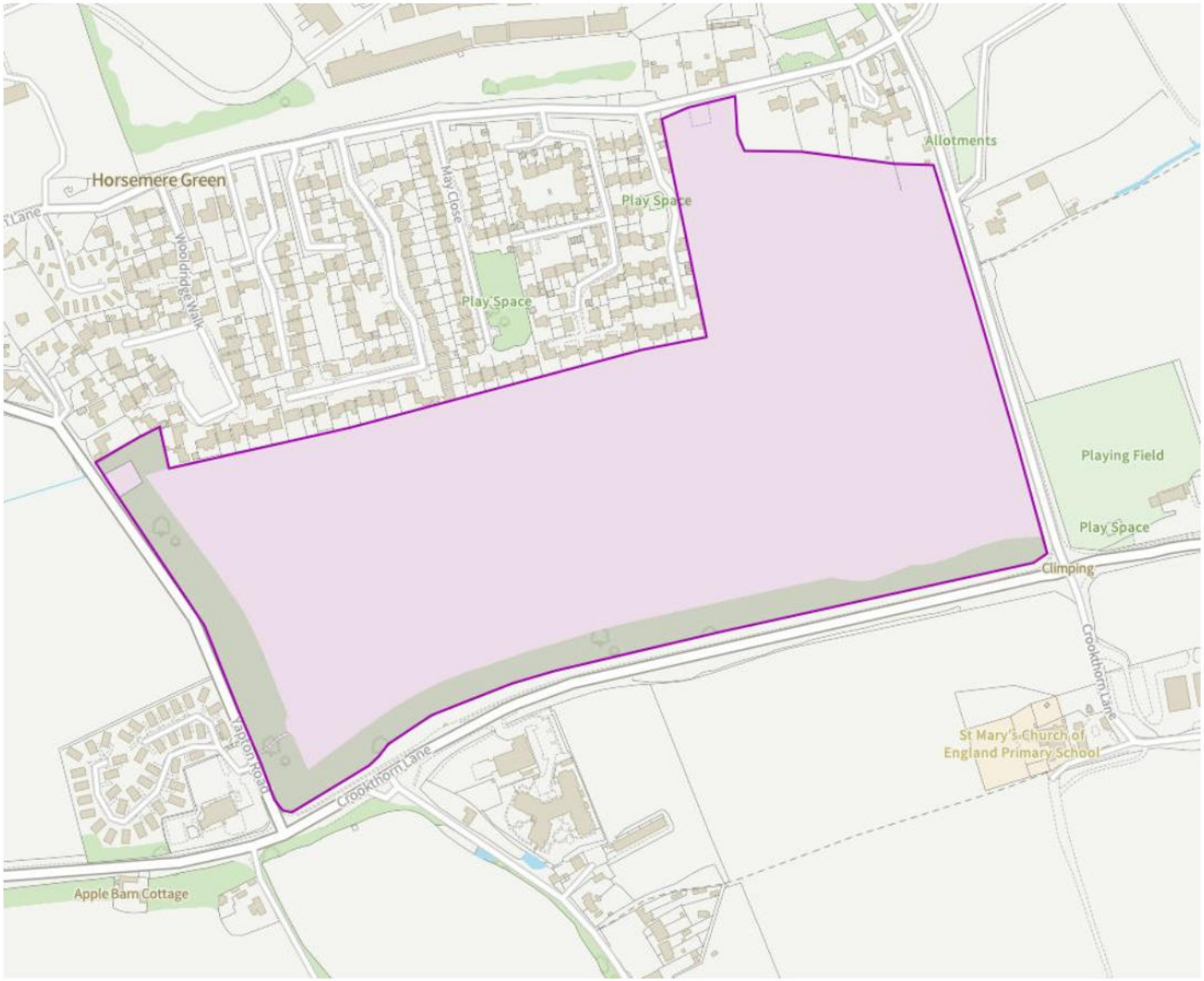
Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001



Site Boundary

Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 1 – Site Location Plan	**GWPR6003**

ground&water



Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 2 – Proposed Development Plan	**GWPR6003**

ground&water



Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 3 – Aerial Photograph	**GWPR6003**

ground&water



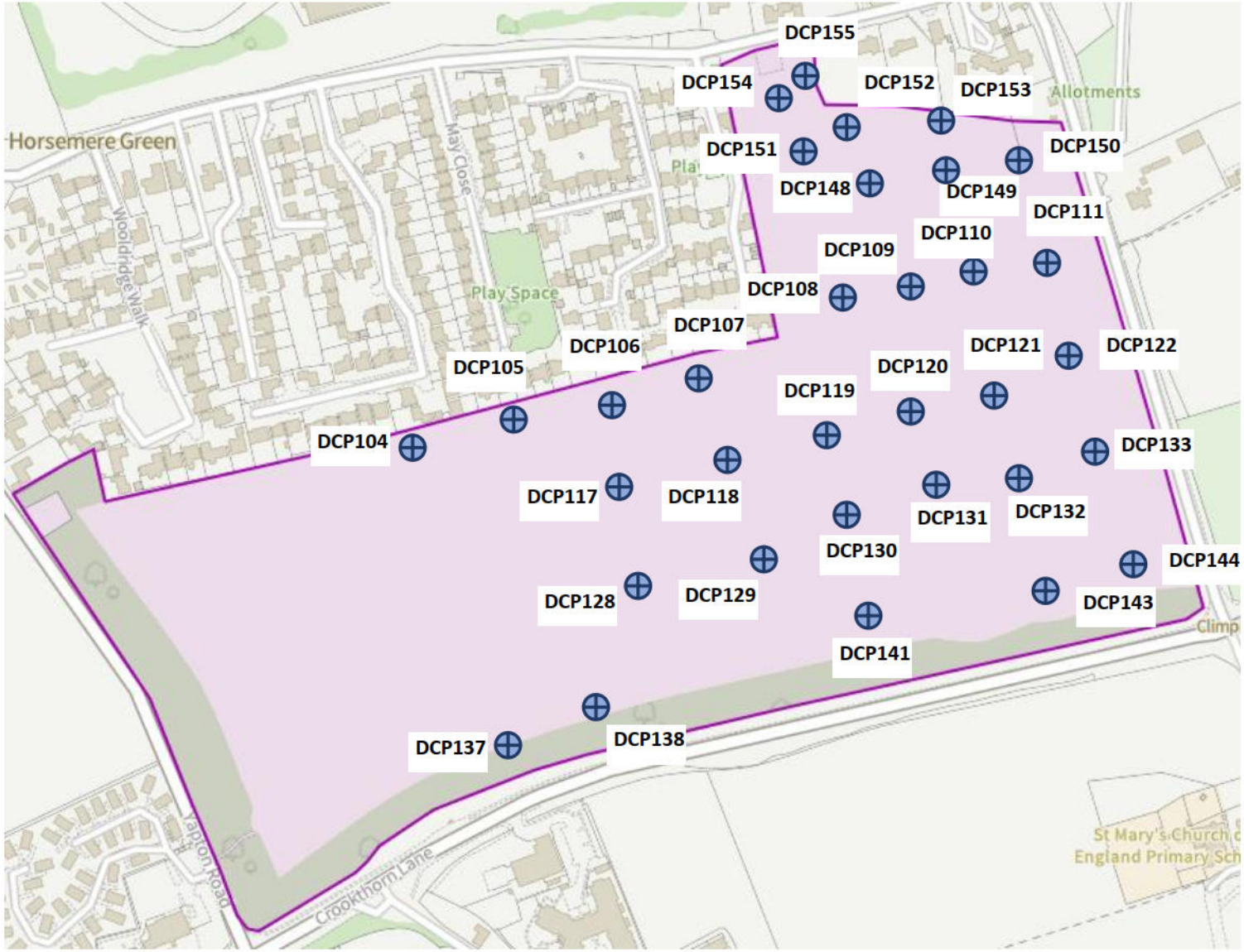
Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 4 –Proposed Development Plan	**GWPR6003**

ground&water



Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 5 –Trial Hole Location Plan (WS, BRE, CBR)	**GWPR6003**

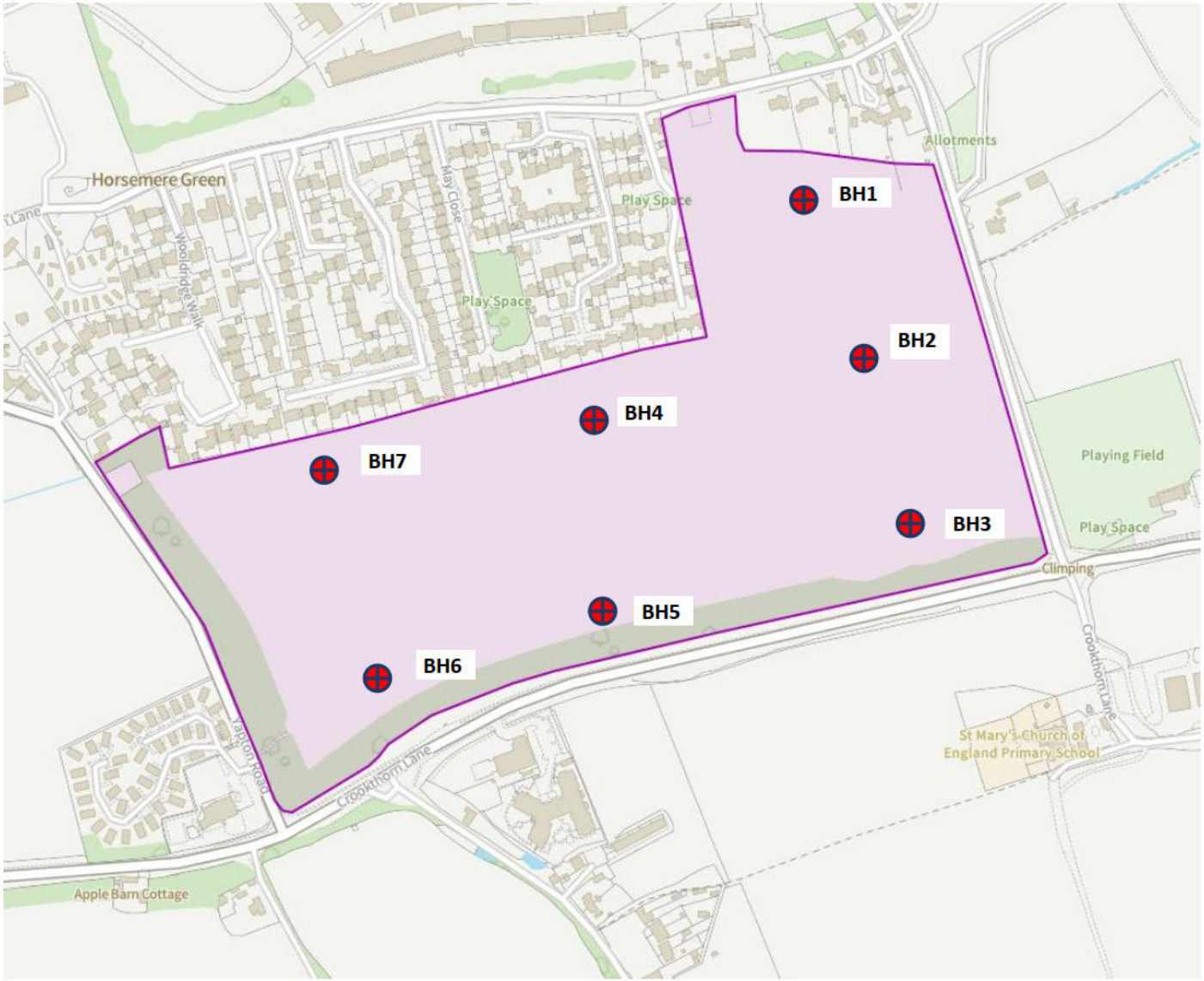
ground&water



CPT Test Locations

Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 6 – Trial Hole Location Plan (CPT)	**GWPR6003**

ground&water



Cable Percussion Borehole

Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 7 – Trial Hole Location Plan (BH)	**GWPR6003**

ground&water



Large Body of standing Water on the southern portion of the site

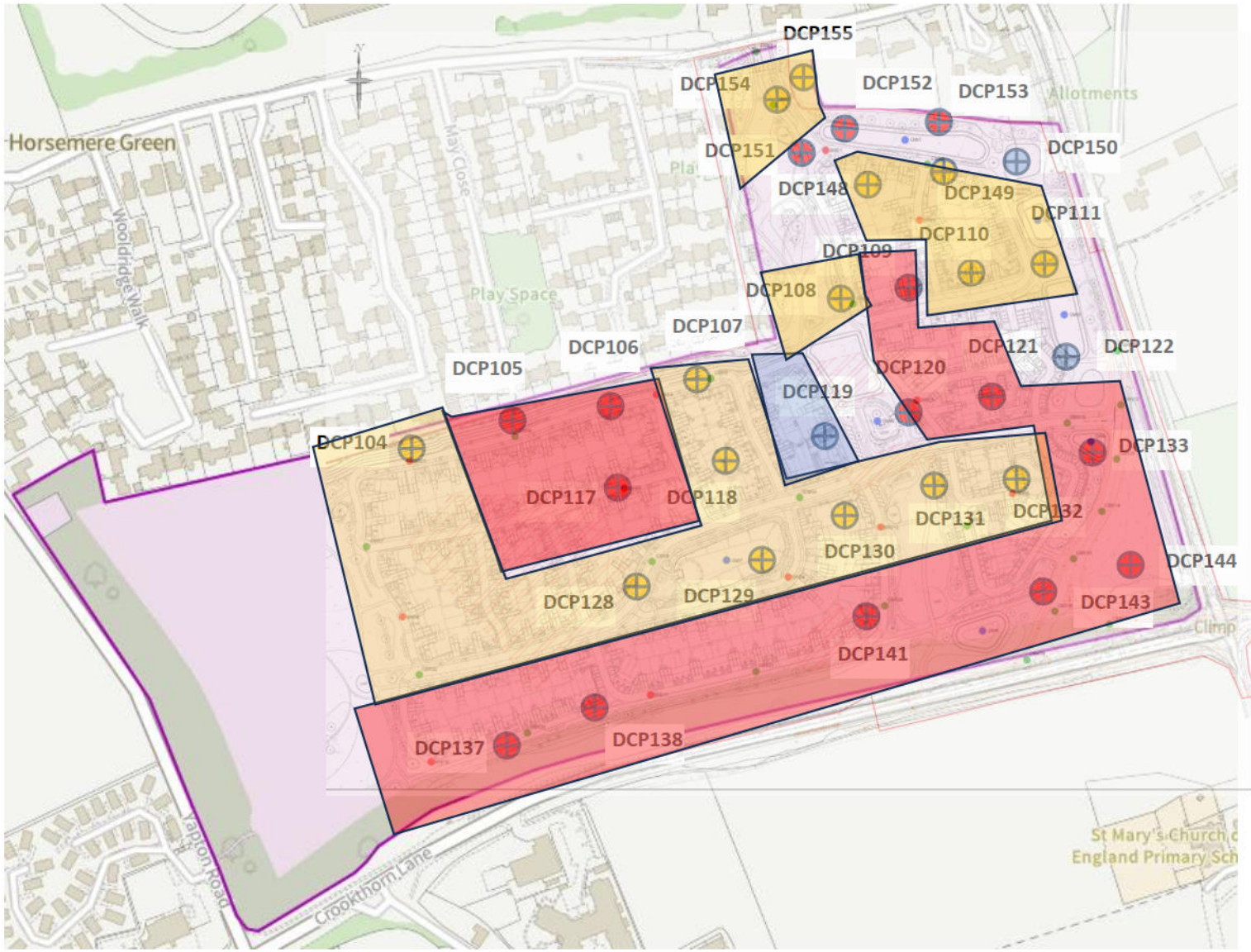




Soakaway test pit, before any water had been filled. Groundwater levels had risen to close to ground level. No soakaway tests were undertaken in pits BRE4-BRE8 and BRE10-BRE12.

Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 8 –Groundwater Conditions Photos	**GWPR6003**

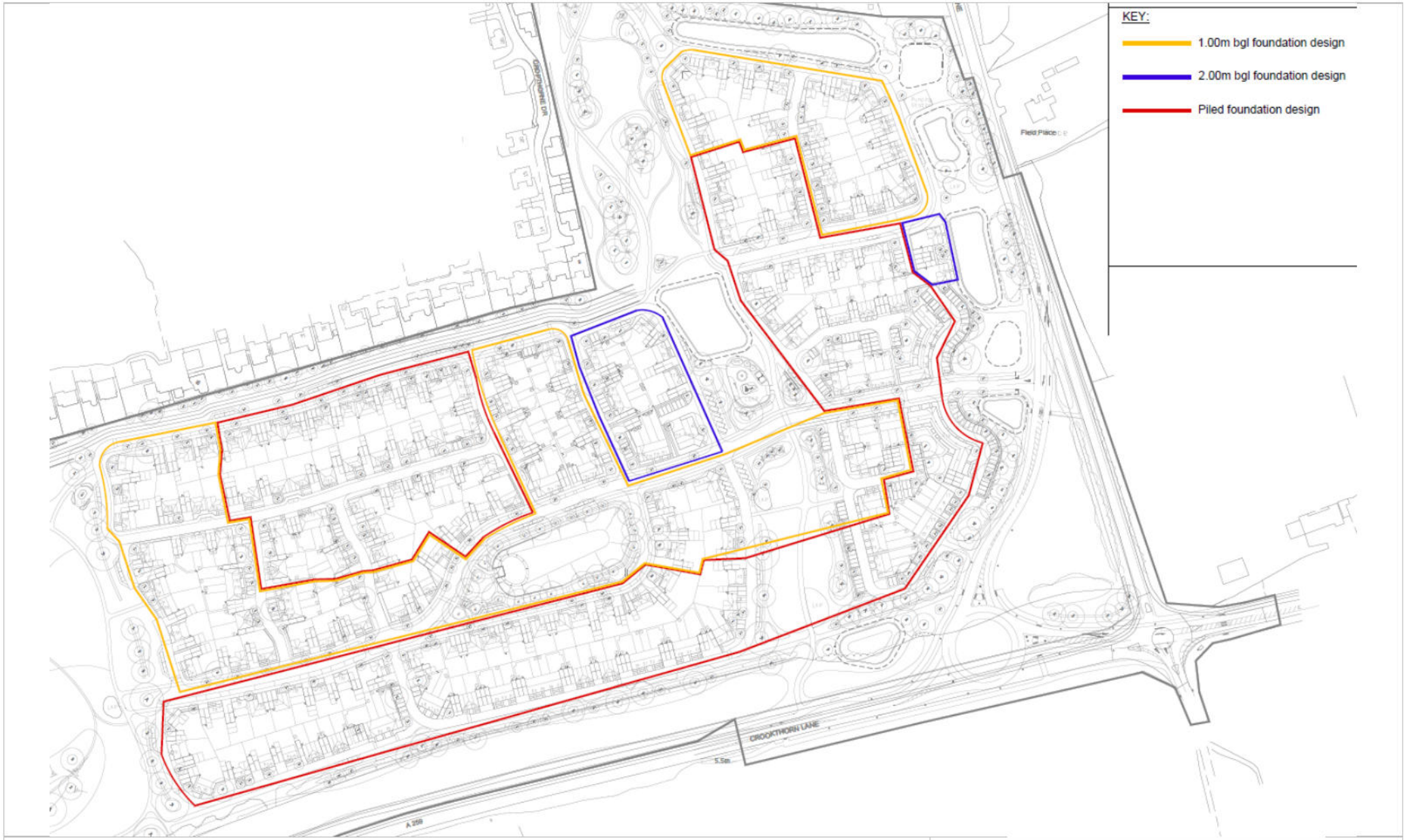
ground&water



- CPT Test Location- 1.00m bgl foundation design
- CPT Test Location- 2.00m bgl foundation design
- CPT Test Location- Piled foundation design

Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 9 – Foundation solution	**GWPR6003**

ground&water



Land adj. to Church Lane, Climping, West Sussex, BN17 5GG	
Foreman Homes	**August 2024**
Figure 10 – Foundation solution	**GWPR6003**

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APPENDIX A: Conditions and Limitations

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

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

The report has been prepared on the basis of information, data and materials which were available at the time of writing. Accordingly, any conclusions, opinions or judgements made in the report should not be regarded as definitive or relied upon to the exclusion of other information, opinions and judgements.

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

Any decisions made by you, or by any organisation, agency or person who has read, received or been provided with information contained in the report ("you" or "the Recipient") are decisions of the Recipient and we will not make, or be deemed to make, any decisions on behalf of any Recipient. We will not be liable for the consequences of any such decisions.

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

Any Recipient must take into account any other factors apart from the Report of which they and their experts and advisers are or should be aware. The information, data, conclusions, opinions and judgements set out in the report may relate to certain contexts and may not be suitable in other contexts. It is your responsibility to ensure that you do not use the information we provide in the wrong context.

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

The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous in ground activities. The ground conditions have been sampled or monitored in recorded locations and tests for some of the more common chemicals generally expected. Other concentrations of types of chemicals may exist.

The conclusions and recommendations relate to Land adj. to Church Lane, Climping, West Sussex, BN17 5GG.

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

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

Ownership of copyright of all printed material including reports, laboratory test results, trial pit and borehole log sheets, including drillers log sheets, remain with Ground and Water Limited. Licence is for the sole use of the client and may not be assigned, transferred or given to a third party.

Only our client may rely on this report and should this report or any information contained in it be provided to any third party we accept no responsibility to the third party for the contents of this report save to the extent expressly outlined by us in writing in a reliance letter addressed from us to the third party.

Recipients are not permitted to publish this report outside of their organisation without our express written consent.

APPENDIX B: Technical Glossary

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

TECHNICAL GLOSSARY

The list of possible definitions within the report may be seen below. Please note that some definitions may not be relevant to this report.

HYDROGEOLOGY:

A **Principal Aquifer** is a layer of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

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

Secondary (B) Aquifers consist of deposits with predominantly lower permeability layers with may stoke and yield limited amounts of groundwater due to localised features such as fissures, think permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

Secondary Aquifers (Undifferentiated) are assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both a minor aquifer and non-aquifer in different locations due to the variable characteristics of the rock type.

Unproductive Strata are rock layers with low permeability that have negligible significance for water supply or river base flow. These were formerly classified as non-aquifers.

FLOOD ZONES:

Environment Agency Flood Zone 2, defined as; land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.

Environment Agency Flood Zone 3 shows the extent of a river flood with a 1 in 100 (1%0 or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year.

Environment Agency Flood Zone 3 area that benefits from flood defences, defined as; land and property in this flood zone would have a high probability of flooding without the local flood defences. These protect the area against a river flood with a 1% chance of happening each year, or a flood from the sea with a 0.5% chance of happening each year.

GROUNDWATER SOURCE PROTECTION ZONES (SPZS):

Inner Zone (SPZ1): This zone is 50 day travel time of pollutant to source with a 50 metres default minimum radius.

Outer Zone (SPZ2): This zone is 400 day travel time of pollutant to source. This has a 250 or 500 metres minimum radius around the source depending on the amount of water taken.

Total Catchment (SPZ3): This is the area around a supply source within which all the groundwater ends up at the abstraction point. This is the point from where the water is taken. This could extend some distance from the source point.

Zone of Special Interest (SPZ4): This zone is where local conditions require additional protection.

IN-SITU STRENGTH GEOTECHNICAL TESTING:

Windowless Sample and/or Cable Percussion and/or Rotary Boreholes provide samples of the ground for assessment but they do not give any engineering data. The standard penetration test (SPT) is an in-situ dynamic penetration test designed to provide information on the geotechnical engineering properties of soil. The test uses a thick-walled sample tube, with an outside diameter of 50mm and an inside diameter of 35mm, and a length of around 650mm. This is driven into the ground at the bottom of a borehole by blows from a slide hammer with a weight of 63.5kg falling through a distance of 760mm. The sample tube is driven 150mm into the ground and then the number of blows needed for the tube to penetrate each 75mm up to a depth of 450mm is recorded. The sum of the number of blows is termed the "standard penetration resistance" or the "N-value".

Dynamic Probing involves the driving of a metal cone into the ground via a series of steel rods. These rods are driven from the surface by a hammer system that lifts and drops a 63.5kg (SHDP) hammer onto the top of the rods through a set height, thus ensuring a consistent energy input. The number of hammer blows that are required to drive the cone down by each 100mm increment are recorded. These blow counts then provide a comparative assessment from which correlations have been published, based on dynamic energy, which permits engineering parameters to be generated. (The Dynamic Probe 'Super Heavy' (SHDP) Tests were conducted in accordance with BS 1377; 1990; Part 9, Clause 3.2).

APPENDIX C: Groundsure Historical Mapping and GeoInsight Report

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

Groundsure LOCATION INTELLIGENCE

Geo Insight

Land adj. to Church Lane Climping West Sussex BN17 5GG

Order Details

Date: 28/02/2024

Your ref: GWPR5903 Church Lane Climping West Sussex

Our Ref: GS-AUV-5SM-6U7-YEE

Site Details

Location: 500037 102014

Area: 25.46 ha

Authority: Arun District Council ↗



Summary of findings p. 2 >

Aerial image p. 5 >

OS MasterMap site plan N/A: >10ha

groundsure.com/insightuserguide ↗

Contact us with any questions at:

[redacted]

Certified B Corporation

Summary of findings

Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
10 >	1.1 >	10k Availability >	Identified (within 500m)				
11	1.2	Artificial and made ground (10k)	0	0	0	0	-
12 >	1.3 >	Superficial geology (10k) >	4	0	1	2	-
13	1.4	Landslip (10k)	0	0	0	0	-
14 >	1.5 >	Bedrock geology (10k) >	2	0	0	0	-
15	1.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
16 >	2.1 >	50k Availability >	Identified (within 500m)				
17	2.2	Artificial and made ground (50k)	0	0	0	0	-
17	2.3	Artificial ground permeability (50k)	0	0	-	-	-
18 >	2.4 >	Superficial geology (50k) >	2	0	1	0	-
19 >	2.5 >	Superficial permeability (50k) >	Identified (within 50m)				
19	2.6	Landslip (50k)	0	0	0	0	-
19	2.7	Landslip permeability (50k)	None (within 50m)				
20 >	2.8 >	Bedrock geology (50k) >	1	0	0	0	-
21 >	2.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
21	2.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
22 >	3.1 >	BGS Boreholes >	0	0	1	-	-
Page	Section	Natural ground subsidence >					
23 >	4.1 >	Shrink swell clays >	Low (within 50m)				
24 >	4.2 >	Running sands >	Low (within 50m)				
26 >	4.3 >	Compressible deposits >	Negligible (within 50m)				
27 >	4.4 >	Collapsible deposits >	Low (within 50m)				
28 >	4.5 >	Landslides >	Very low (within 50m)				
29 >	4.6 >	Ground dissolution of soluble rocks >	Very low (within 50m)				

Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
31	5.1	BritPits	0	0	0	0	-
32 >	5.2 >	Surface ground workings >	0	0	9	-	-
32	5.3	Underground workings	0	0	0	0	0
32	5.4	Underground mining extents	0	0	0	0	-
33	5.5	Historical Mineral Planning Areas	0	0	0	0	-
33	5.6	Non-coal mining	0	0	0	0	0
33	5.7	JPB mining areas	None (within 0m)				
33	5.8	The Coal Authority non-coal mining	0	0	0	0	-
34	5.9	Researched mining	0	0	0	0	-
34	5.10	Mining record office plans	0	0	0	0	-
34	5.11	BGS mine plans	0	0	0	0	-
34	5.12	Coal mining	None (within 0m)				
34	5.13	Brine areas	None (within 0m)				
35	5.14	Gypsum areas	None (within 0m)				
35	5.15	Tin mining	None (within 0m)				
35	5.16	Clay mining	None (within 0m)				

Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
36	6.1	Natural cavities	0	0	0	0	-
36	6.2	Mining cavities	0	0	0	0	0
36	6.3	Reported recent incidents	0	0	0	0	-
36	6.4	Historical incidents	0	0	0	0	-
37	6.5	National karst database	0	0	0	0	-

Page	Section	Radon >	
38 >	7.1 >	Radon >	Less than 1% (within 0m)

Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
40 >	8.1 >	BGS Estimated Background Soil Chemistry >	7	0	-	-	-
40	8.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
41	8.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
42	9.1	Underground railways (London)	0	0	0	-	-
42	9.2	Underground railways (Non-London)	0	0	0	-	-
42	9.3	Railway tunnels	0	0	0	-	-
42	9.4	Historical railway and tunnel features	0	0	0	-	-
42	9.5	Royal Mail tunnels	0	0	0	-	-
43	9.6	Historical railways	0	0	0	-	-
43	9.7	Railways	0	0	0	-	-
43	9.8	Crossrail 1	0	0	0	0	-
43	9.9	Crossrail 2	0	0	0	0	-
43	9.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 20/04/2021

Site Area: 25.46ha

Recent site history - 2018 aerial photograph



Capture Date: 28/06/2018

Site Area: 25.46ha

Recent site history - 2012 aerial photograph



Capture Date: 13/09/2012

Site Area: 25.46ha

Recent site history - 2010 aerial photograph



Capture Date: 24/04/2010

Site Area: 25.46ha

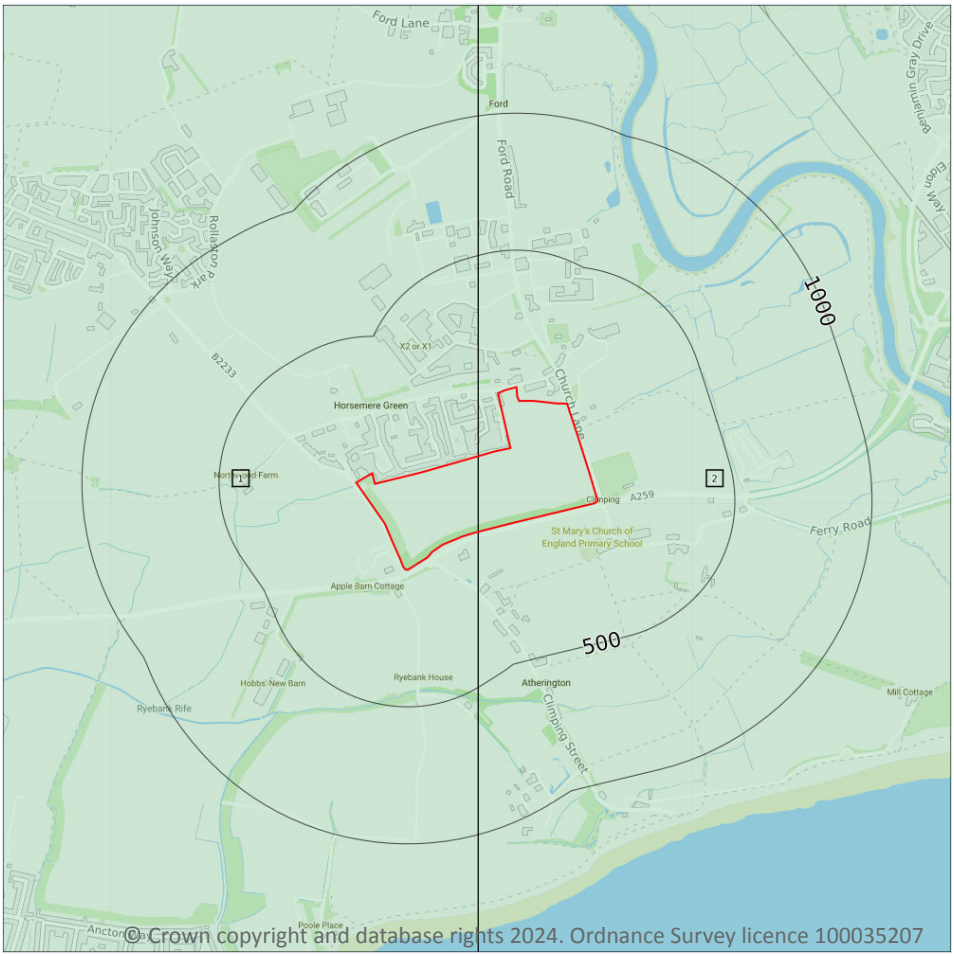
Recent site history - 1999 aerial photograph



Capture Date: 25/07/1999

Site Area: 25.46ha

1 Geology 1:10,000 scale - Availability



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Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

1.1 10k Availability

Records within 500m	2

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 10 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**No coverage**	**SU90SE**
2	**On site**	**Full**	**Full**	**Full**	**No coverage**	**TQ00SW**

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

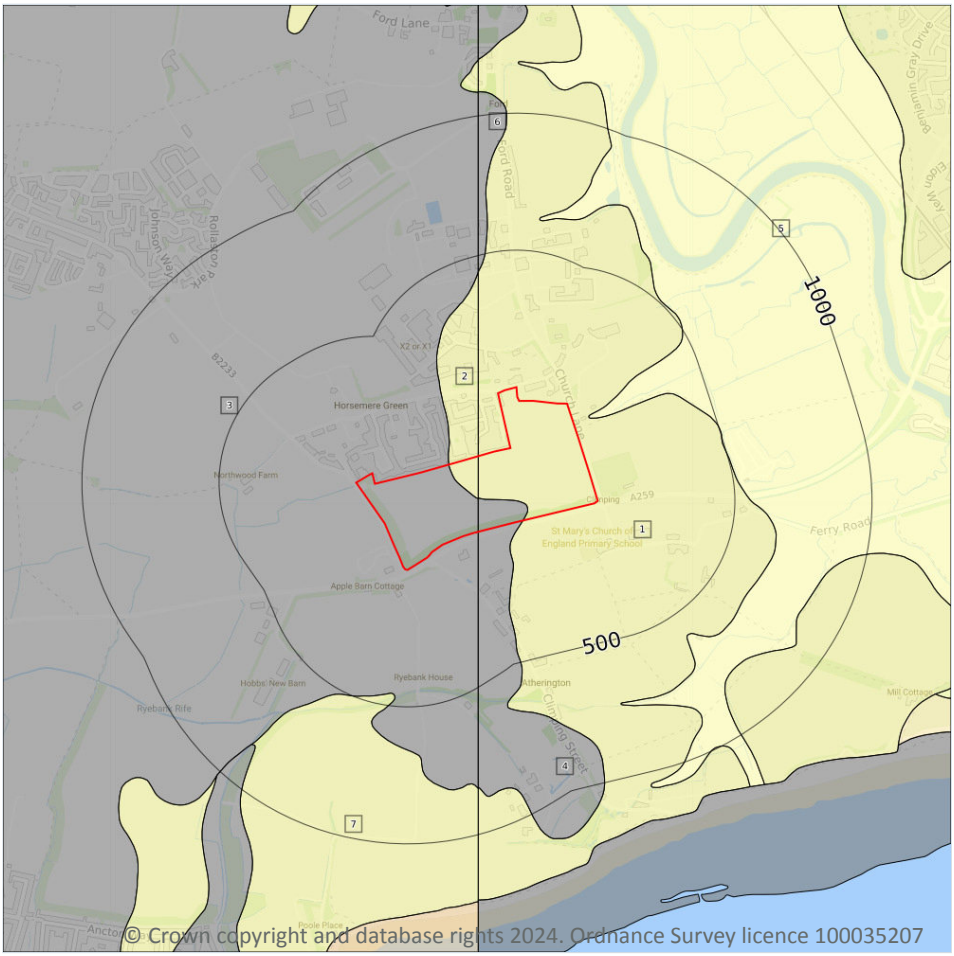
1.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

1.3 Superficial geology (10k)

Records within 500m **7**

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 12 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**RBD1-V**	**Raised Beach Deposits, 1 - Gravel**	**Gravel**
2	**On site**	**RBD1-XSV**	**Raised Beach Deposits, 1 - Sand And Gravel**	**Sand And Gravel**
3	**On site**	**RTDU-Z**	**River Terrace Deposits (undifferentiated) - Silt (unlithified Deposits Coding Scheme)**	**Silt**

ID	Location	LEX Code	Description	Rock description
4	**On site**	**BRK-Z**	**Brickearth - Silt**	**Silt**
5	61m NE	TRD-XSZC	Tidal River Or Creek Deposits - Sand, Silt And Clay	Sand, Silt And Clay
6	442m N	BRK-Z	Brickearth - Silt	Silt
7	454m SW	RBD1-XSV	Raised Beach Deposits, 1 - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

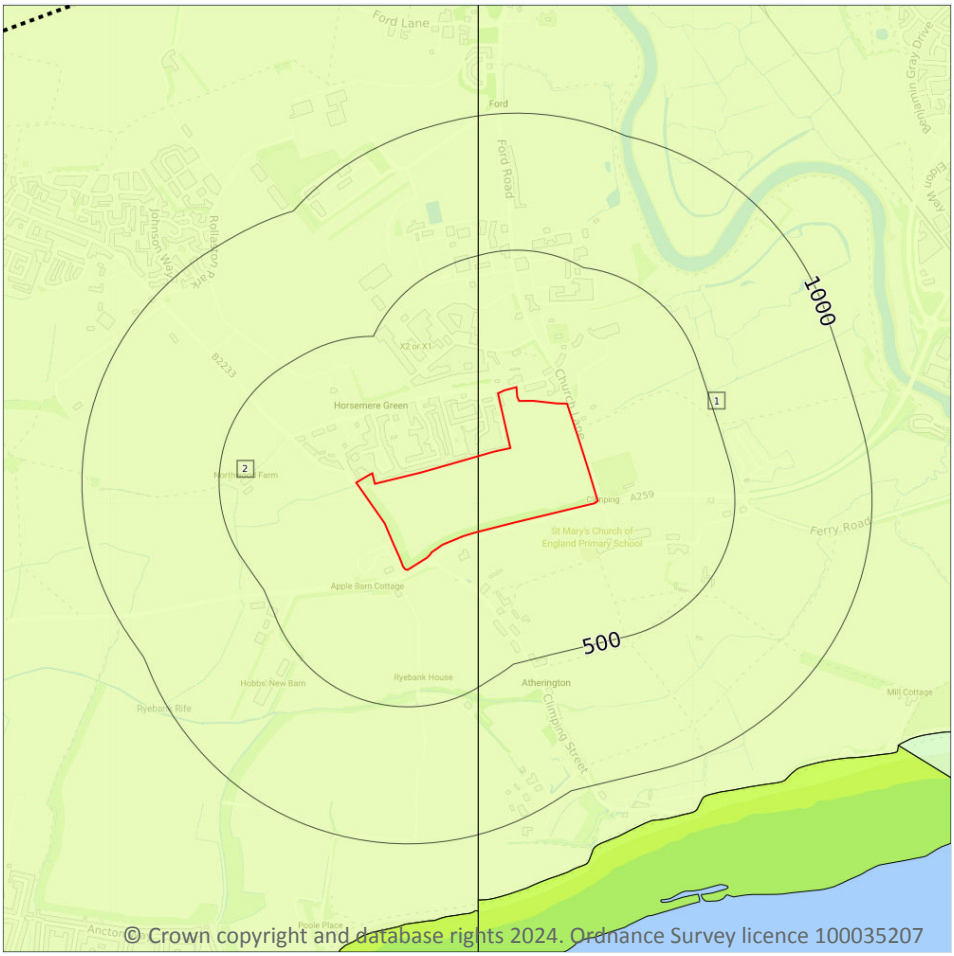
1.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



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Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

1.5 Bedrock geology (10k)

Records within 500m **2**

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 14 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LPCK-CHLK**	**Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation And Portsdown Chalk Formation (undifferentiated) - Chalk**	**Campanian Age - Turonian Age**

ID	Location	LEX Code	Description	Rock age
2	**On site**	**LPCK-CHLK**	**Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation And Portsdown Chalk Formation (undifferentiated) - Chalk**	**Campanian Age - Turonian Age**

This data is sourced from the British Geological Survey.

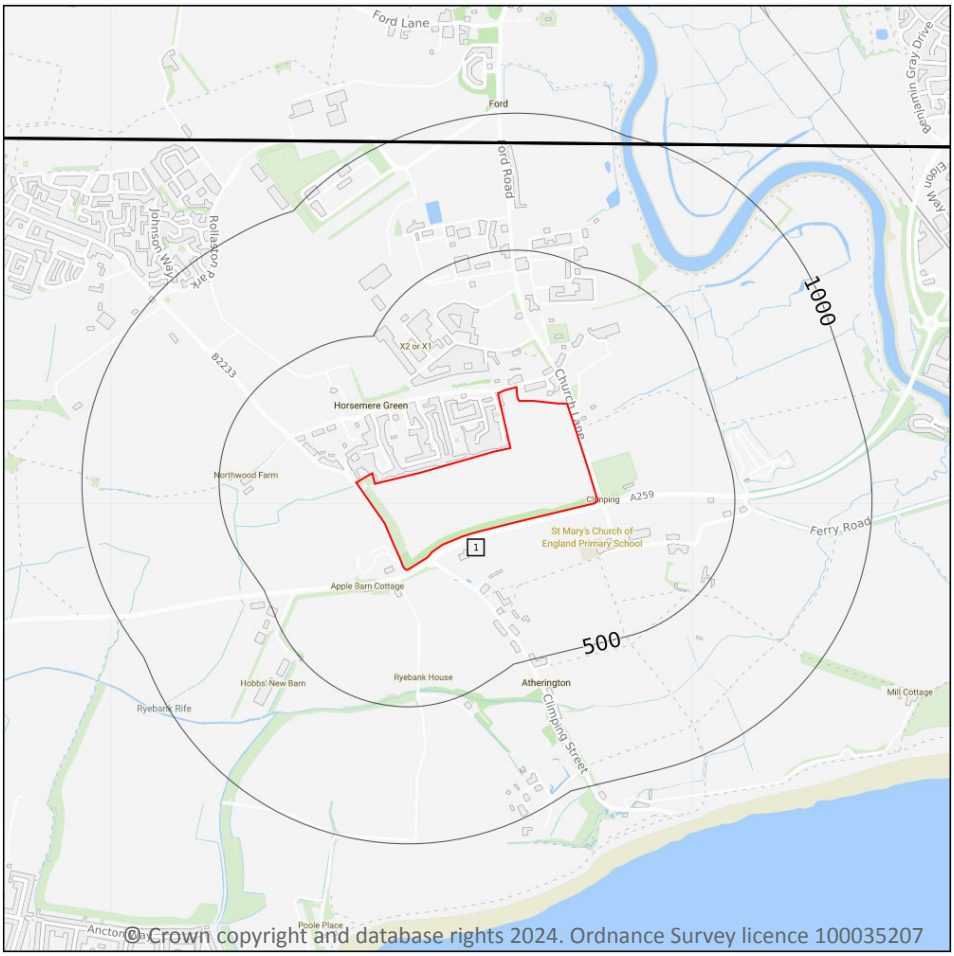
1.6 Bedrock faults and other linear features (10k)

Records within 500m	**0**

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

2 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

2.1 50k Availability

Records within 500m	1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 16 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW317_332_chichester_and_**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

2.2 Artificial and made ground (50k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

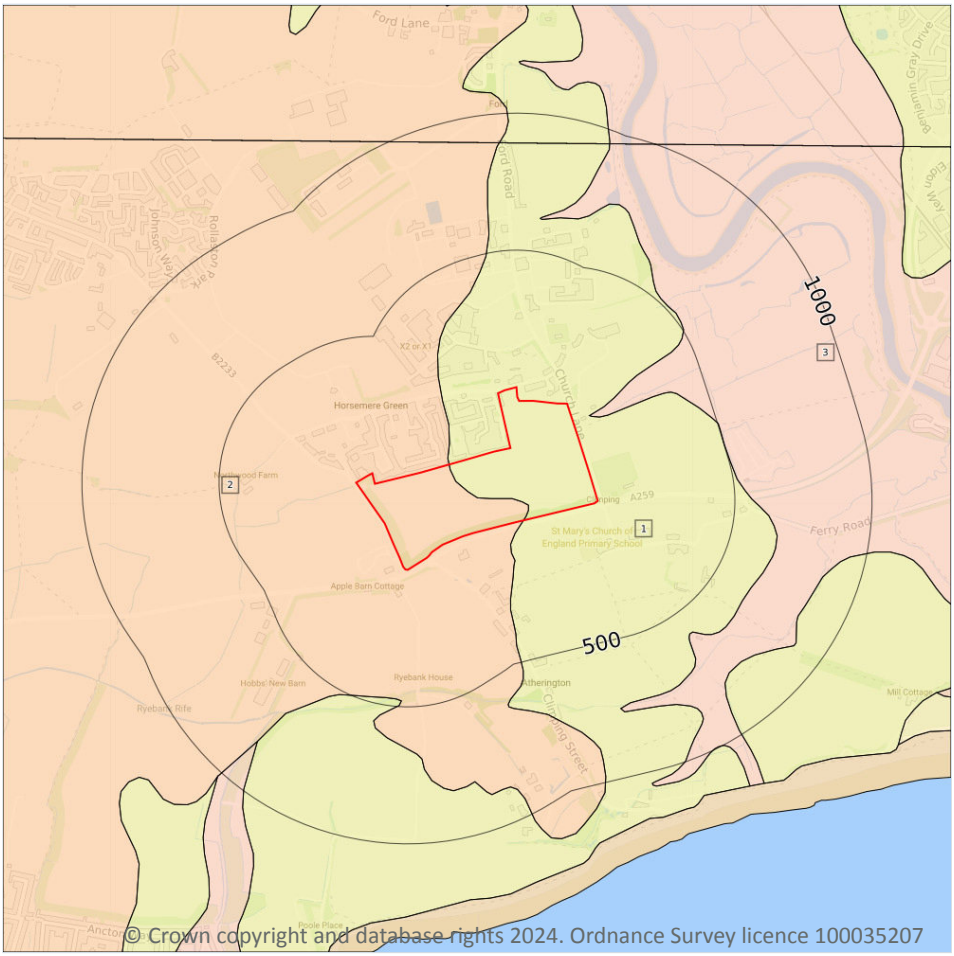
2.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



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Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

2.4 Superficial geology (50k)

Records within 500m **3**

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 18 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**RBD1-XSV**	**RAISED BEACH DEPOSITS, 1**	**SAND AND GRAVEL**
2	**On site**	**RTDU-XSZC**	**RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)**	**SAND, SILT AND CLAY**
3	65m NE	RMD-XCZSV	RAISED MARINE DEPOSITS	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

2.5 Superficial permeability (50k)

Records within 50m	4

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**Very High**	**High**
On site	**Intergranular**	**Very High**	**High**
On site	**Intergranular**	**High**	**Low**
On site	**Intergranular**	**High**	**Low**

This data is sourced from the British Geological Survey.

2.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

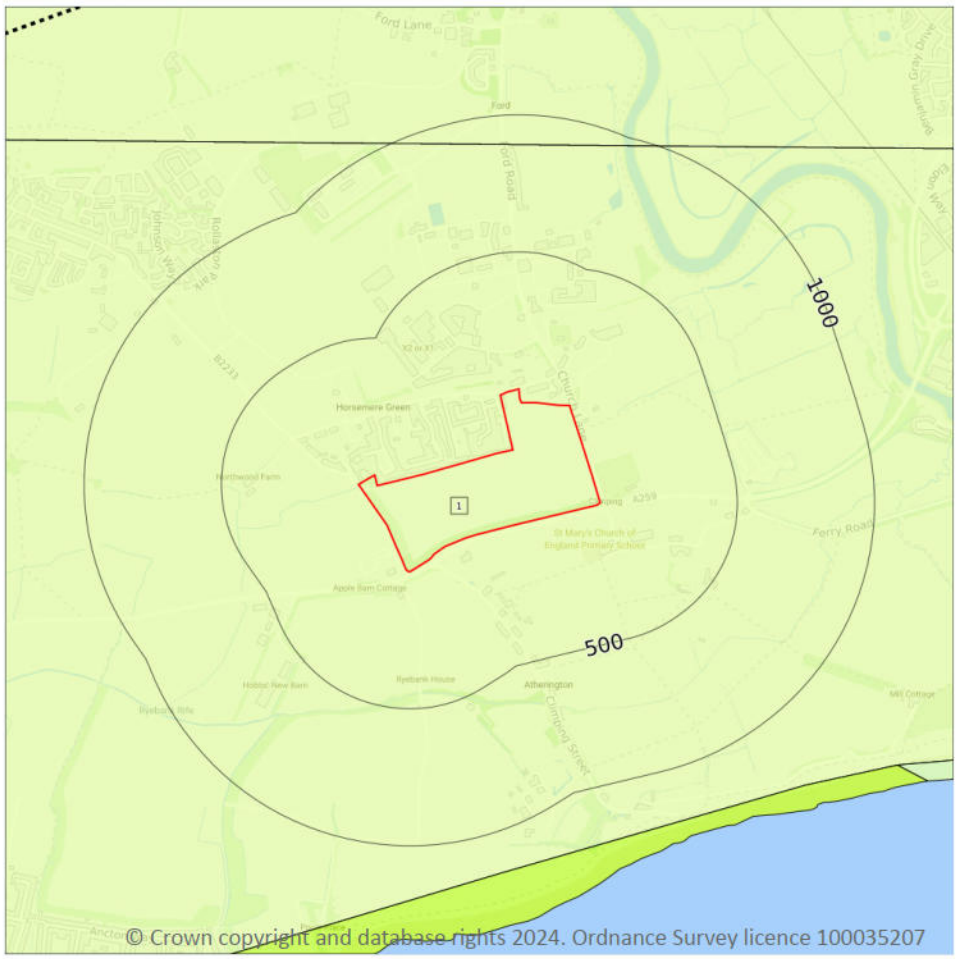
2.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



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Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

2.8 Bedrock geology (50k)

Records within 500m **1**

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 20 >**

ID	Location	LEX Code	Description	Rock age
1	On site	LPCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK FORMATION AND PORTSDOWN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	TURONIAN

This data is sourced from the British Geological Survey.

2.9 Bedrock permeability (50k)

Records within 50m	2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Very High**	**Very High**
On site	**Fracture**	**Very High**	**Very High**

This data is sourced from the British Geological Survey.

2.10 Bedrock faults and other linear features (50k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

3 Boreholes



Site Outline

Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

3.1 BGS Boreholes

Records within 250m	1

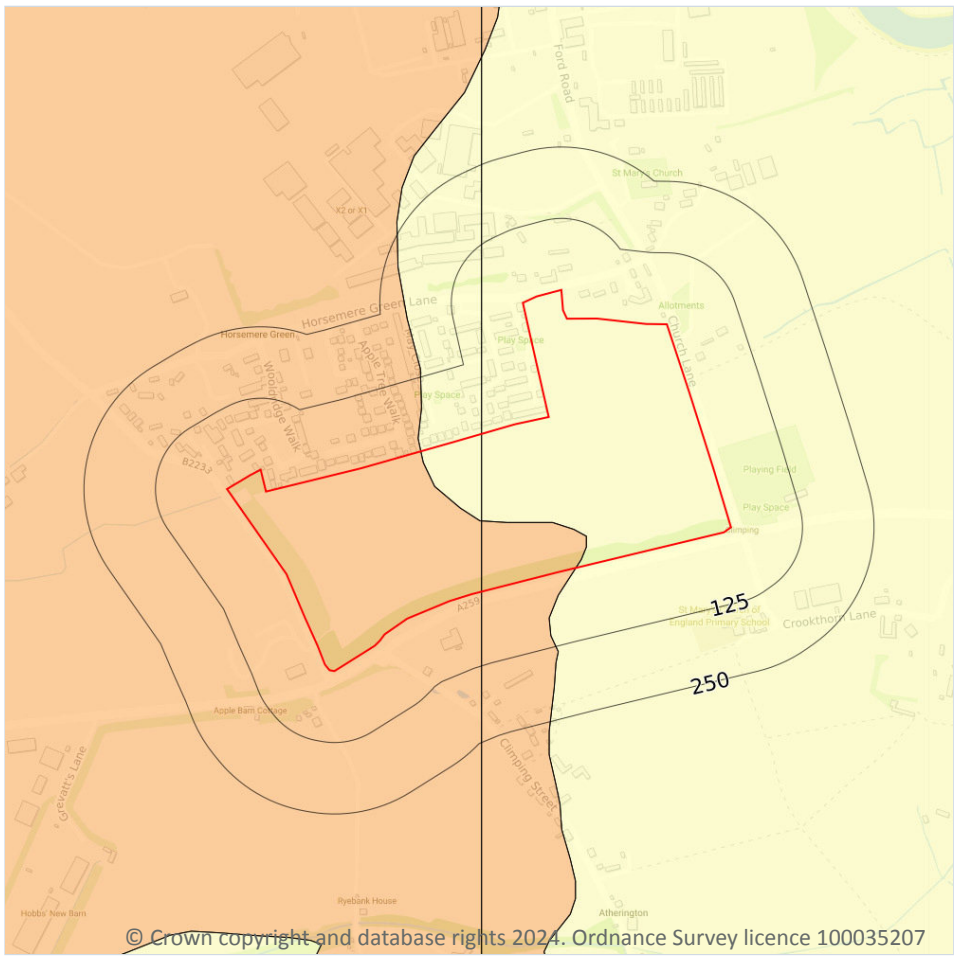
The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 22 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	223m NE	500529 102392	PROPOSED LANDFILL SITE W.SUSSEX BH24	6.0	N	569845 ↗

This data is sourced from the British Geological Survey.

4 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.1 Shrink swell clays

Records within 50m	2

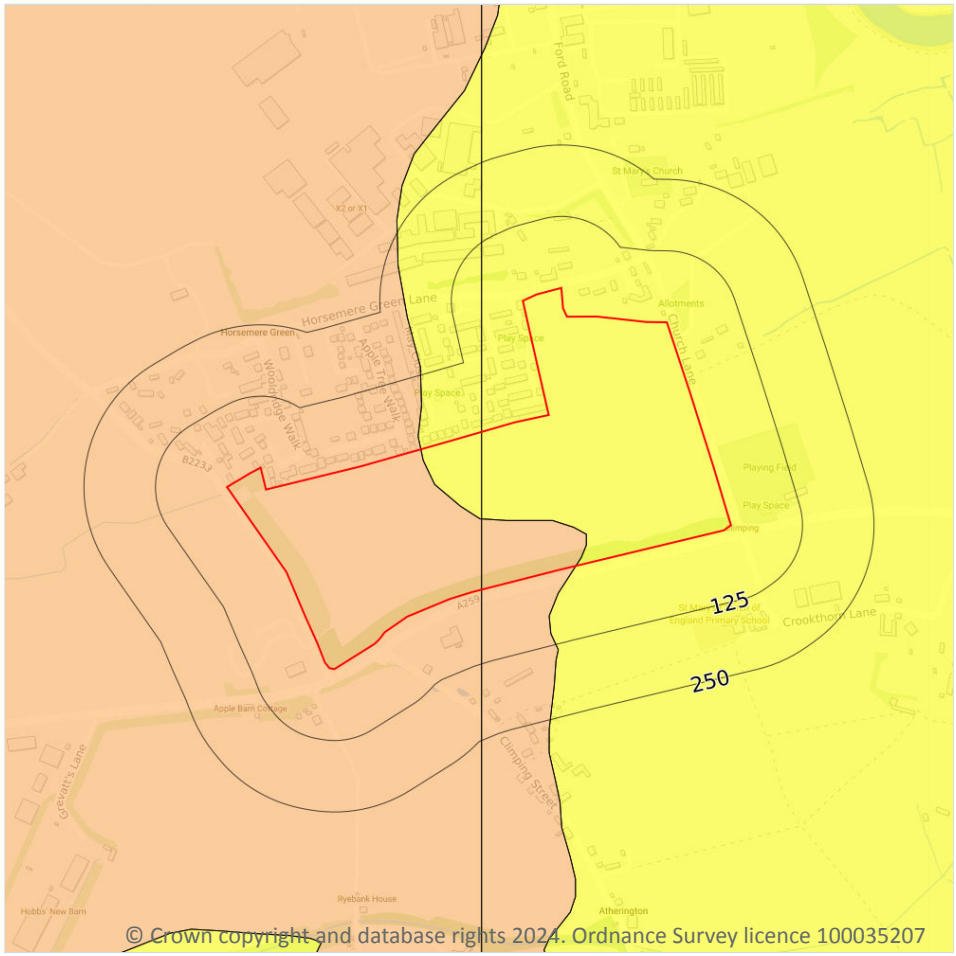
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 23 >**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**Low**	**Ground conditions predominantly medium plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.2 Running sands

Records within 50m	2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

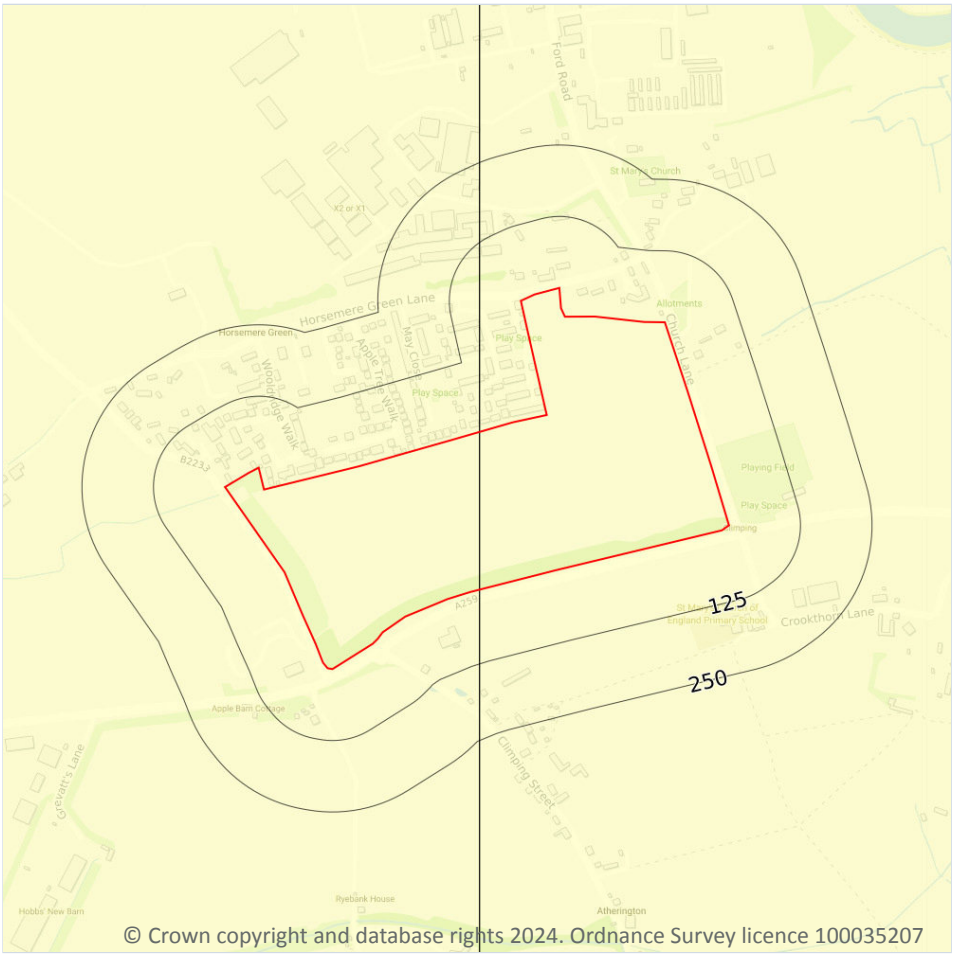
Features are displayed on the Natural ground subsidence - Running sands map on **page 24 >**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

Location	Hazard rating	Details
On site	**Low**	**Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.3 Compressible deposits

Records within 50m	1

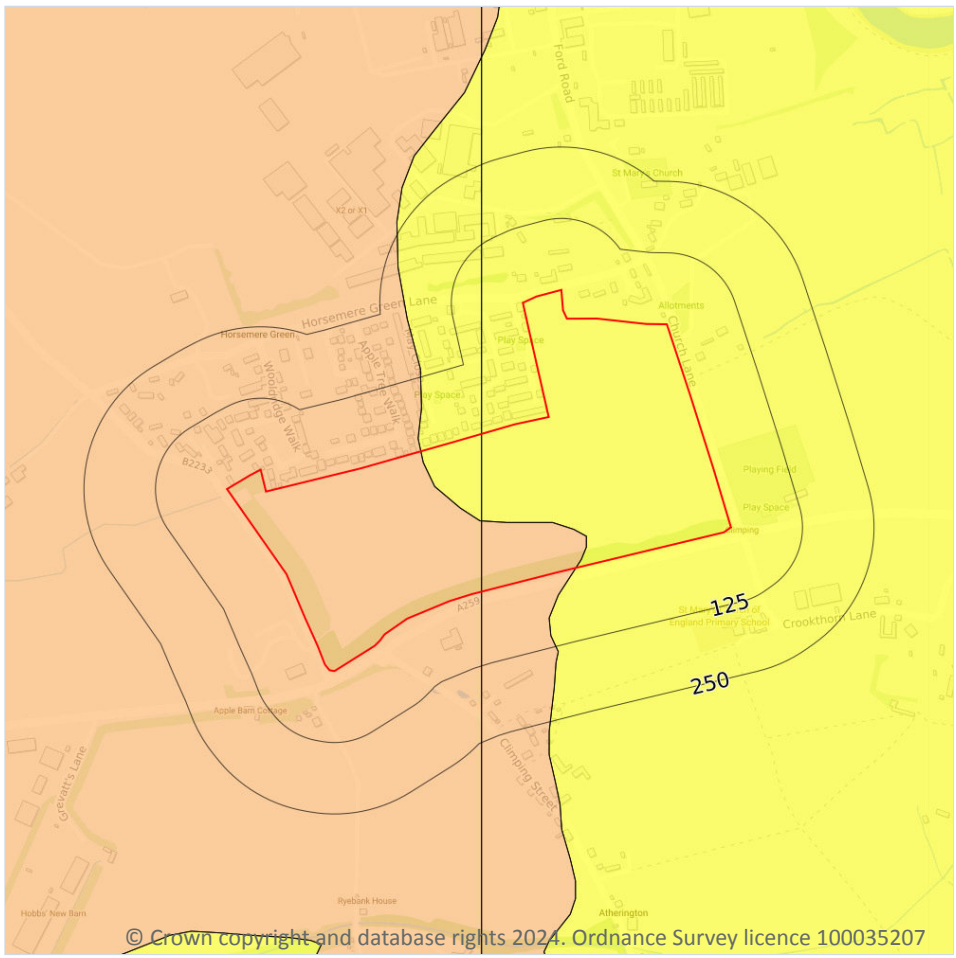
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 26 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.4 Collapsible deposits

Records within 50m	2

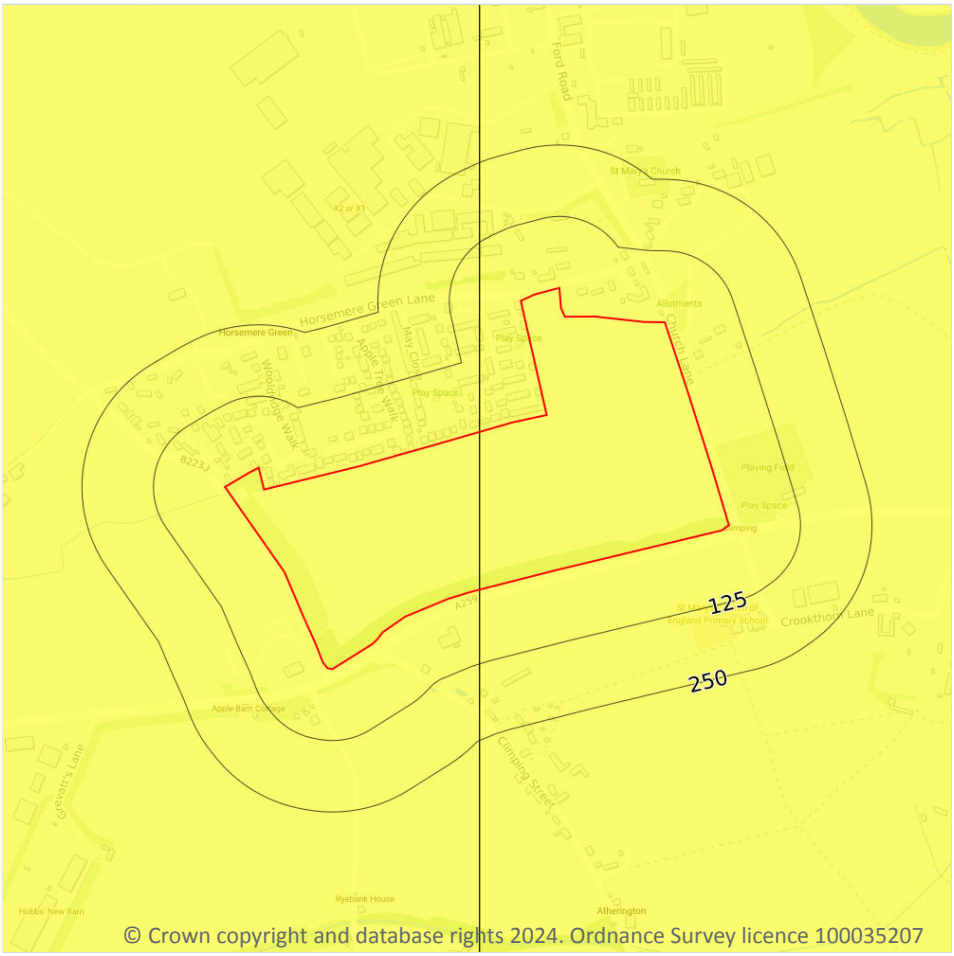
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 27 >**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**
On site	**Low**	**Deposits with potential to collapse when loaded and saturated are possibly present in places.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.5 Landslides

Records within 50m	1

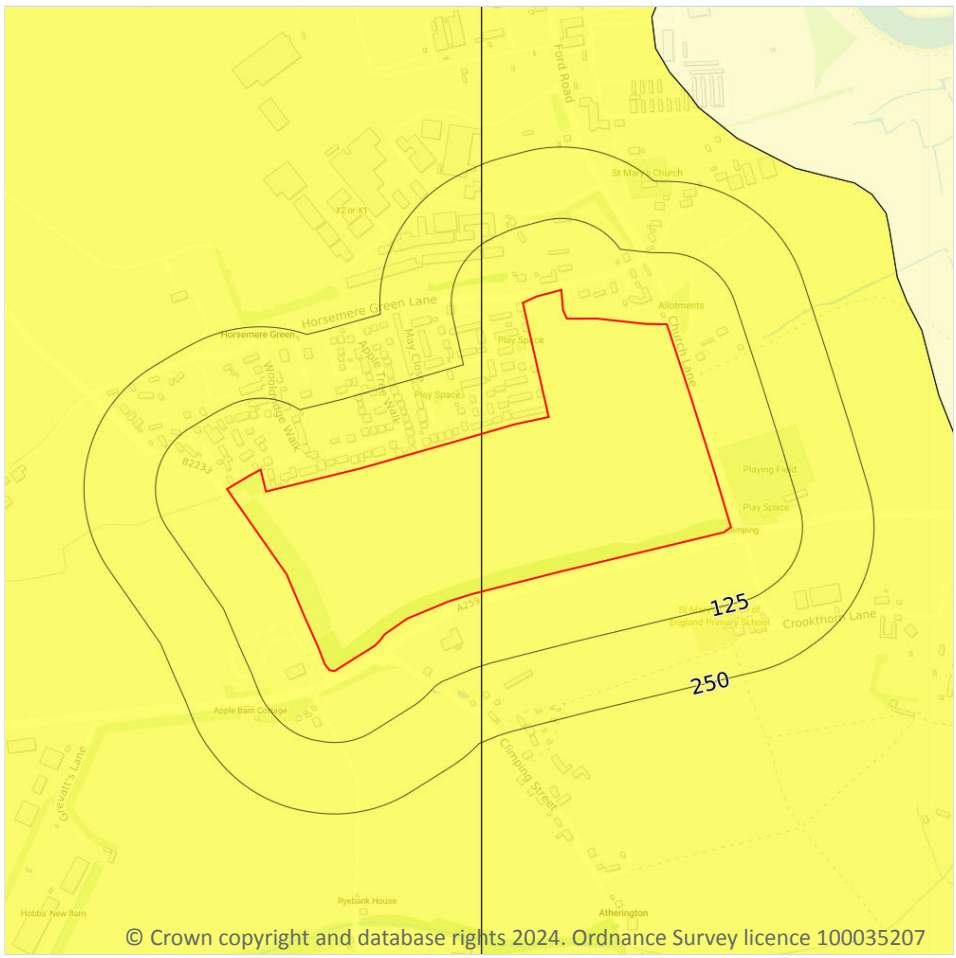
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 28 >**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.6 Ground dissolution of soluble rocks

Records within 50m	1

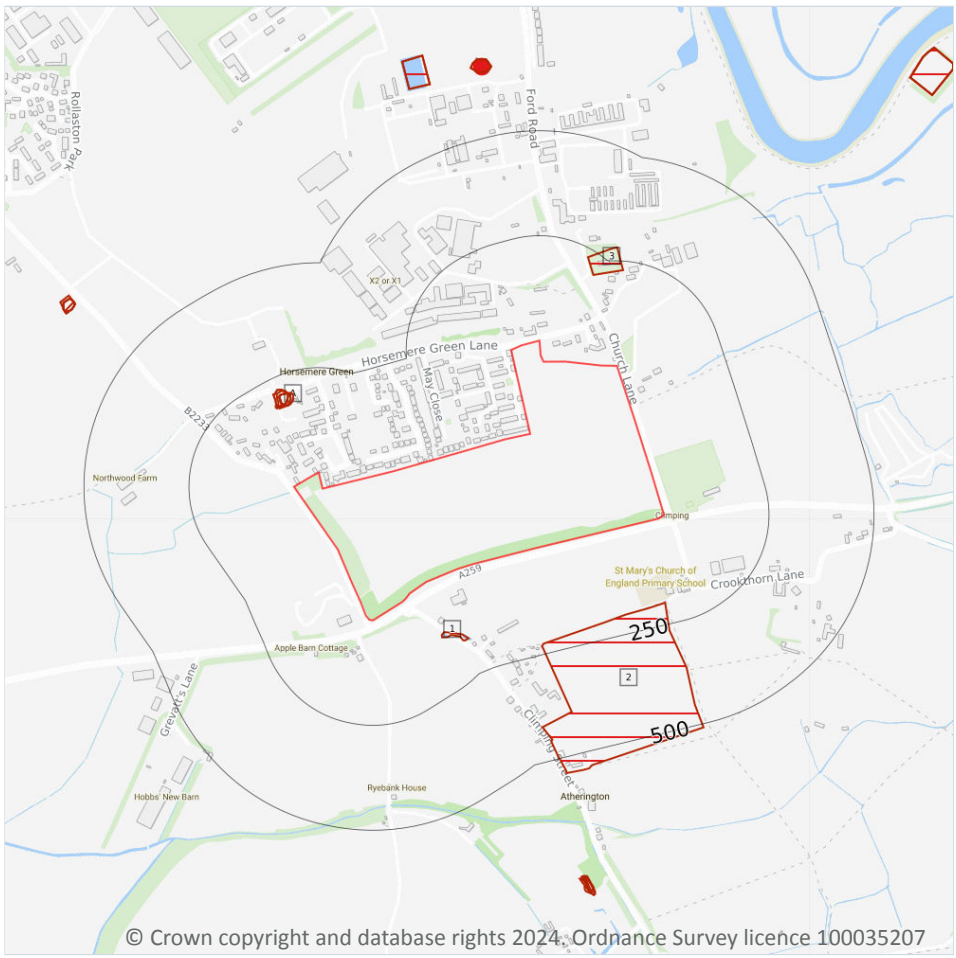
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 29 >**

Location	Hazard rating	Details
On site	**Very low**	**Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.**

This data is sourced from the British Geological Survey.

5 Mining and ground workings



Site Outline

Search buffers in metres (m)

BritPits

Surface ground workings

Underground workings

Underground mining extents

Historical mineral planning areas

TCA non-coal mining

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

5.1 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

5.2 Surface ground workings

Records within 250m	9

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on **page 31 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	122m S	Ponds	1876	1:10560
A	176m W	Pond	1991	1:10000
A	176m W	Pond	1978	1:10000
A	176m W	Pond	1896	1:10560
A	180m W	Pond	1950	1:10560
A	180m W	Pond	1910	1:10560
A	181m W	Pond	1876	1:10560
2	198m SE	Sewage Works	1992	1:10000
3	202m NE	Grave Yard	1876	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

5.3 Underground workings

Records within 1000m	0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

5.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

5.5 Historical Mineral Planning Areas

Records within 500m	0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

5.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

5.7 JPB mining areas

Records on site	0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

5.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

5.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

5.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

5.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

5.12 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

5.13 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

5.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

5.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

5.16 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

6 Ground cavities and sinkholes

6.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

6.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

6.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

6.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

6.5 National karst database

Records within 500m	0

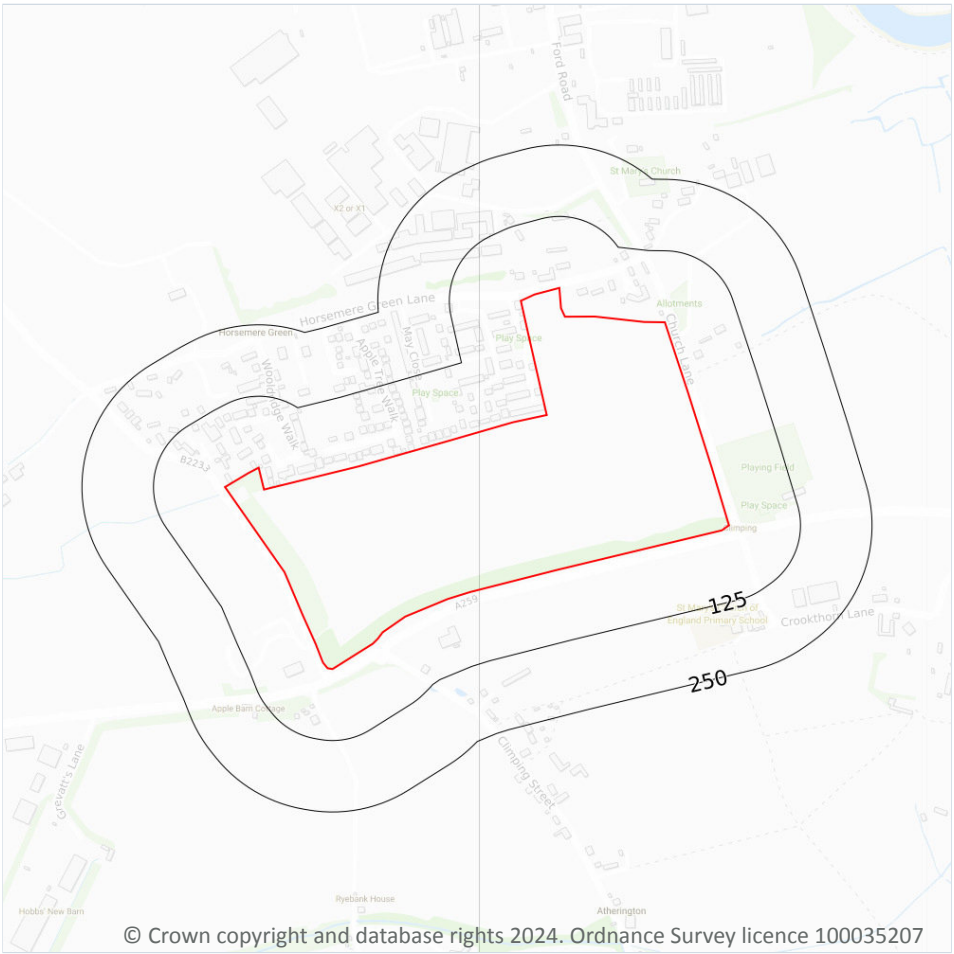
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

7 Radon



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Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

7.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 38 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None**

This data is sourced from the British Geological Survey and UK Health Security Agency.

8 Soil chemistry

8.1 BGS Estimated Background Soil Chemistry

Records within 50m	7

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

This data is sourced from the British Geological Survey.

8.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

8.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

9 Railway infrastructure and projects

9.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

9.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

9.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

9.4 Historical railway and tunnel features

Records within 250m	0

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

9.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

9.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

9.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

9.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

9.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

9.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

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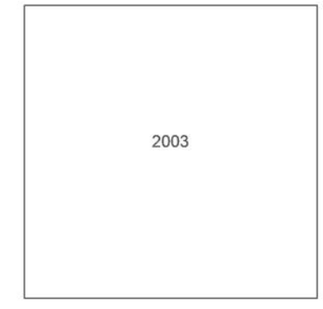
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Land adj. to Church Lane
Climping West Sussex BN17
5GG

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Grid Ref: 499695, 101732

Map Name: LandLine
Map date: 2003
Scale: 1:1,250
Printed at: 1:1,250

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Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_Landline_1_2
Grid Ref: 499695, 102032

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Map date: **2003**
Scale: 1:1,250
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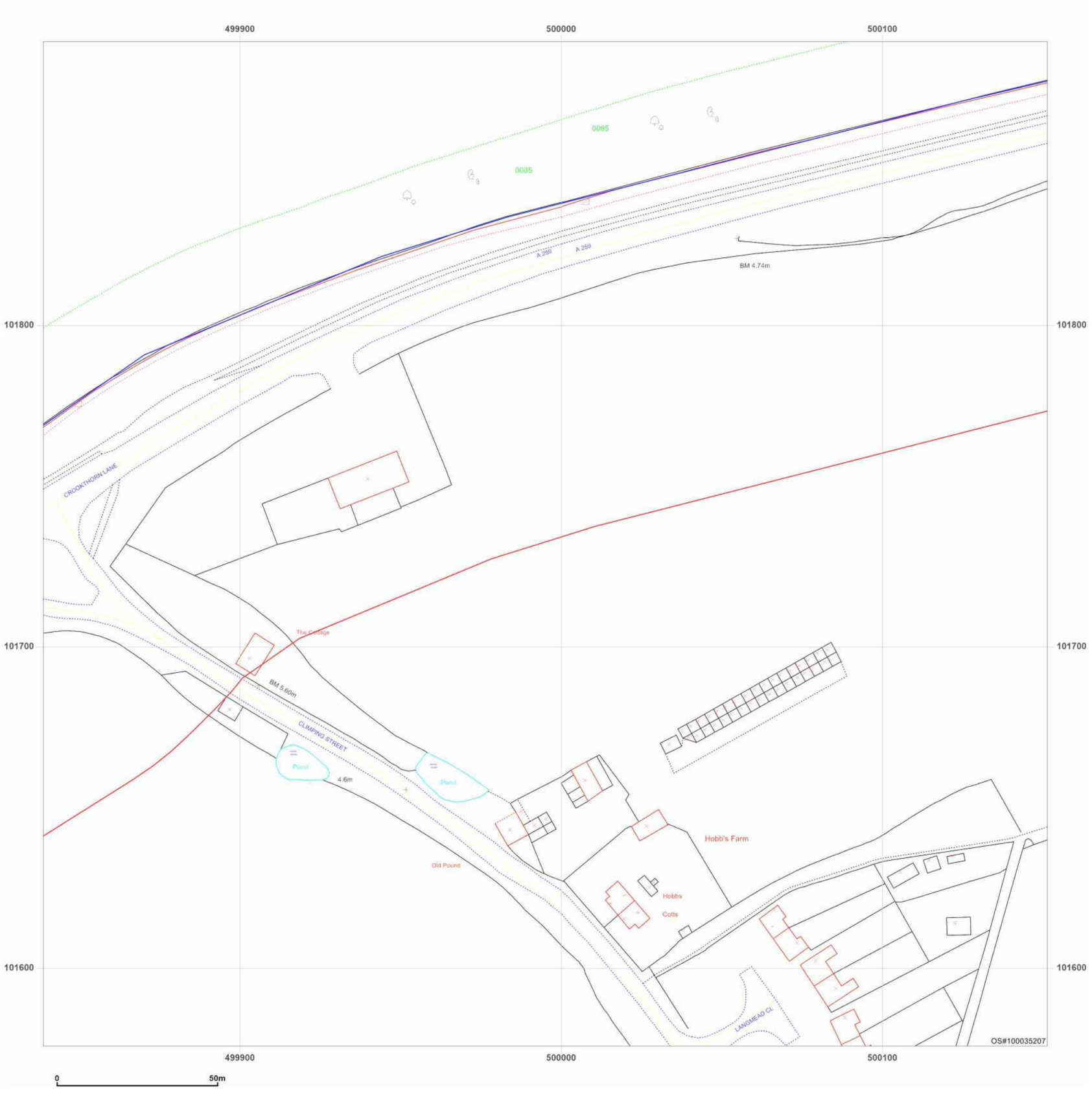
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5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_Landline_2_1
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Scale: 1:1,250
Printed at: 1:1,250

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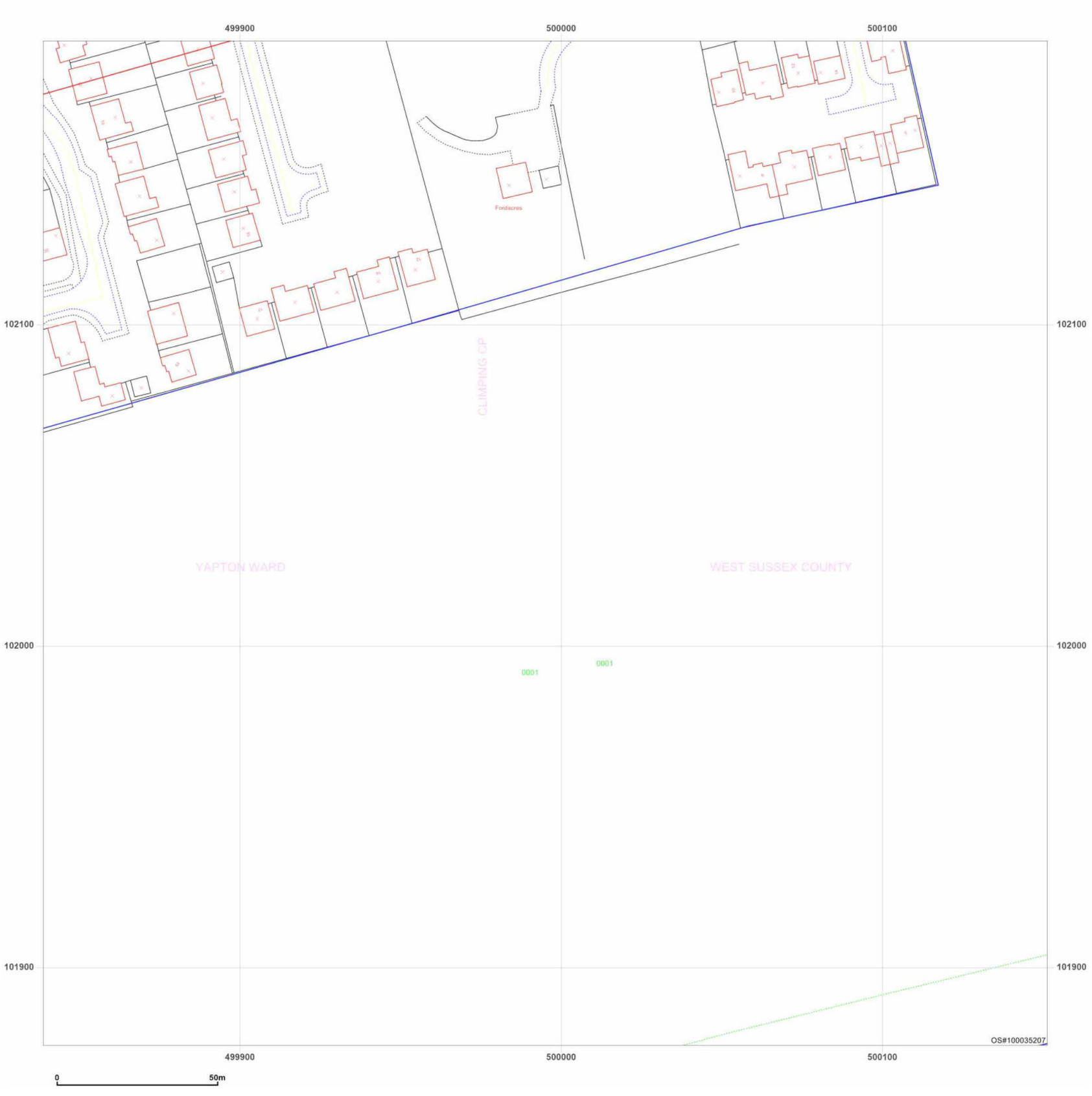
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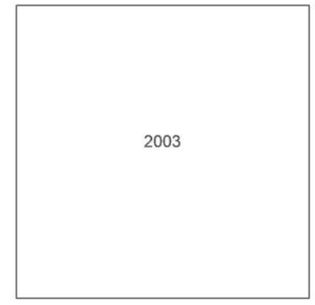
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Climping West Sussex BN17
5GG

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Grid Ref: 499995, 102032

Map Name: LandLine
Map date: 2003
Scale: 1:1,250
Printed at: 1:1,250

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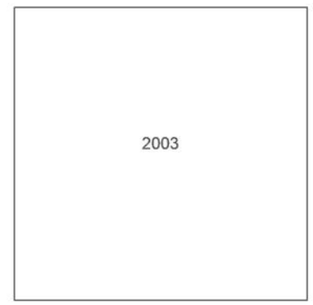
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Land adj. to Church Lane
Climping West Sussex BN17 5GG

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Printed at: 1:1,250

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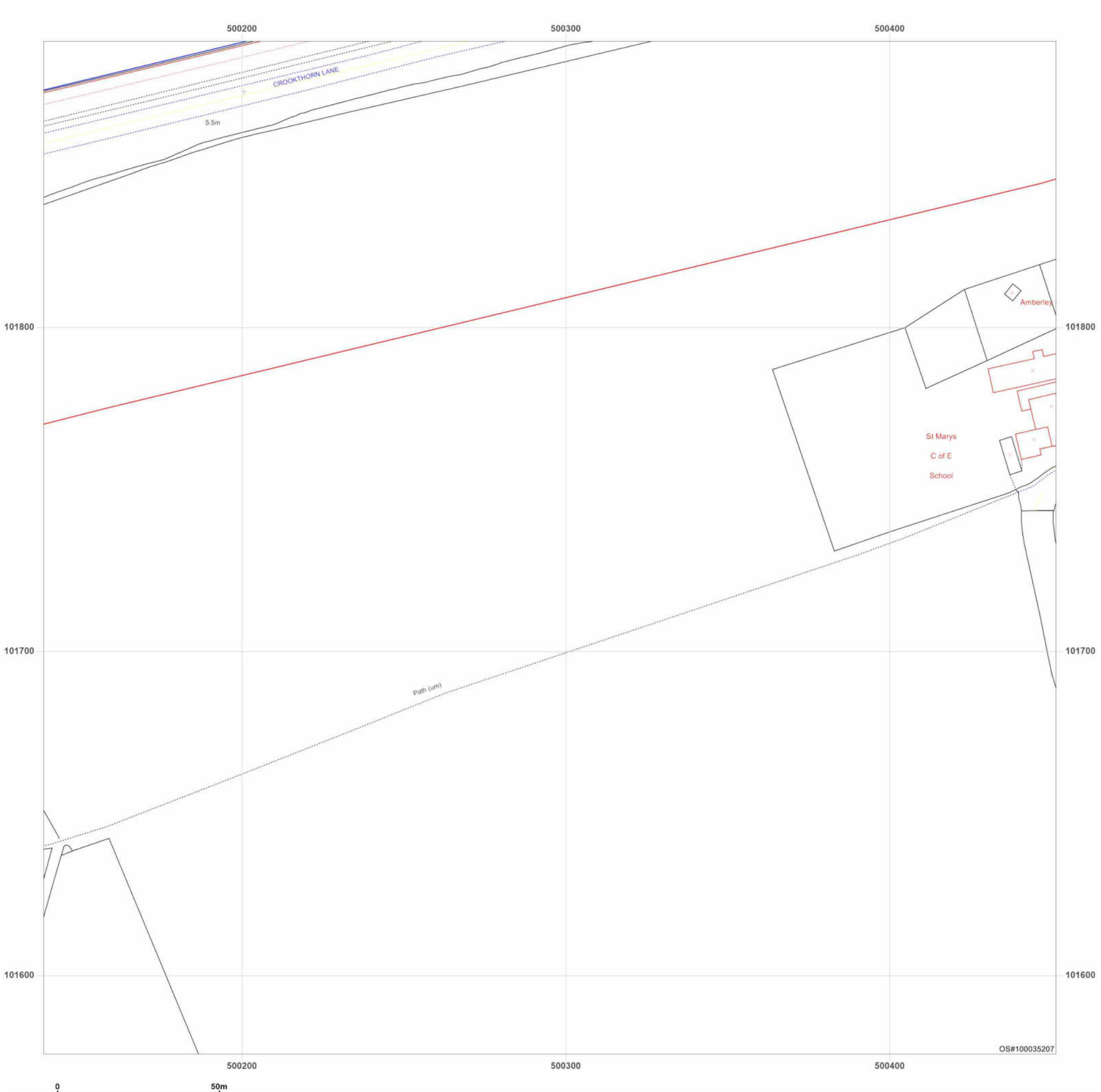
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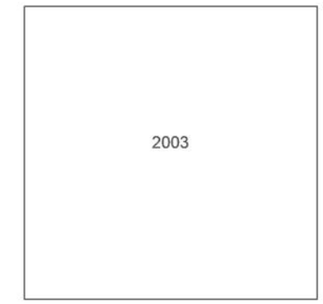
Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_Landline_3_1
Grid Ref: 500295, 101732

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



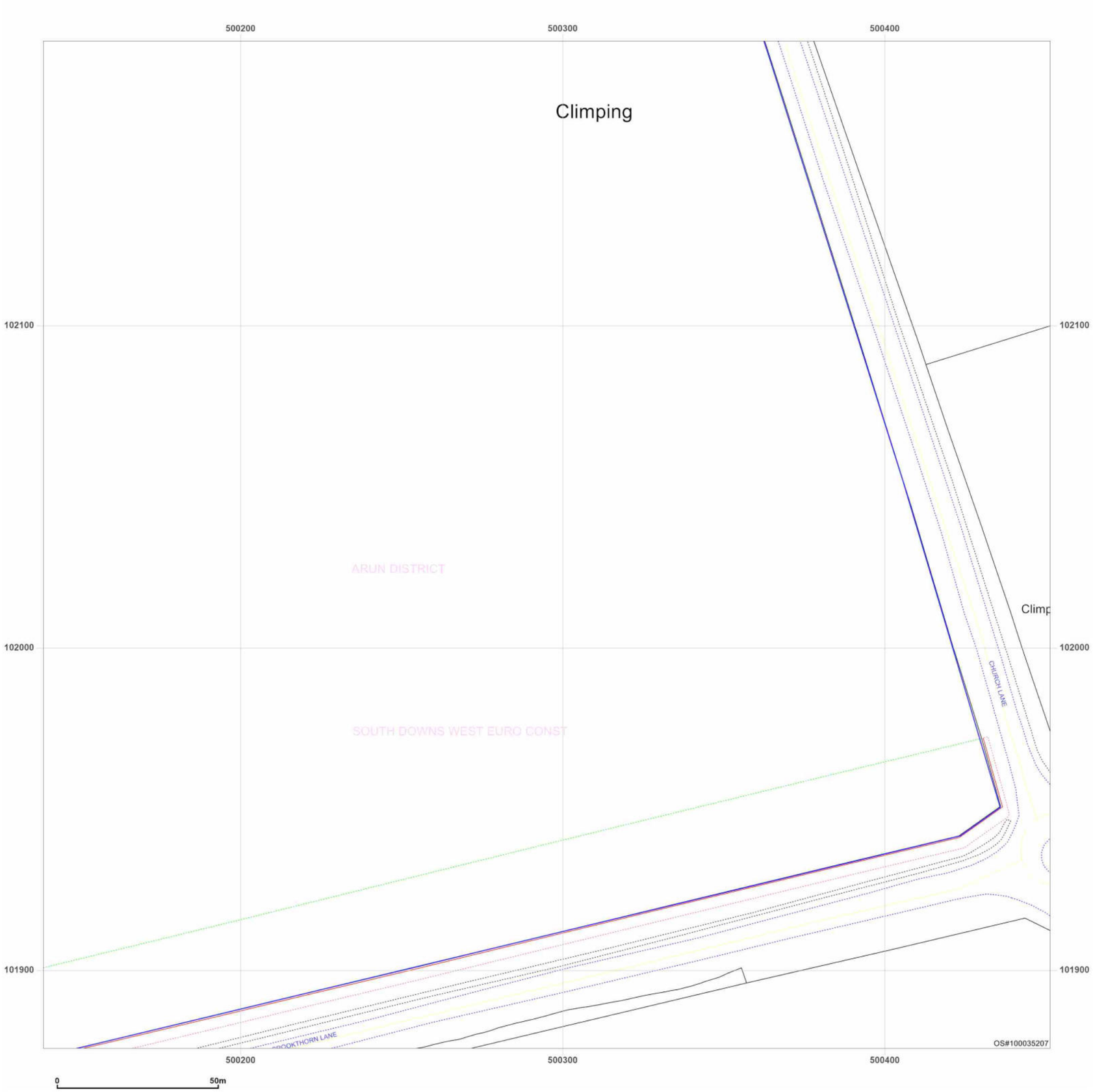
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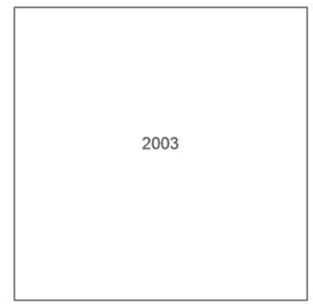
Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_Landline_3_2
Grid Ref: 500295, 102032

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
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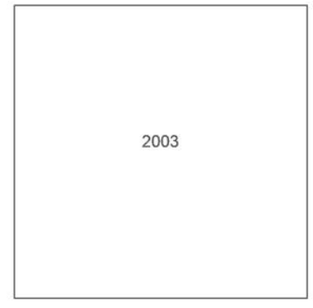
Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_Landline_3_3
Grid Ref: 500295, 102332

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
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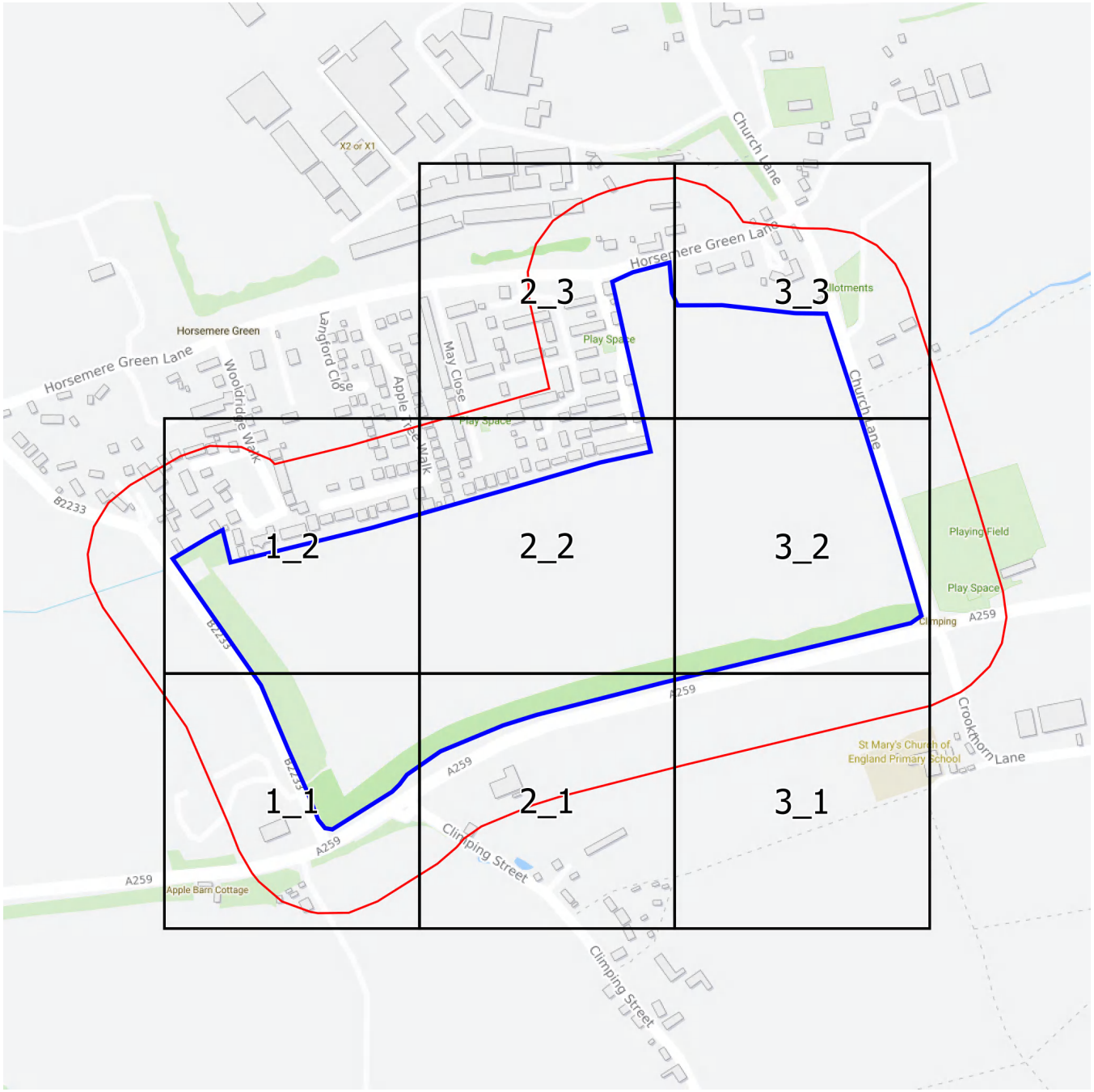
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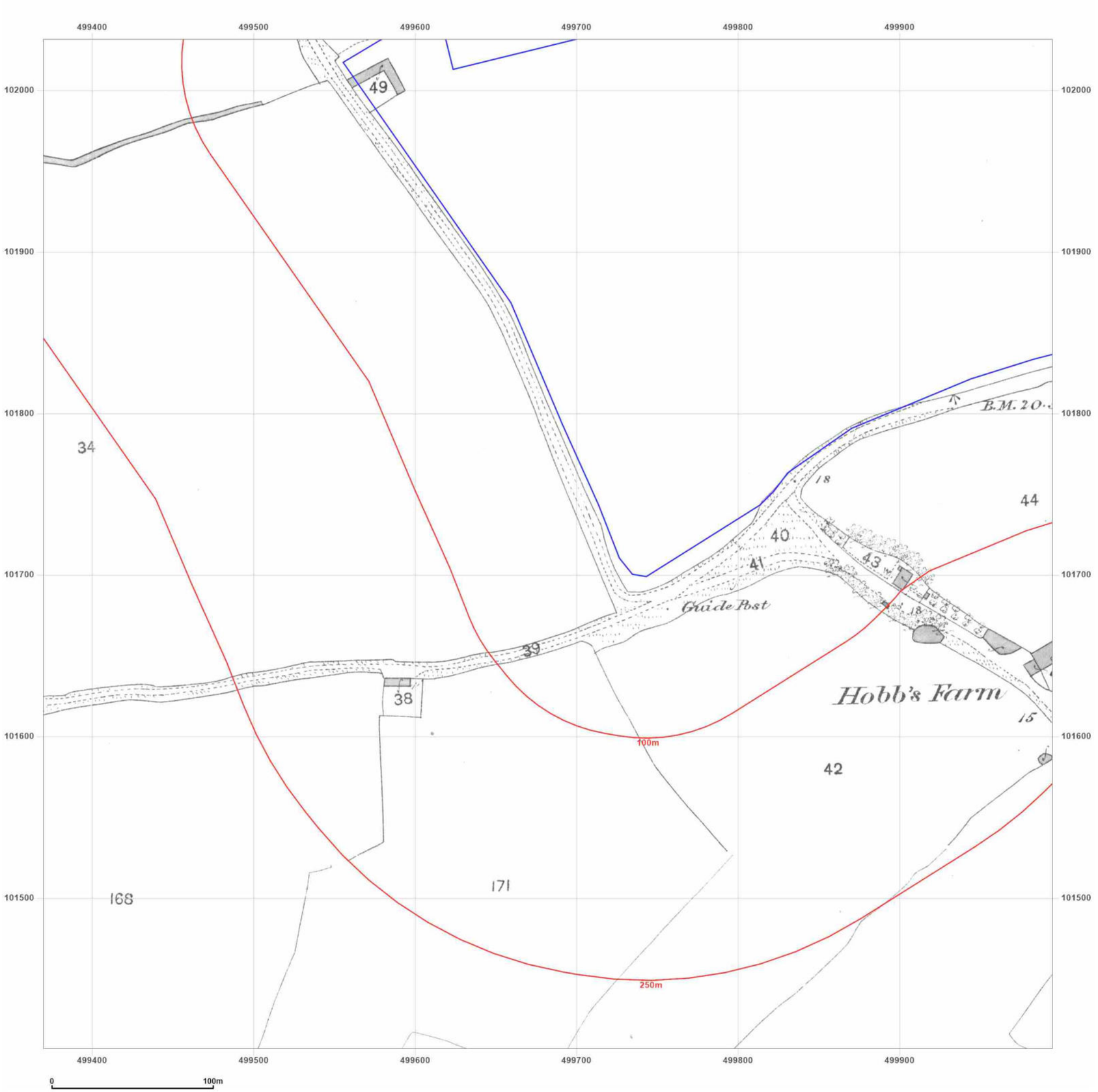
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Landline Scale Grid Index

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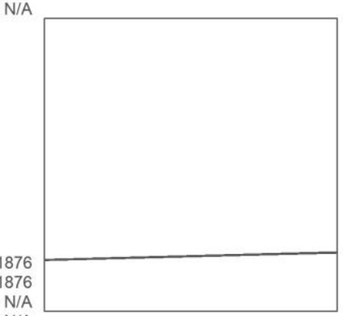
Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_1
Grid Ref: 499682, 101719

Map Name: County Series
Map date: **1876**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A

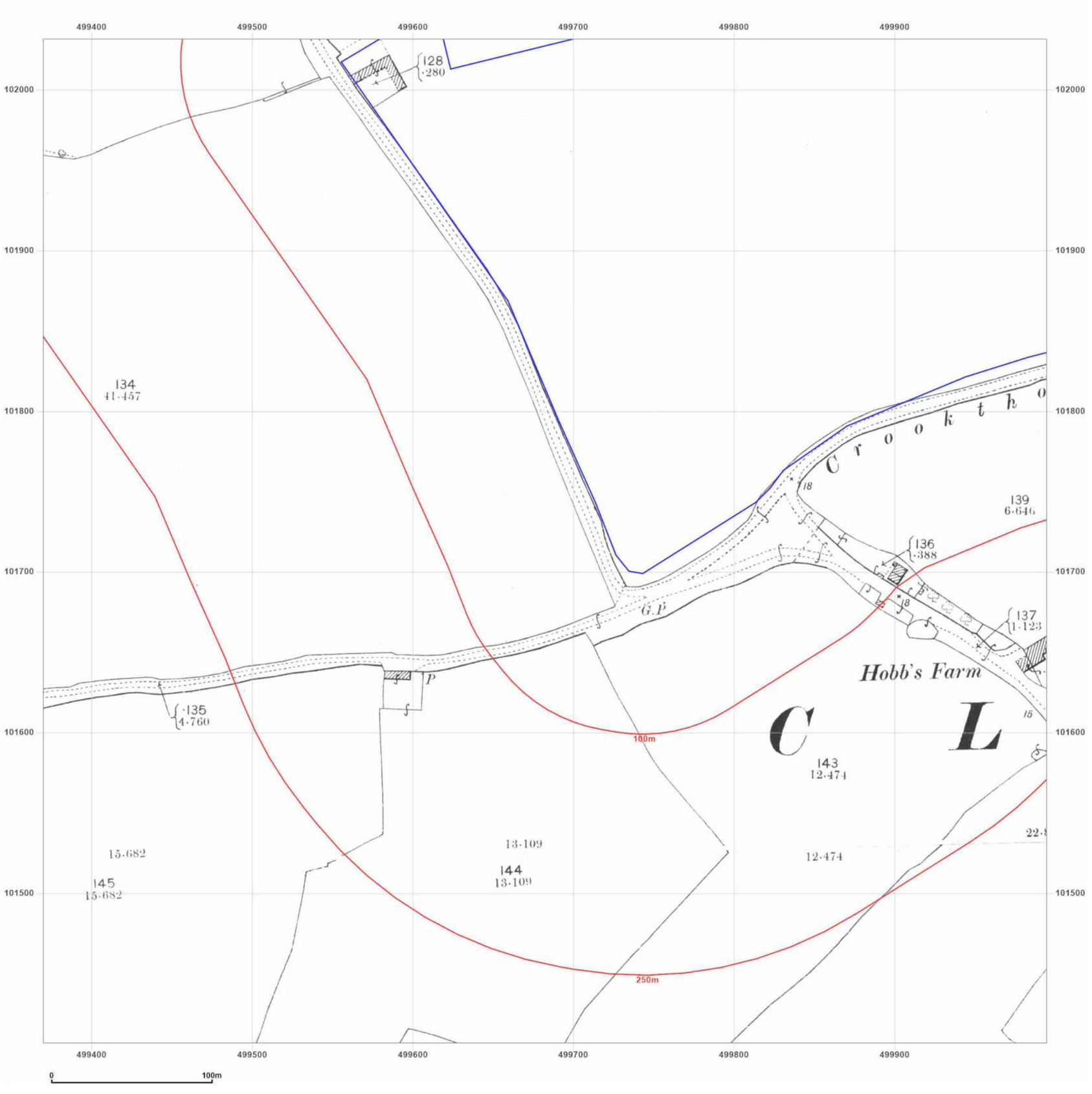
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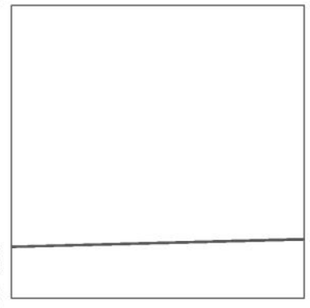
Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_1
Grid Ref: 499682, 101719

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

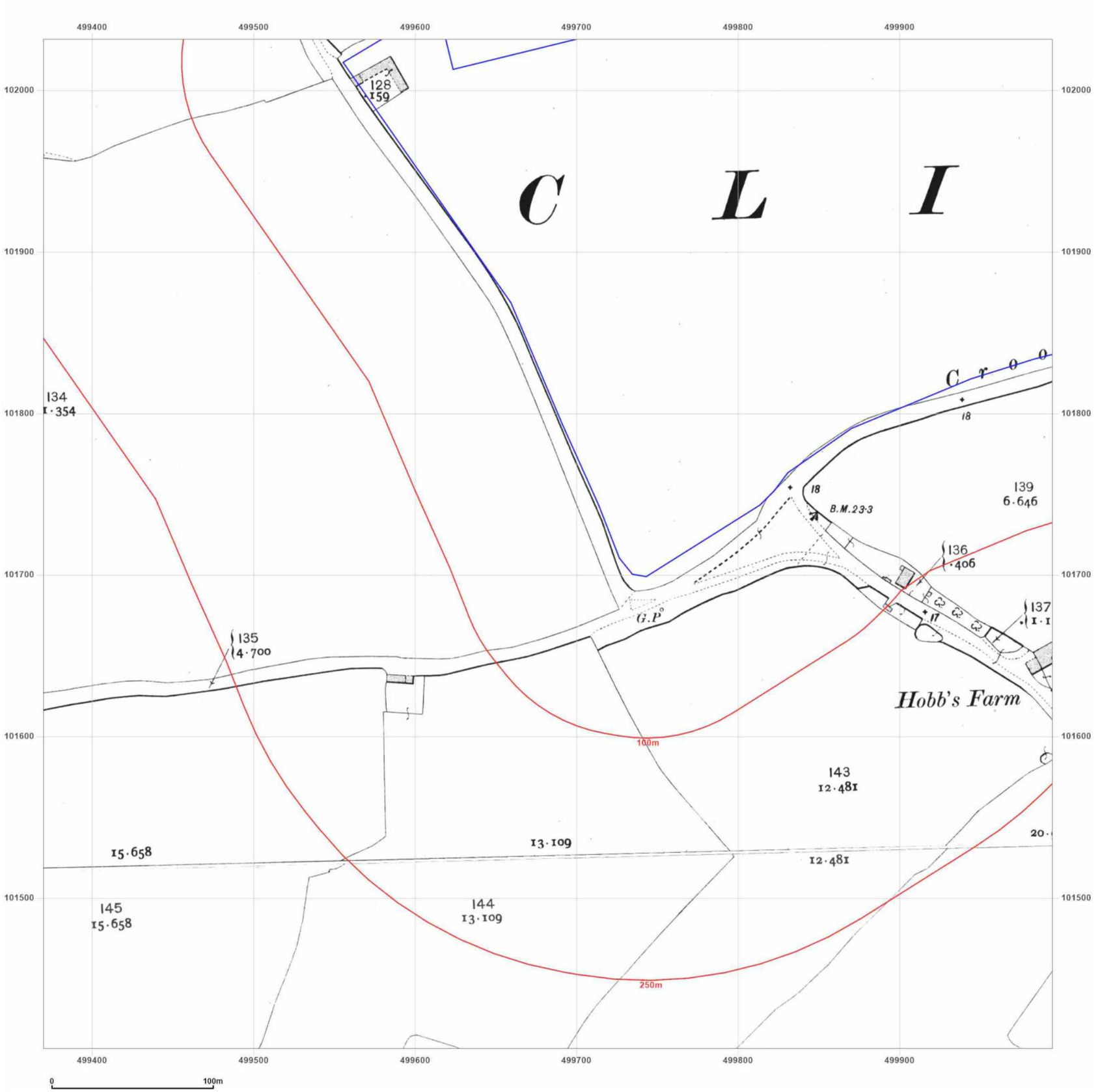
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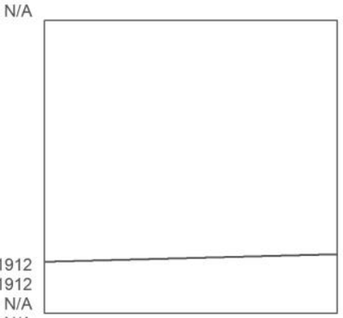
Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_1
Grid Ref: 499682, 101719

Map Name: County Series
Map date: **1912**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

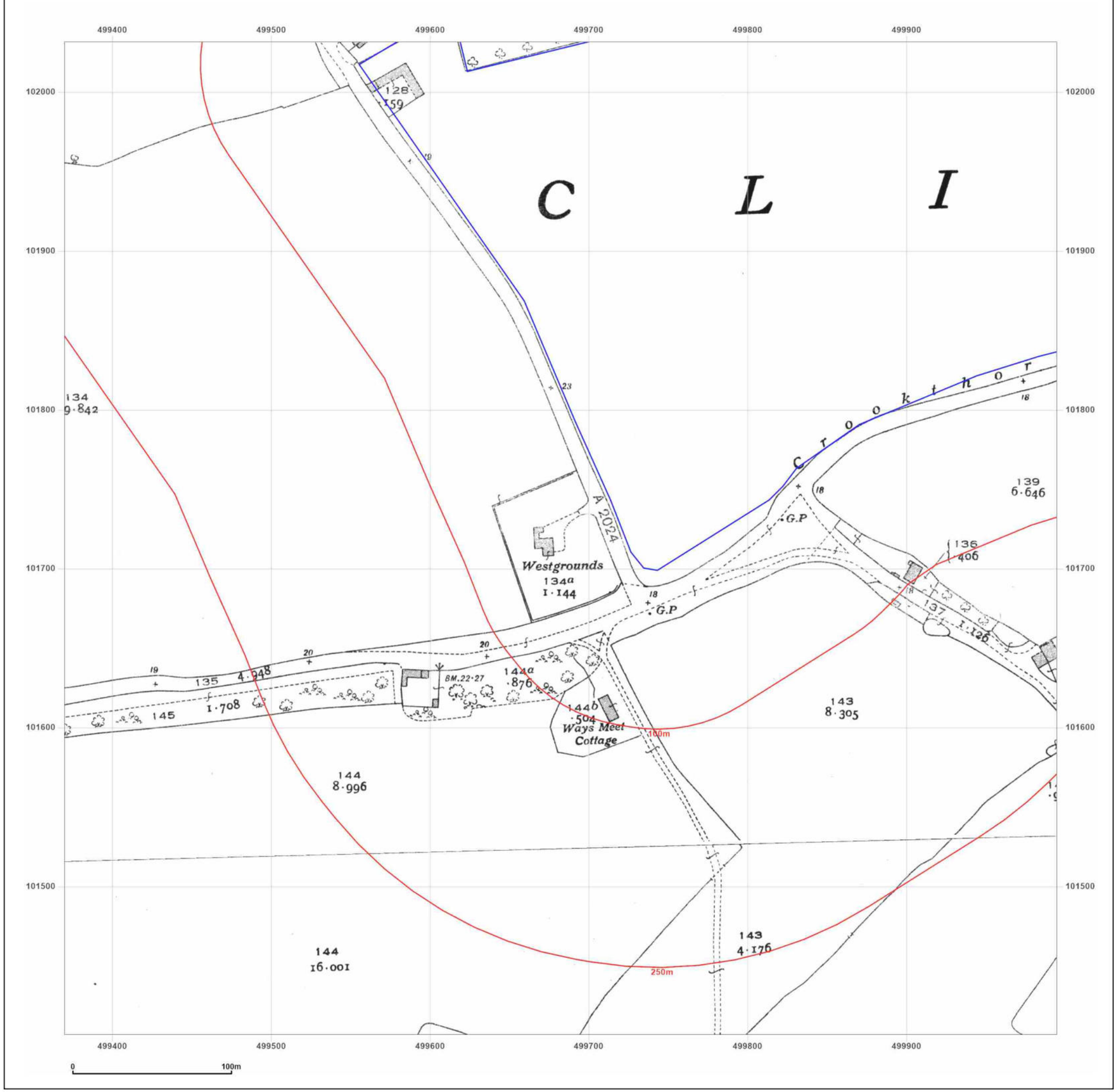
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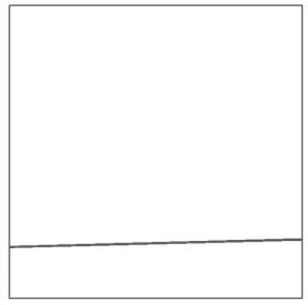
Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_1
Grid Ref: 499682, 101719

Map Name: County Series
Map date: **1933-1937**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1937
Revised 1937
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1933
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A

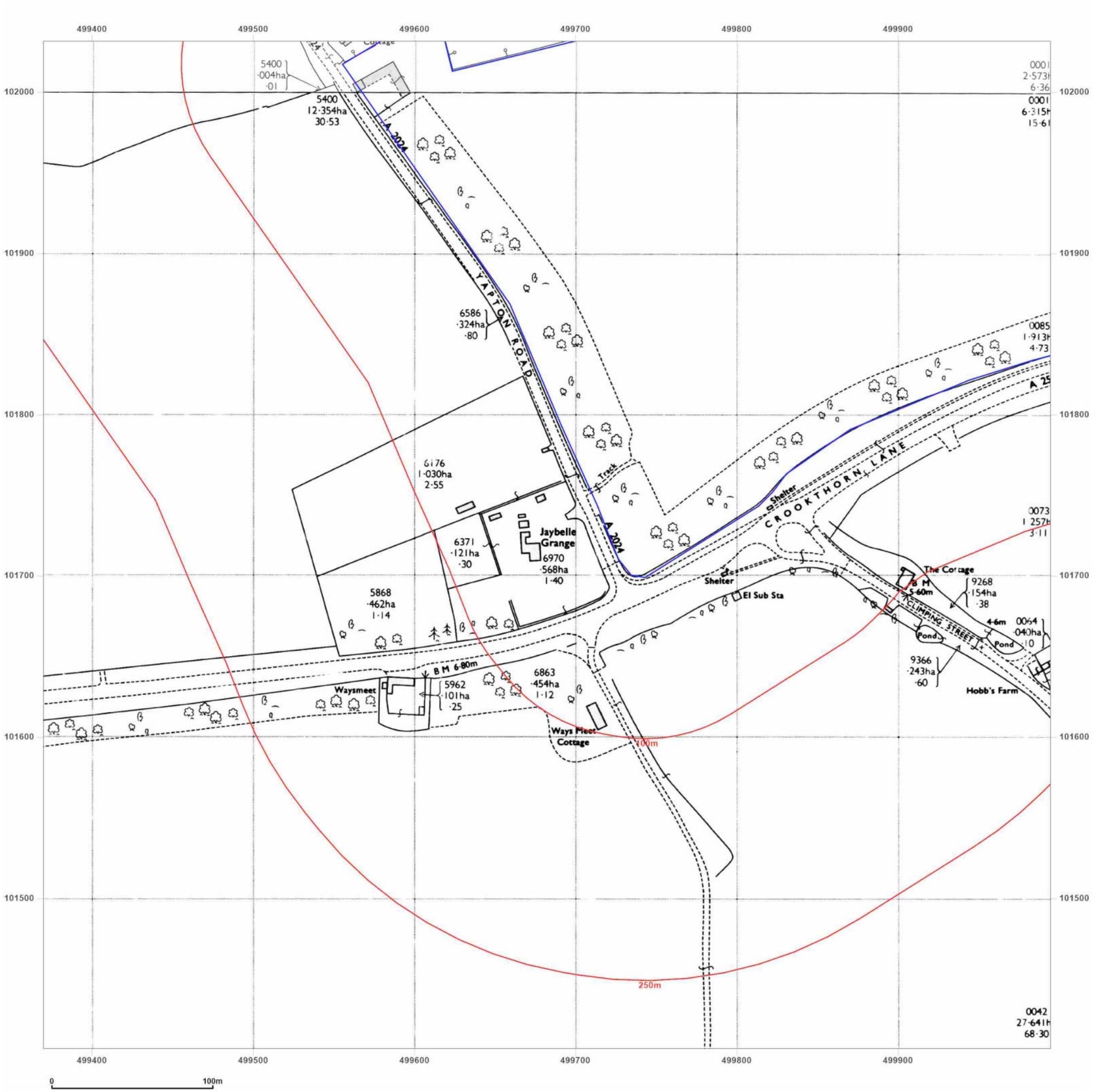
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_1
Grid Ref: 499682, 101719

Map Name: National Grid
Map date: **1973-1974**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1973
Revised 1973
Edition N/A
Copyright 1975
Levelled 1950

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

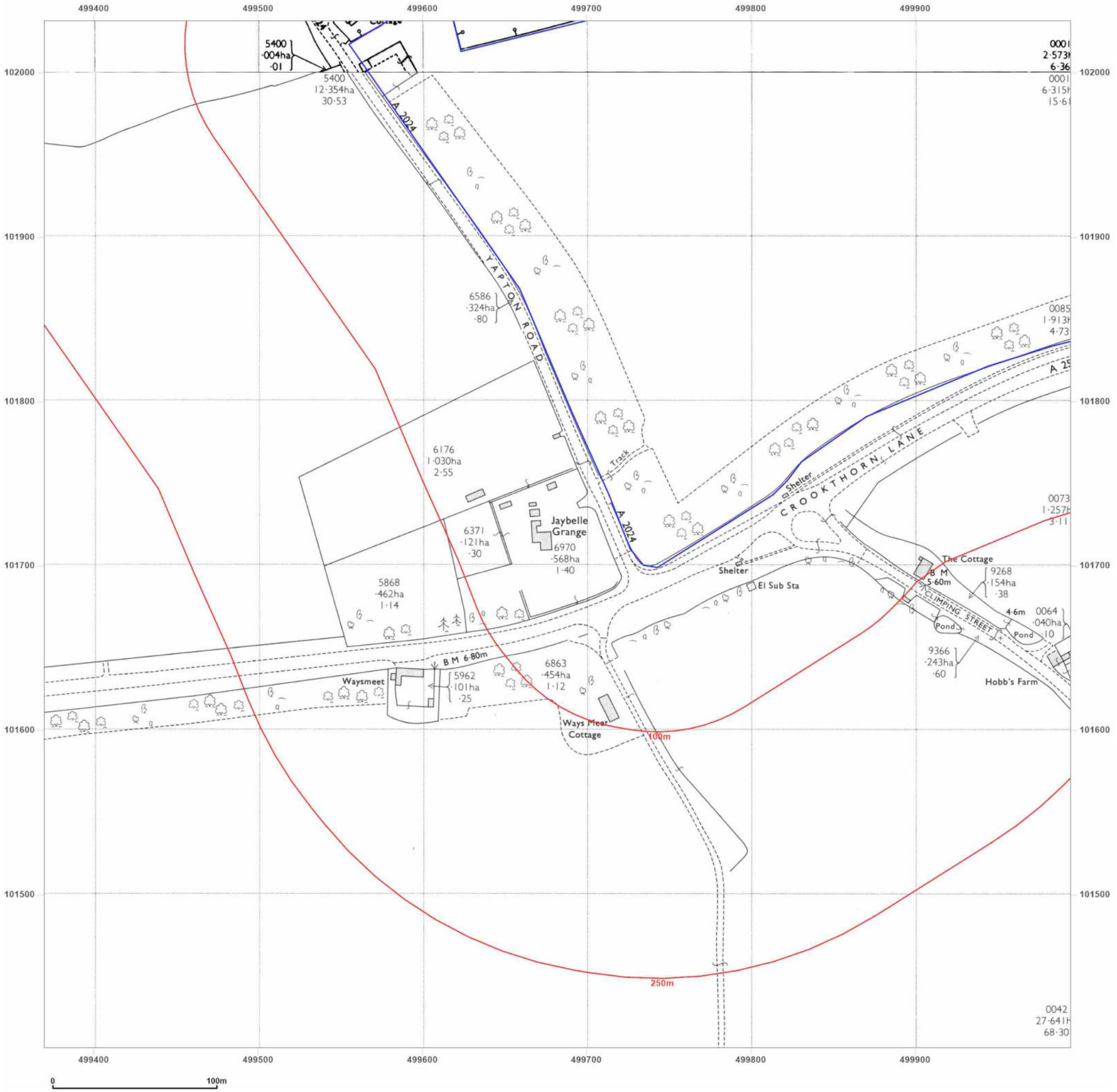
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_1
Grid Ref: 499682, 101719

Map Name: National Grid

Map date: **1974-1975**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1975
Levelled N/A

Surveyed 1974
Revised 1974
Edition N/A
Copyright 1974
Levelled 1966

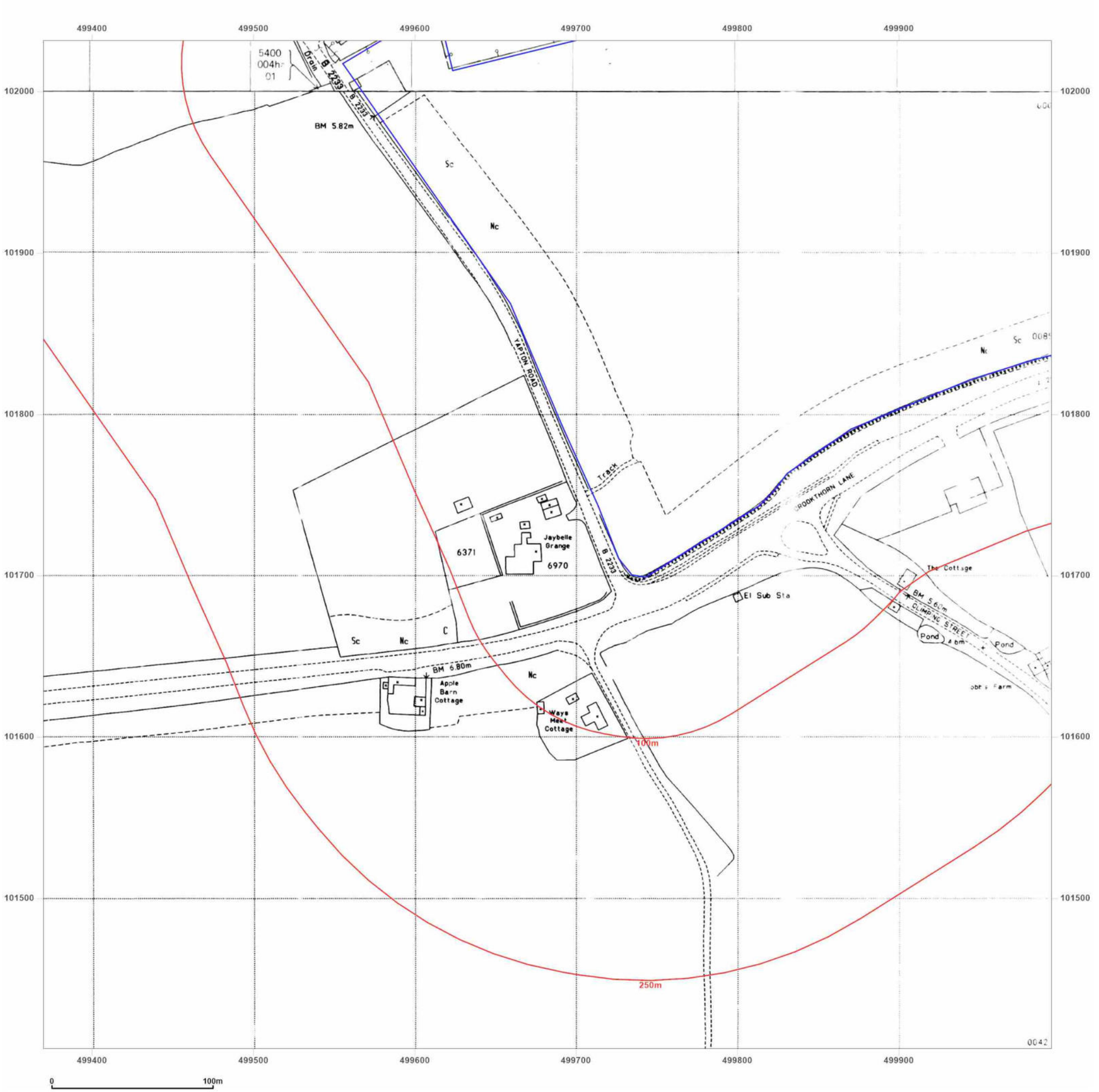
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_1
Grid Ref: 499682, 101719

Map Name: National Grid

Map date: **1991-1994**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1975
Revised 1983
Edition N/A
Copyright 1991
Levelled 1975

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

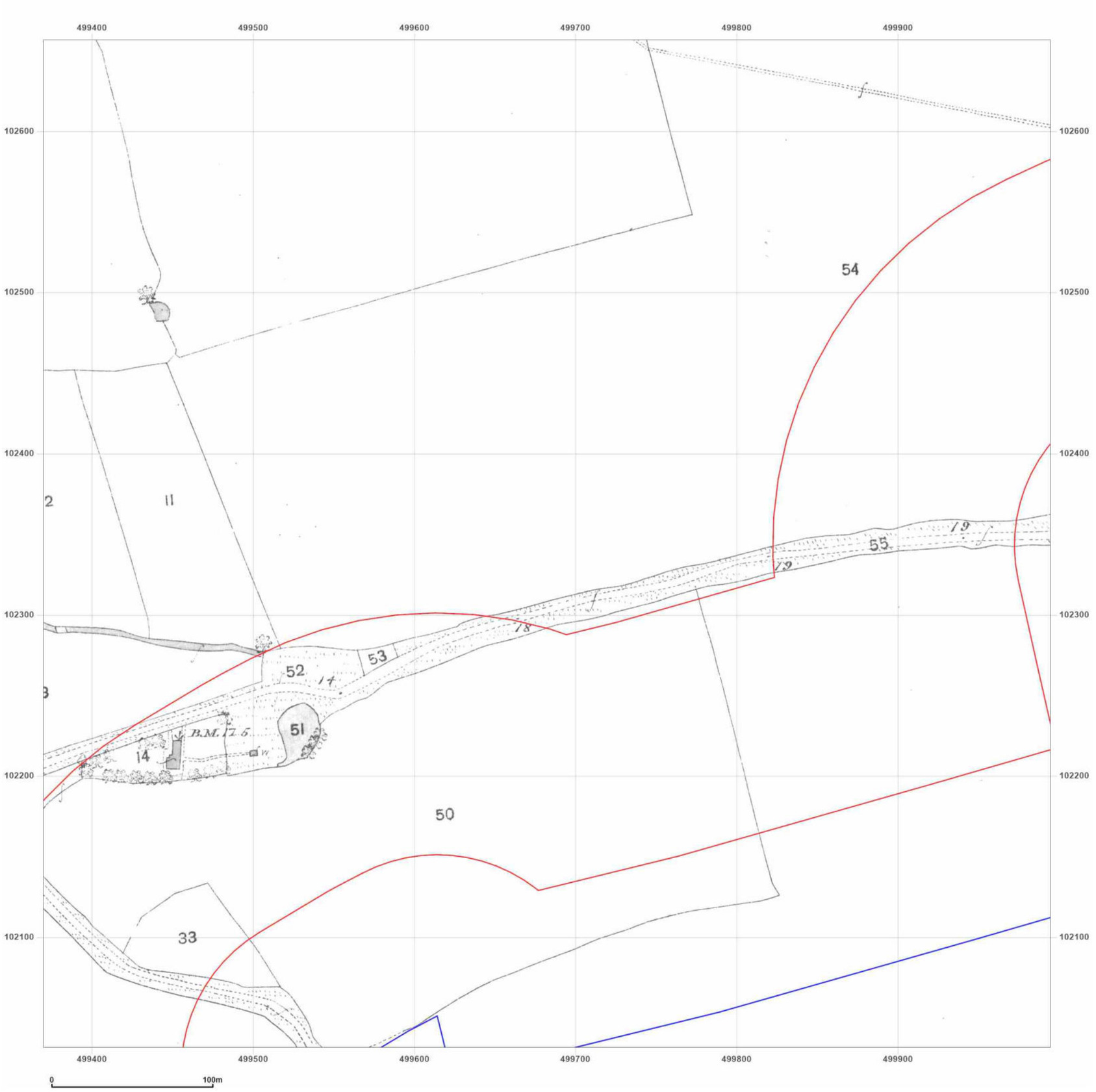
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: County Series
Map date: **1876**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A

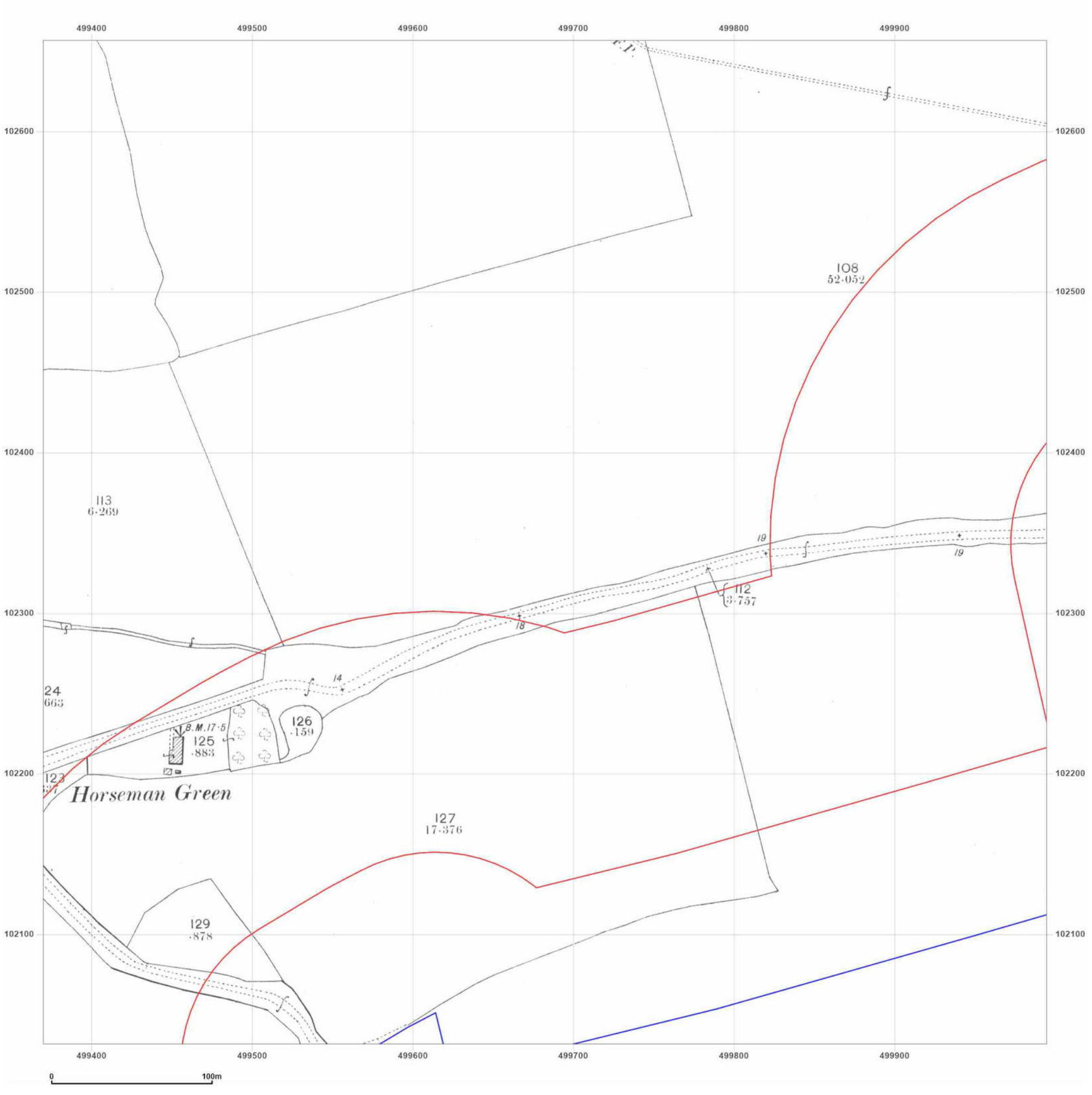
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

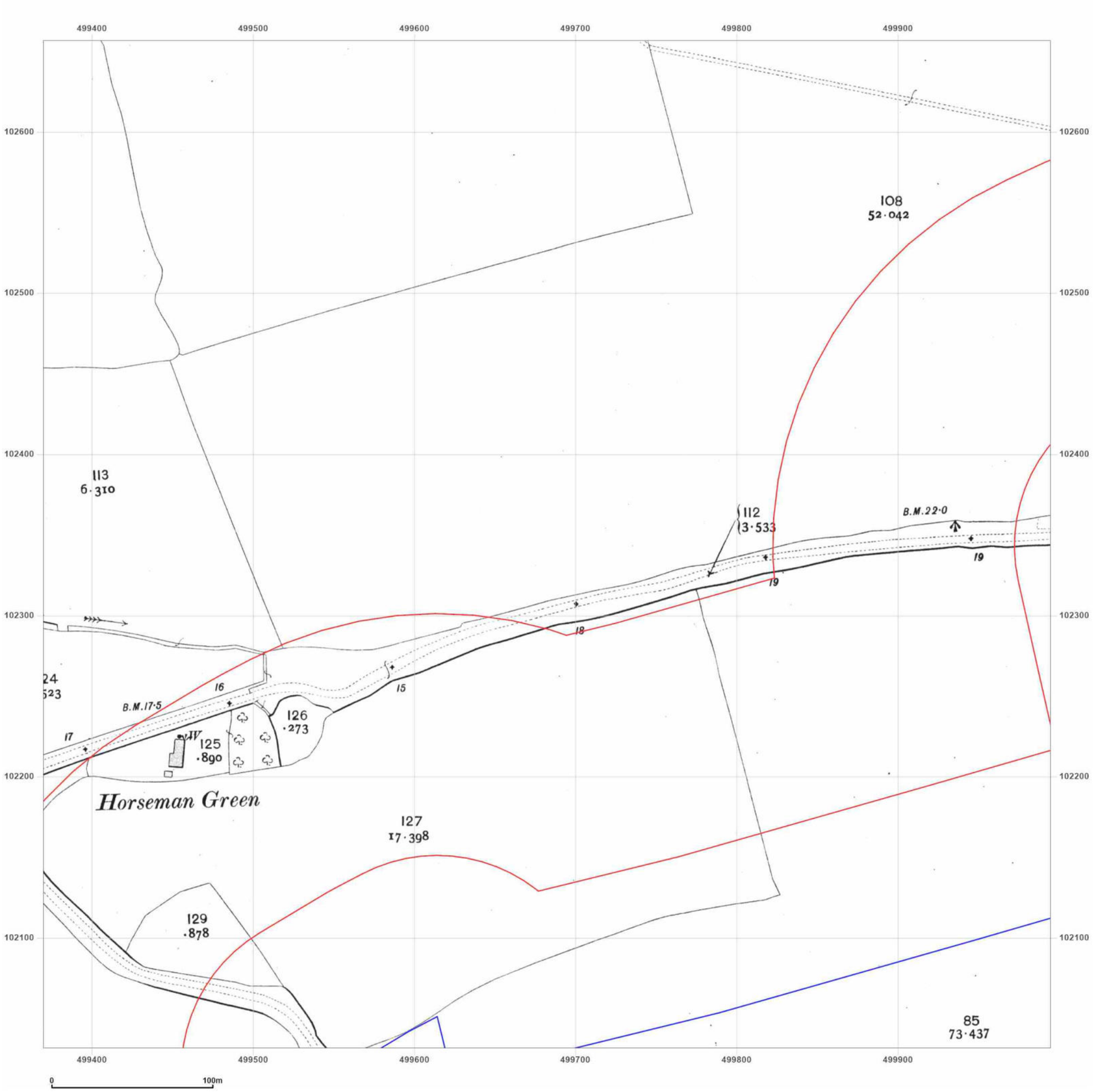
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: County Series
Map date: 1912
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: County Series
Map date: **1937**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1937
Revised 1937
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: National Grid
Map date: **1973**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1973
Revised 1973
Edition N/A
Copyright 1975
Levelled 1950

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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: National Grid
Map date: **1975**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1975
Levelled N/A

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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: National Grid
Map date: **1984**
Scale: 1:2,500
Printed at: 1:2,500

N
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S

Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1975

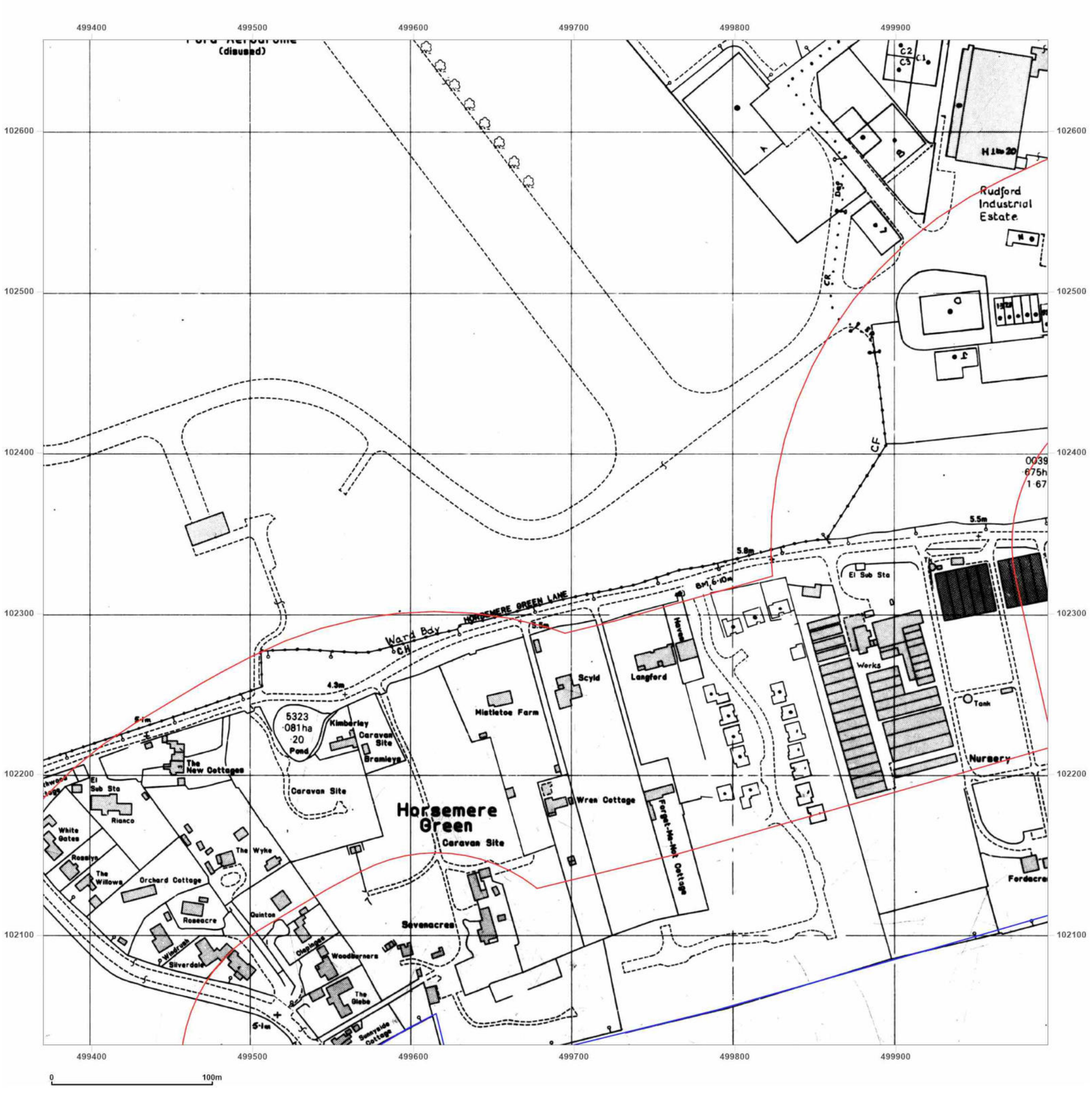
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: National Grid
Map date: **1988**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1973
Revised 1988
Edition N/A
Copyright N/A
Levelled 1975

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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: National Grid
Map date: **1991**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1975
Revised 1983
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Copyright 1991
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_1_2
Grid Ref: 499682, 102344

Map Name: National Grid
Map date: **1994**
Scale: 1:2,500
Printed at: 1:2,500

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

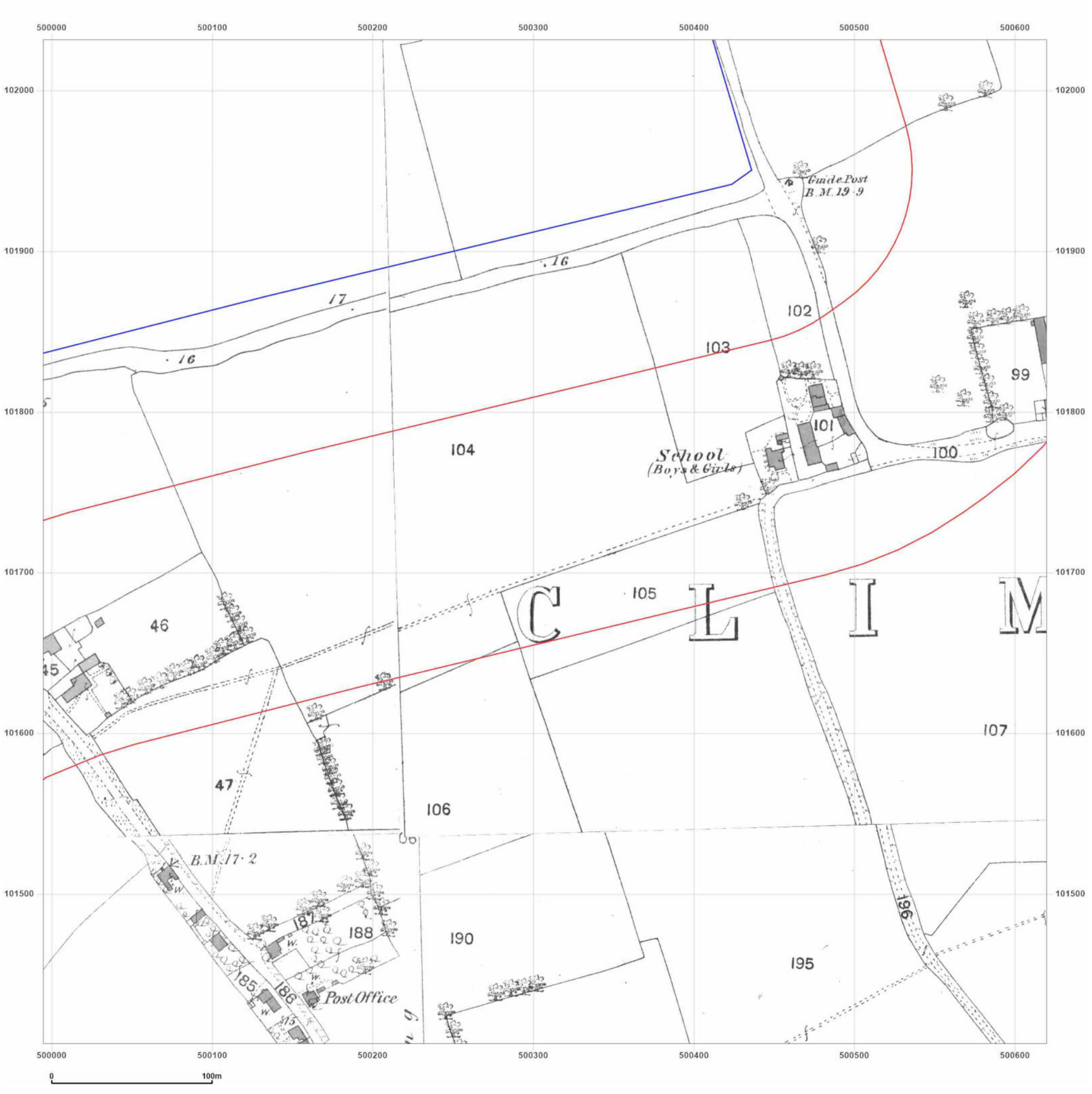
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

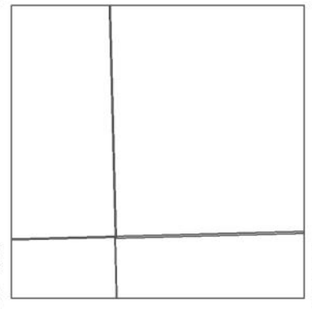
Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_1
Grid Ref: 500307, 101719

Map Name: County Series
Map date: **1876-1879**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1879
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1878
Revised 1878
Edition N/A
Copyright N/A
Levelled N/A

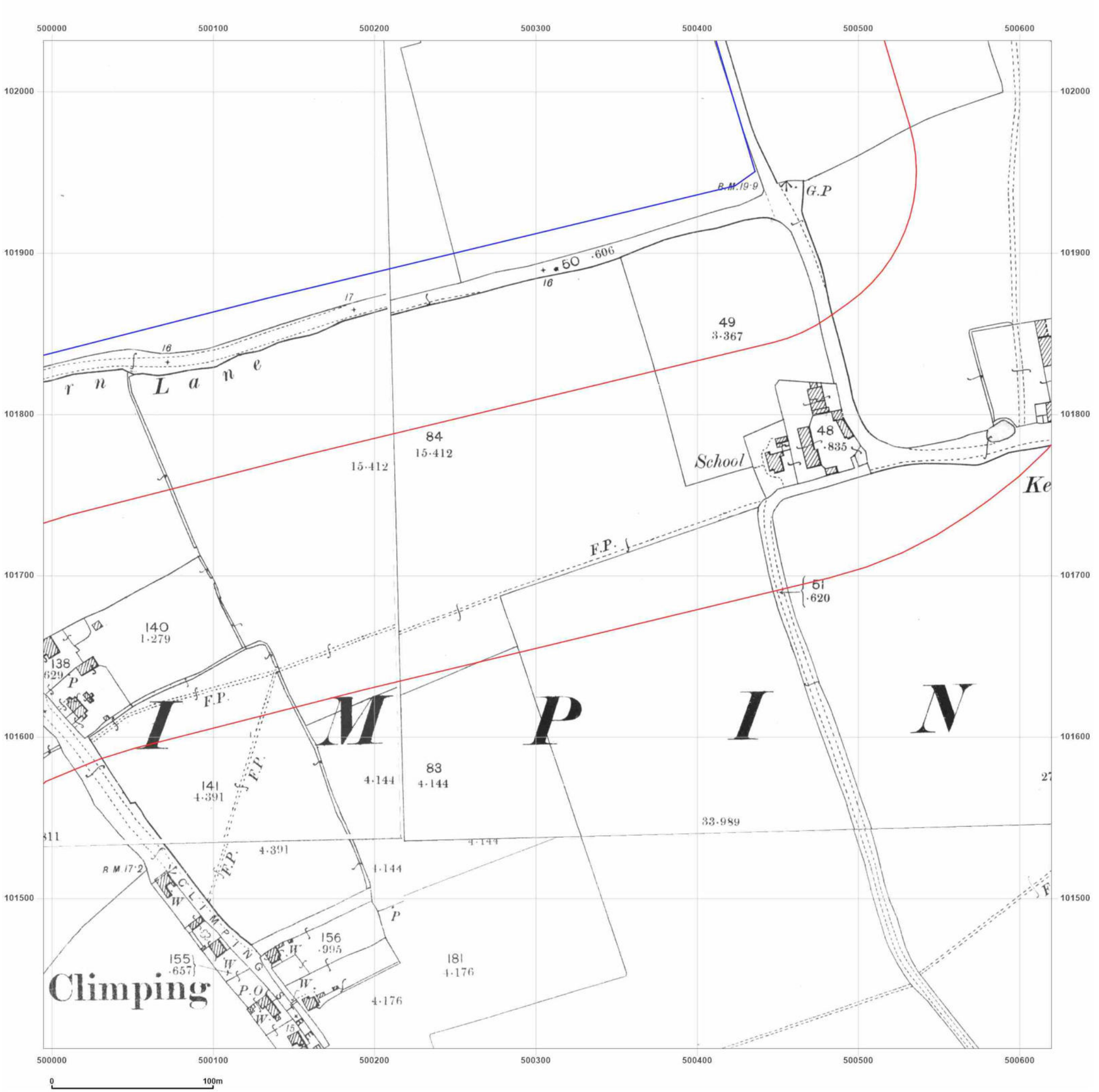
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Site Details:

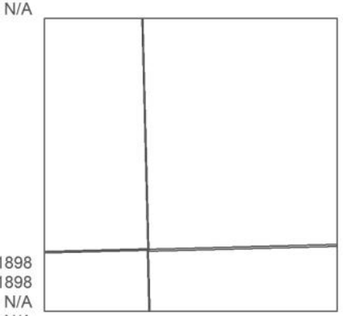
Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_1
Grid Ref: 500307, 101719

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1898
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Copyright N/A
Levelled N/A

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

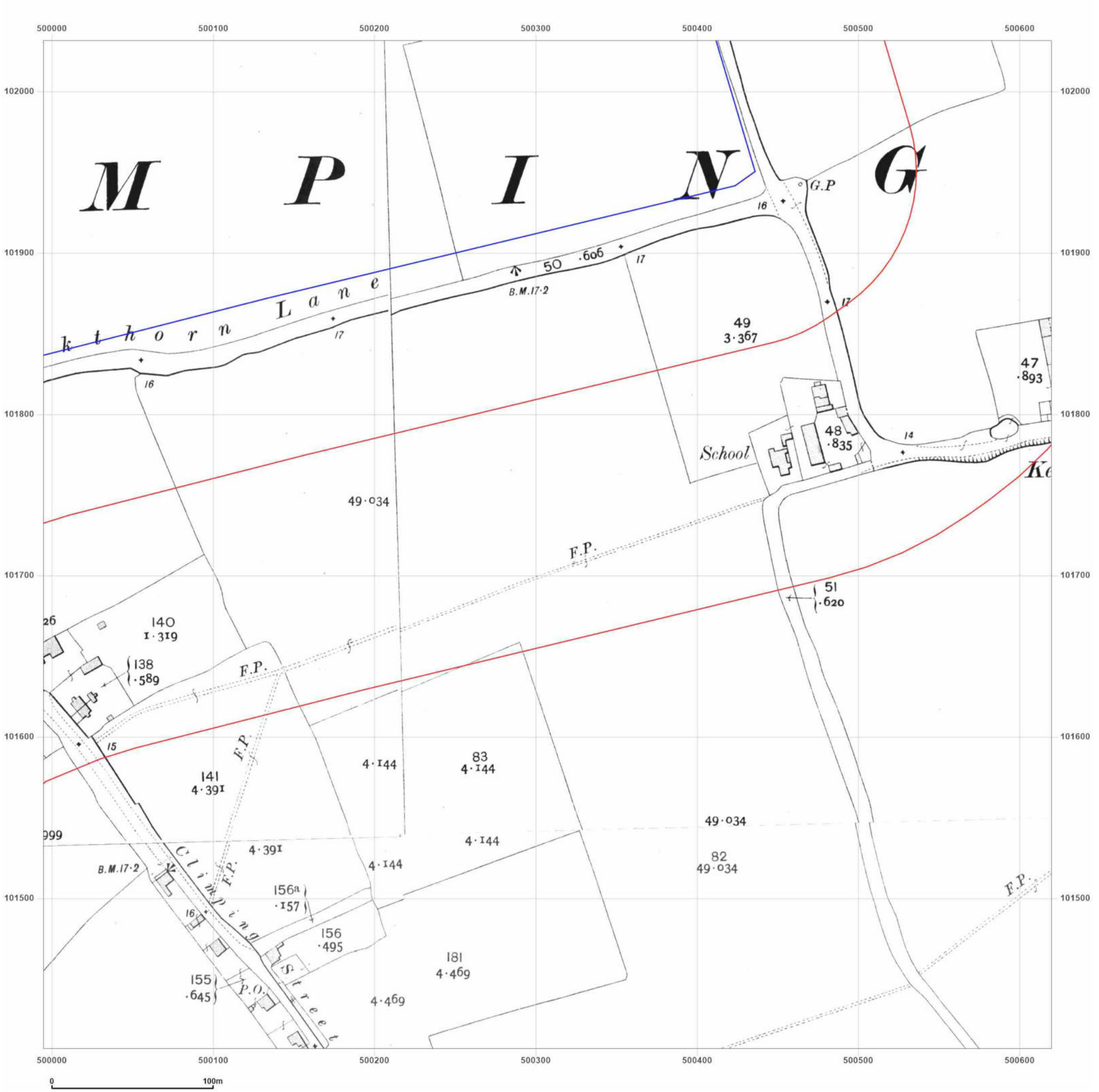
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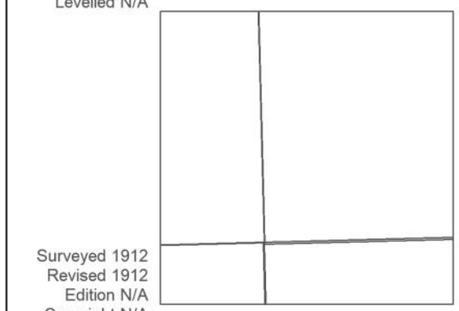
Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_1
Grid Ref: 500307, 101719

Map Name: County Series
Map date: **1911-1912**
Scale: 1:2,500
Printed at: 1:2,500

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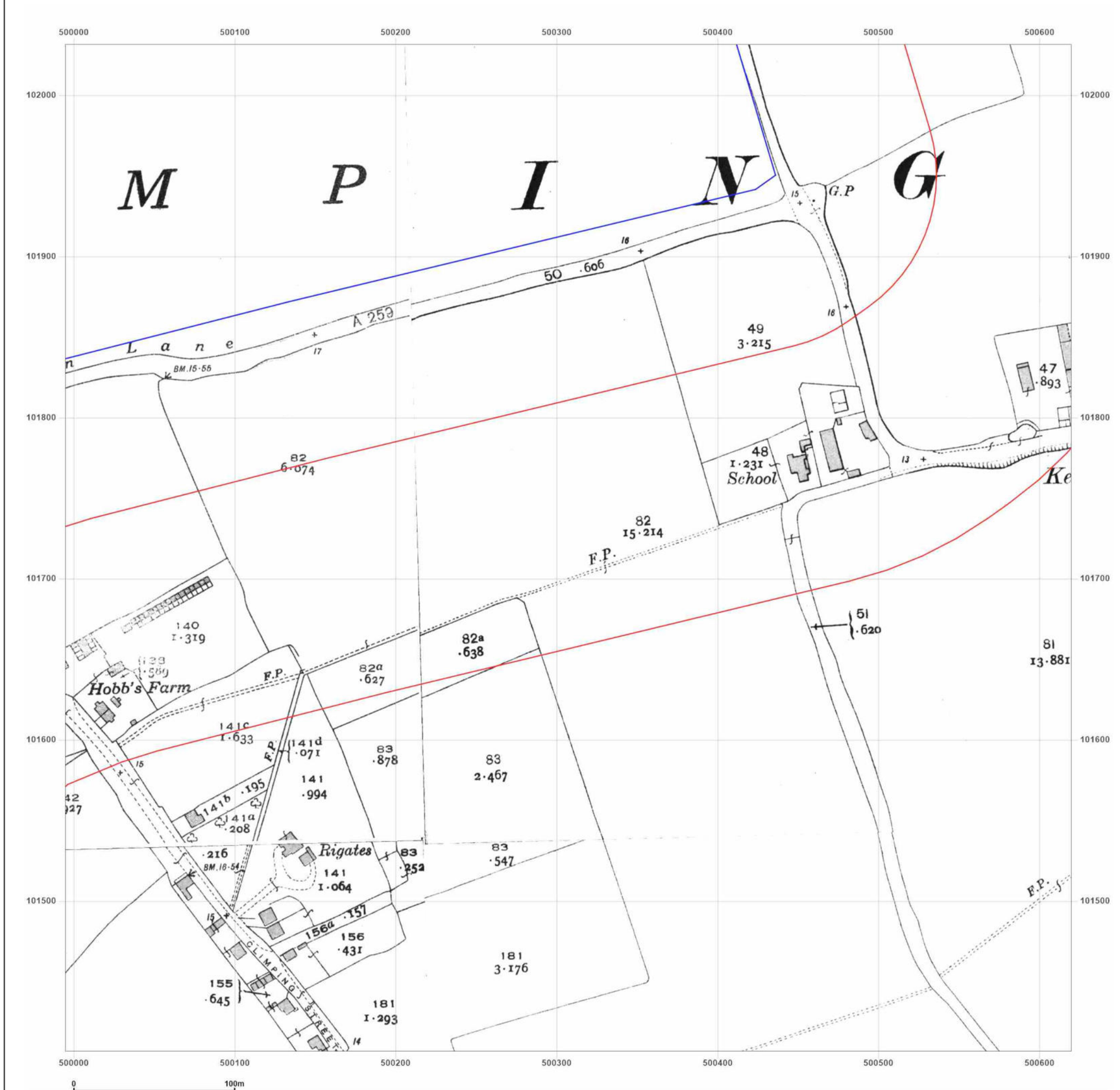
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

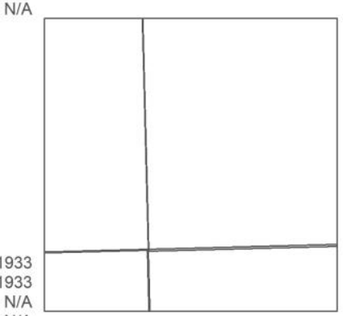
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Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_1
Grid Ref: 500307, 101719

Map Name: County Series
Map date: **1932-1937**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1937
Revised 1937
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1933
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

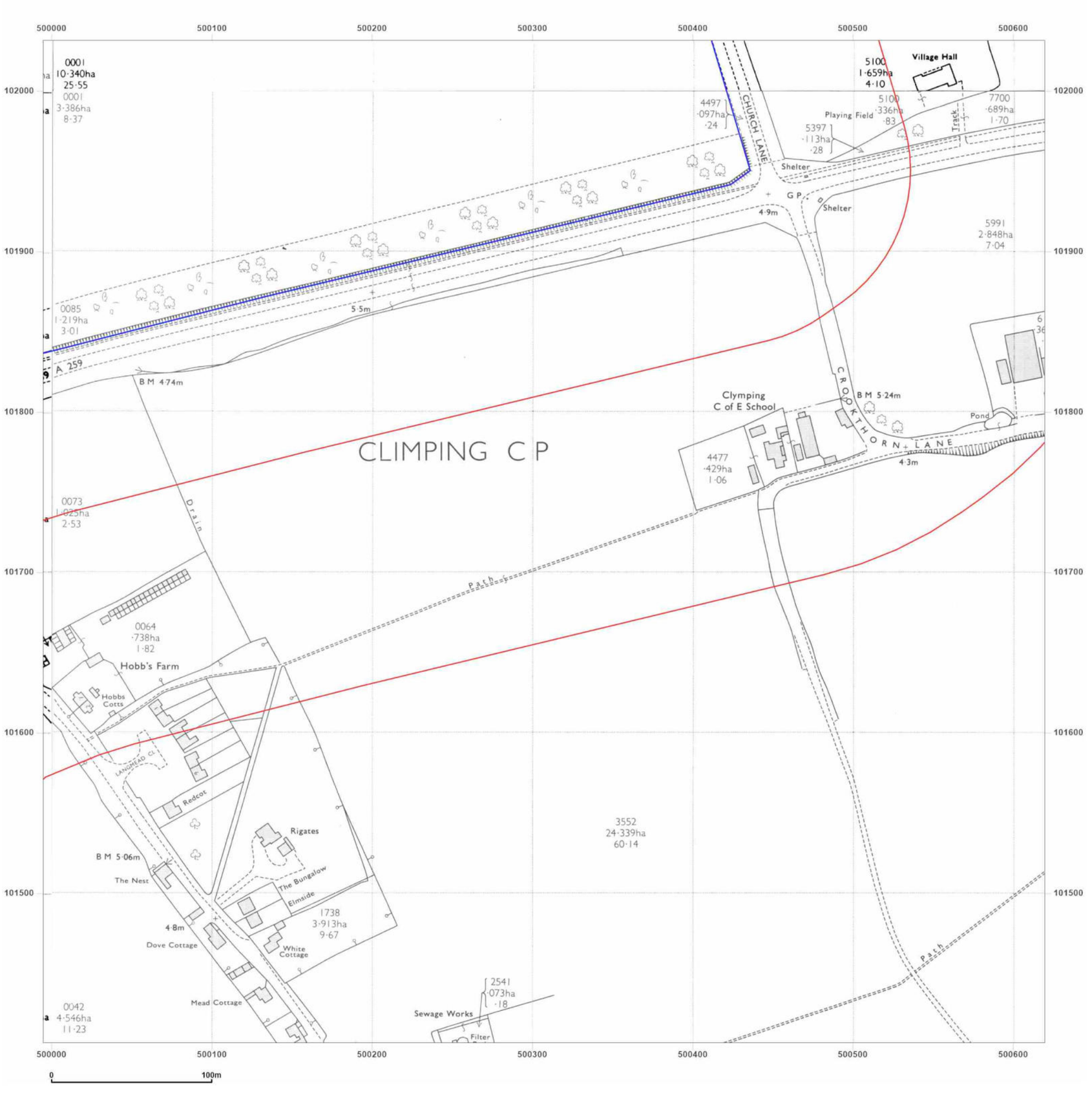
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_1
Grid Ref: 500307, 101719

Map Name: National Grid

Map date: **1972-1974**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1973	Surveyed N/A
Revised 1973	Revised N/A
Edition N/A	Edition N/A
Copyright 1975	Copyright N/A
Levelled 1950	Levelled N/A
Surveyed N/A	Surveyed 1972
Revised N/A	Revised 1972
Edition N/A	Edition N/A
Copyright N/A	Copyright N/A
Levelled N/A	Levelled 1966

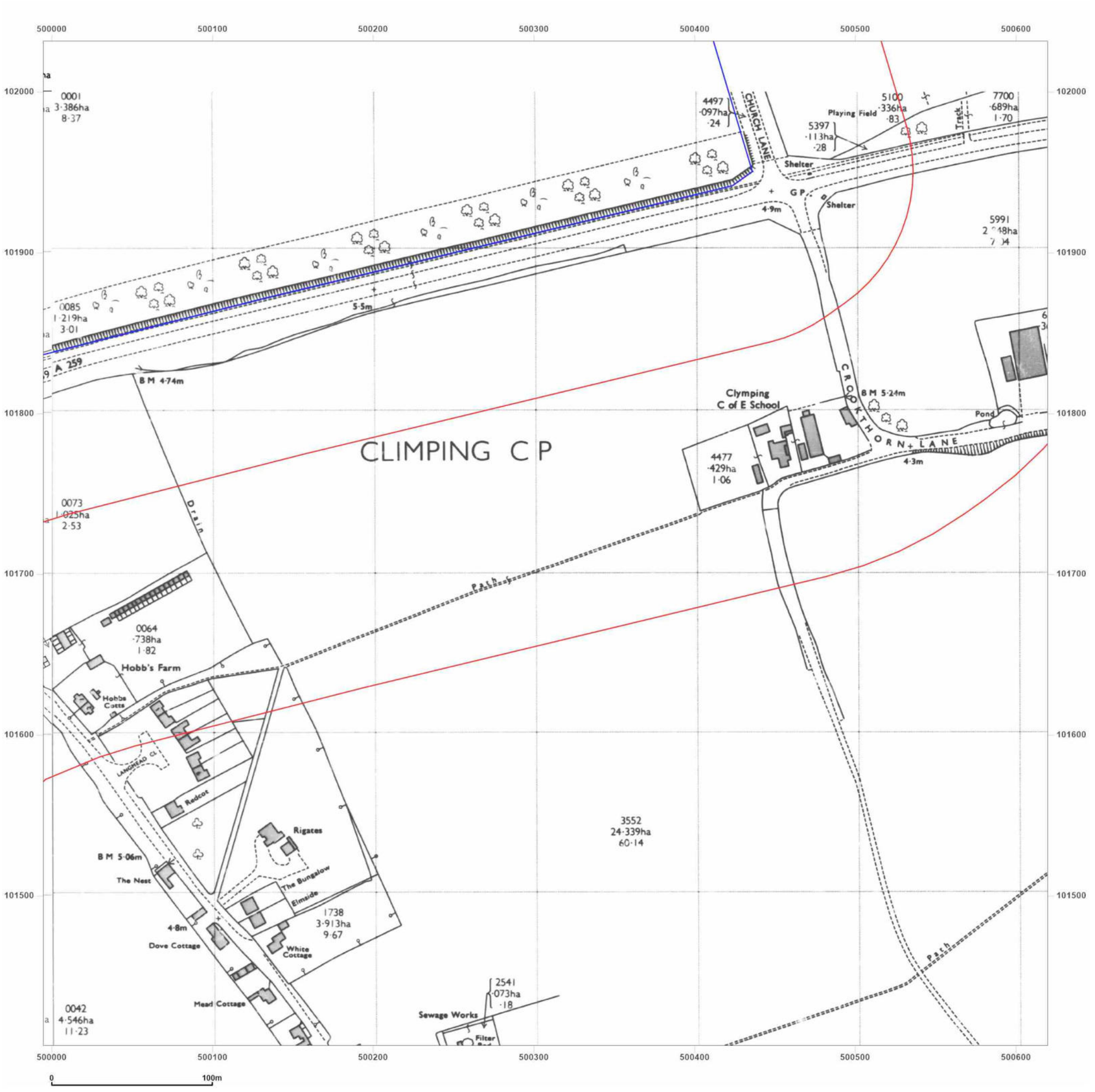
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_1
Grid Ref: 500307, 101719

Map Name: National Grid

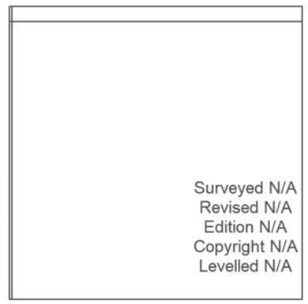
Map date: **1973-1975**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1975
Levelled N/A



Surveyed 1974
Revised 1974
Edition N/A
Copyright 1974
Levelled 1966

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

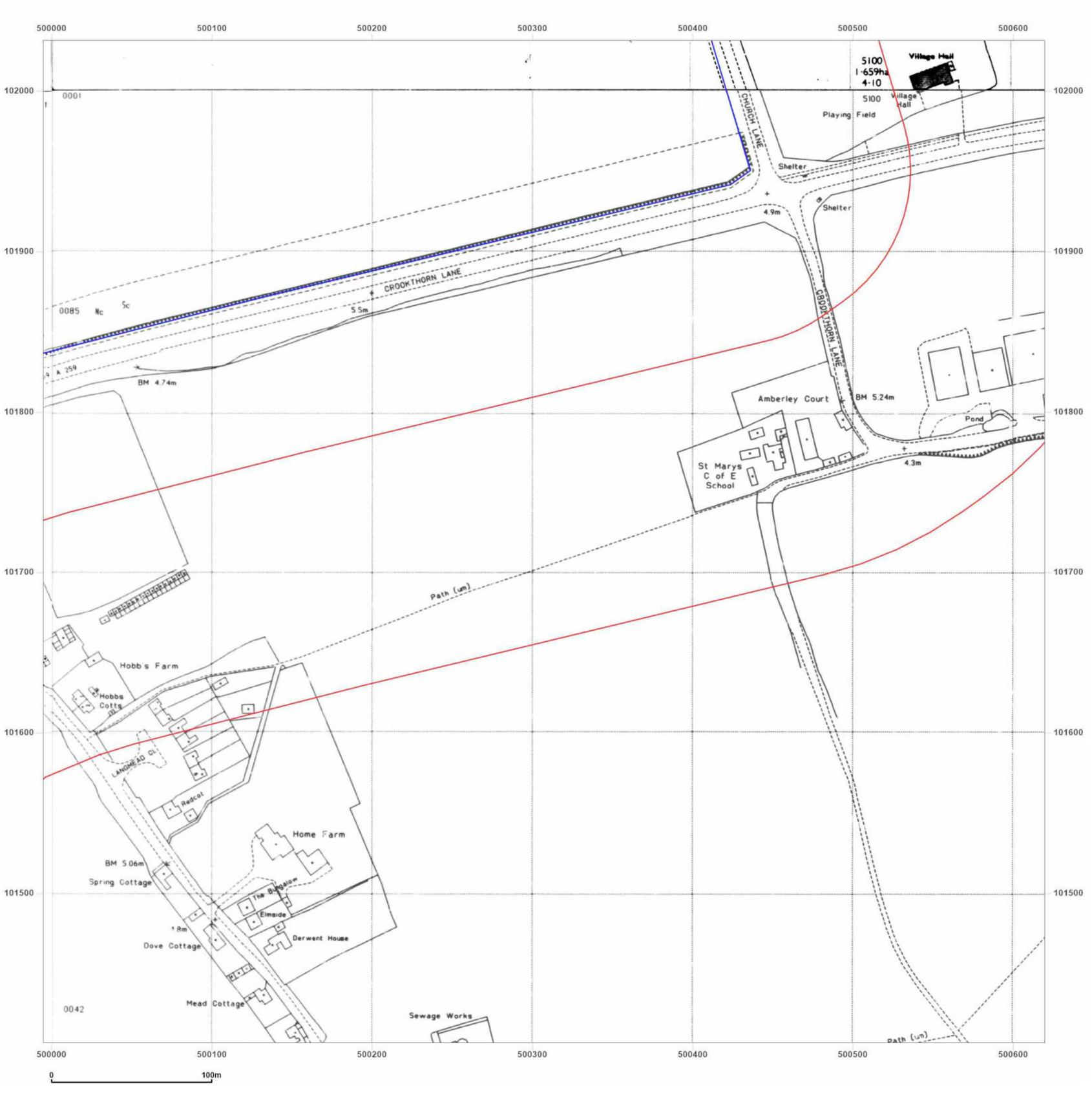
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_1
Grid Ref: 500307, 101719

Map Name: National Grid

Map date: **1989-1994**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1975 Revised 1983 Edition N/A Copyright 1991 Levelled 1975	Surveyed 1975 Revised 1989 Edition N/A Copyright 1989 Levelled 1975
Surveyed 1994 Revised N/A Edition N/A Copyright 1994 Levelled N/A	Surveyed 1994 Revised N/A Edition N/A Copyright 1994 Levelled N/A

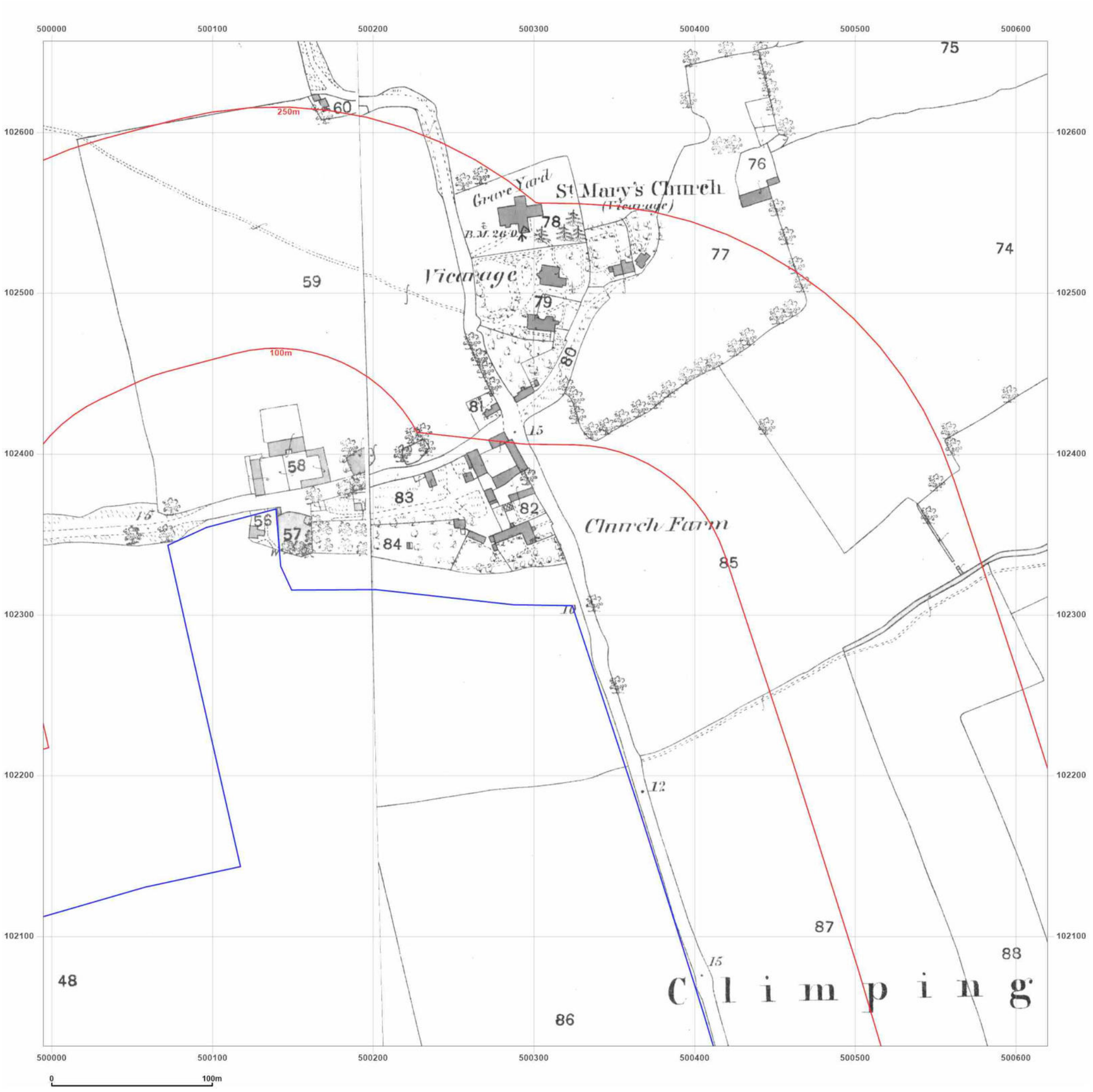
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

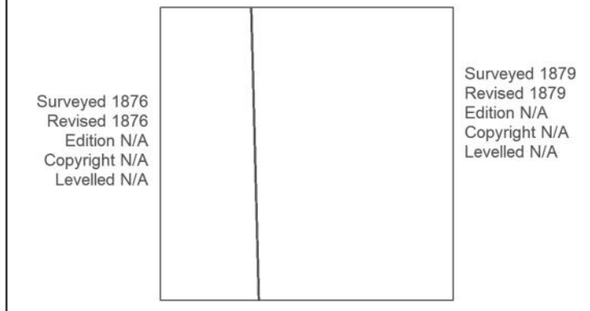
Map Name: County Series

Map date: **1876-1879**

Scale: 1:2,500

Printed at: 1:2,500

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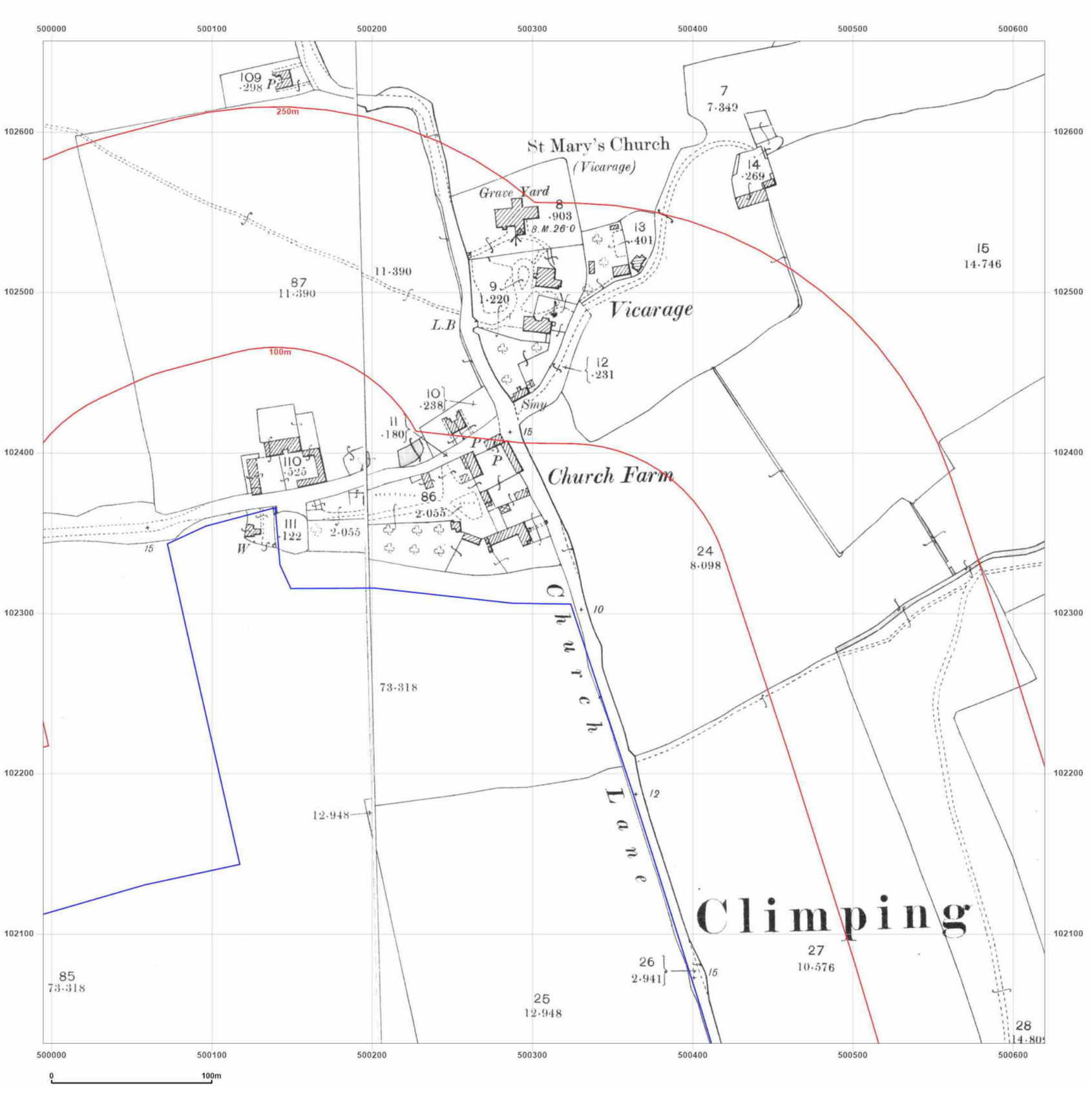
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

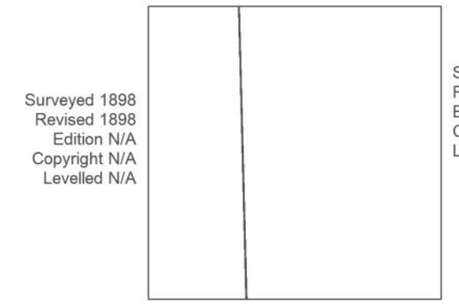
Map Name: County Series

Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

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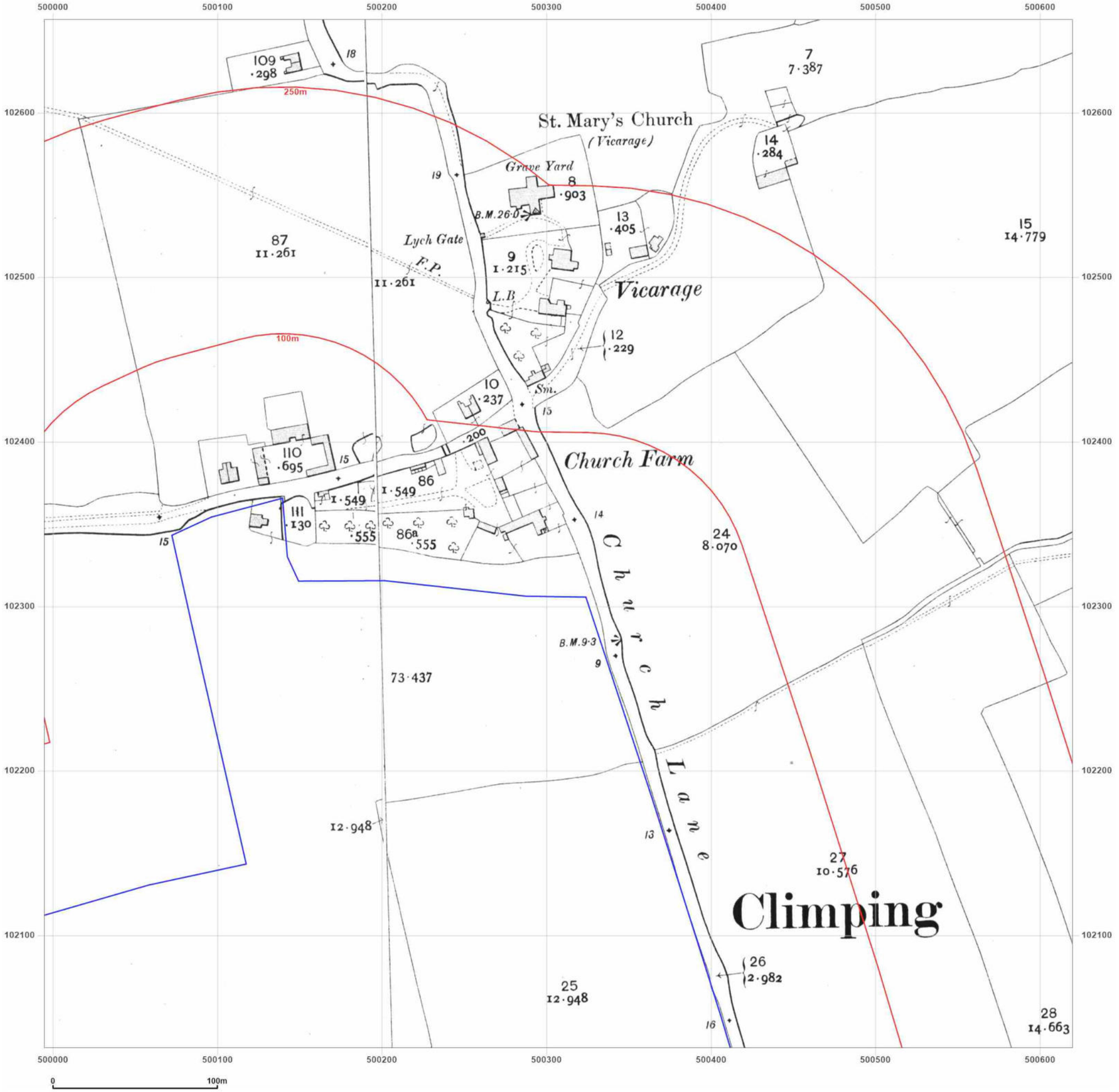
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

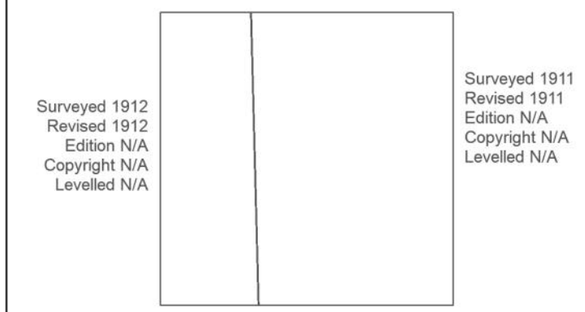
Map Name: County Series

Map date: **1911-1912**

Scale: 1:2,500

Printed at: 1:2,500

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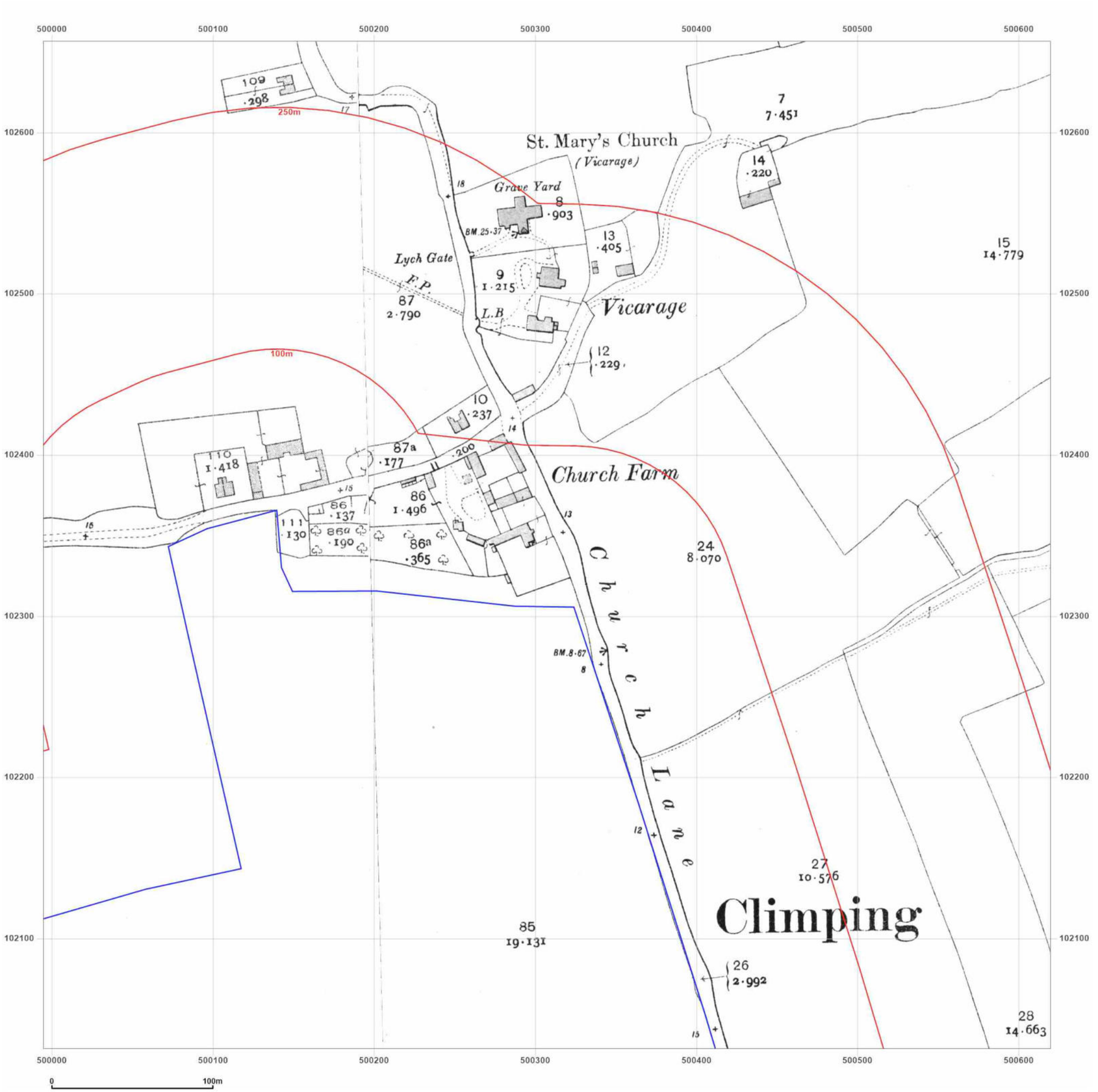
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

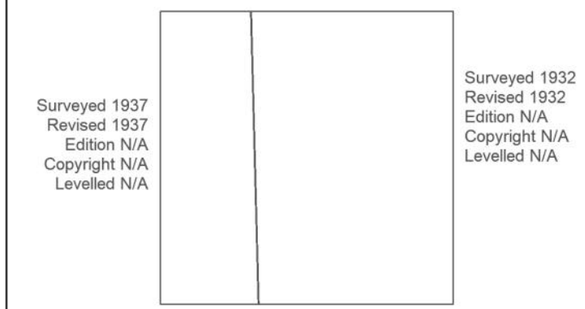
Map Name: County Series

Map date: **1932-1937**

Scale: 1:2,500

Printed at: 1:2,500

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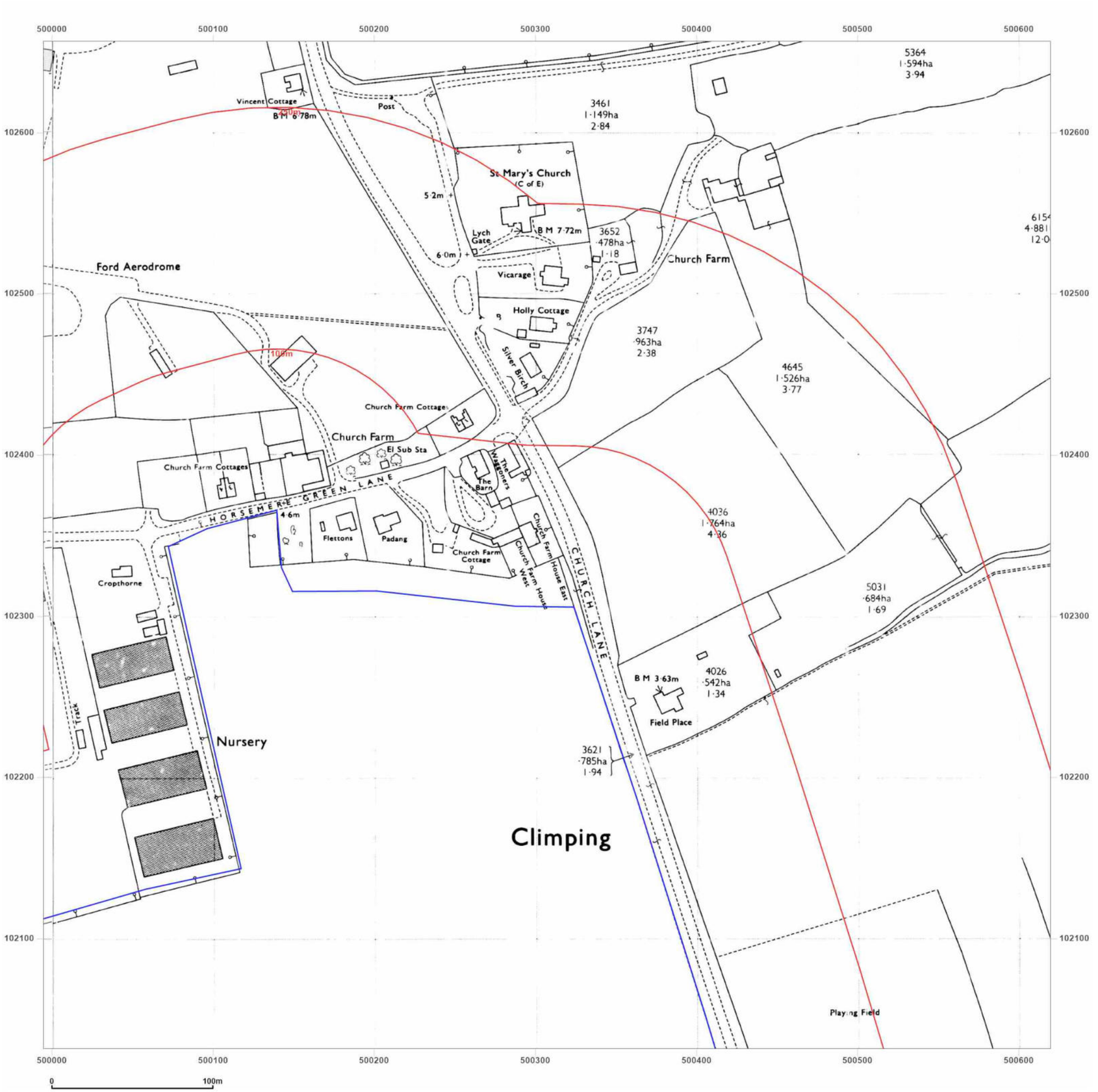
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1973	Surveyed N/A
Revised 1973	Revised N/A
Edition N/A	Edition N/A
Copyright 1975	Copyright N/A
Levelled 1950	Levelled N/A

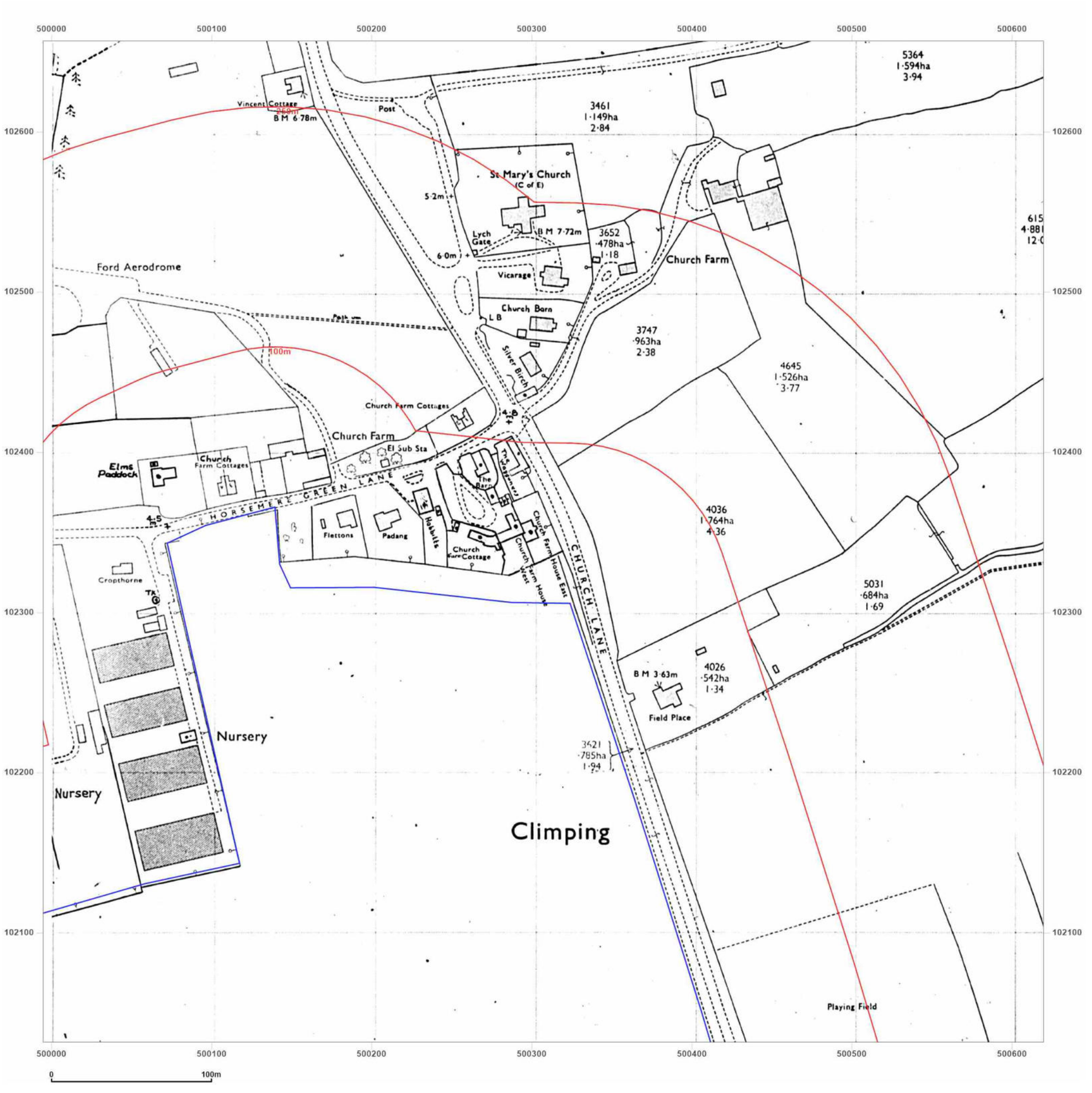
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

Map Name: National Grid

Map date: **1984**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1975
Revised 1984
Edition N/A
Copyright 1984
Levelled 1975

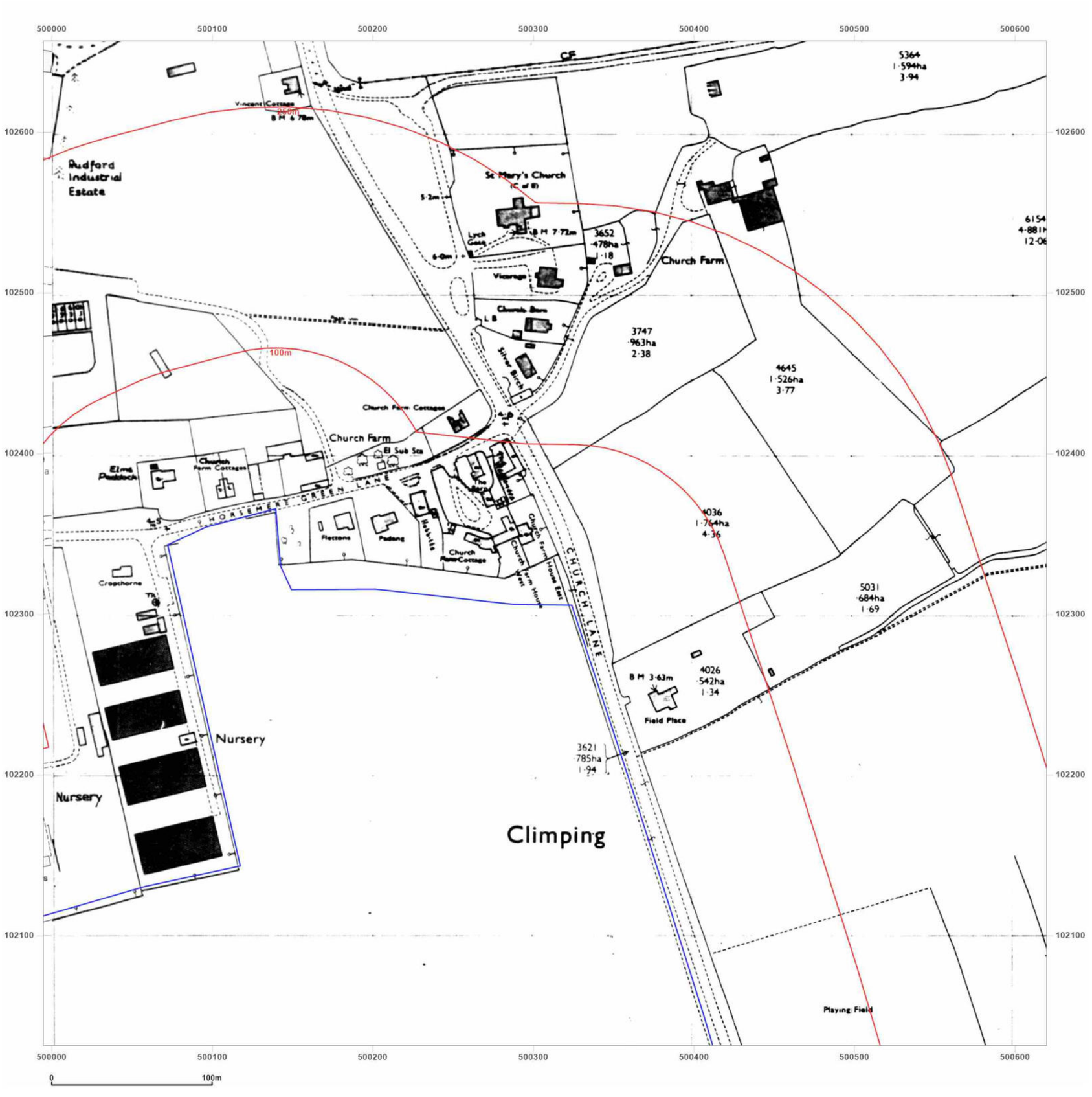
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

Map Name: National Grid

Map date: **1984**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1983	Surveyed 1975
Revised 1983	Revised 1984
Edition N/A	Edition N/A
Copyright 1984	Copyright 1984
Levelled 1975	Levelled 1975

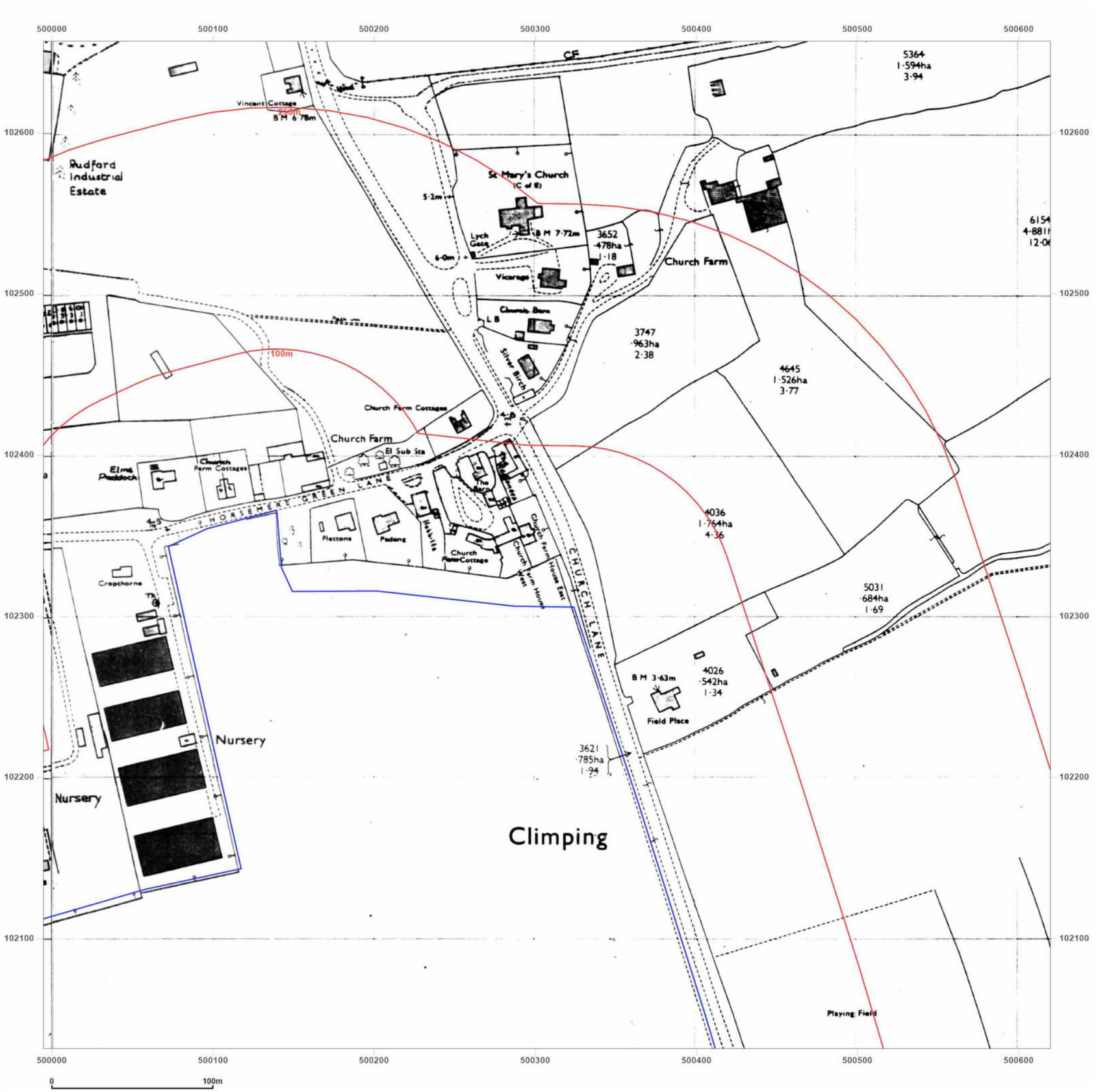
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

Map Name: National Grid

Map date: **1988-1989**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1973	Surveyed 1975
Revised 1988	Revised 1989
Edition N/A	Edition N/A
Copyright N/A	Copyright 1989
Levelled 1975	Levelled 1975

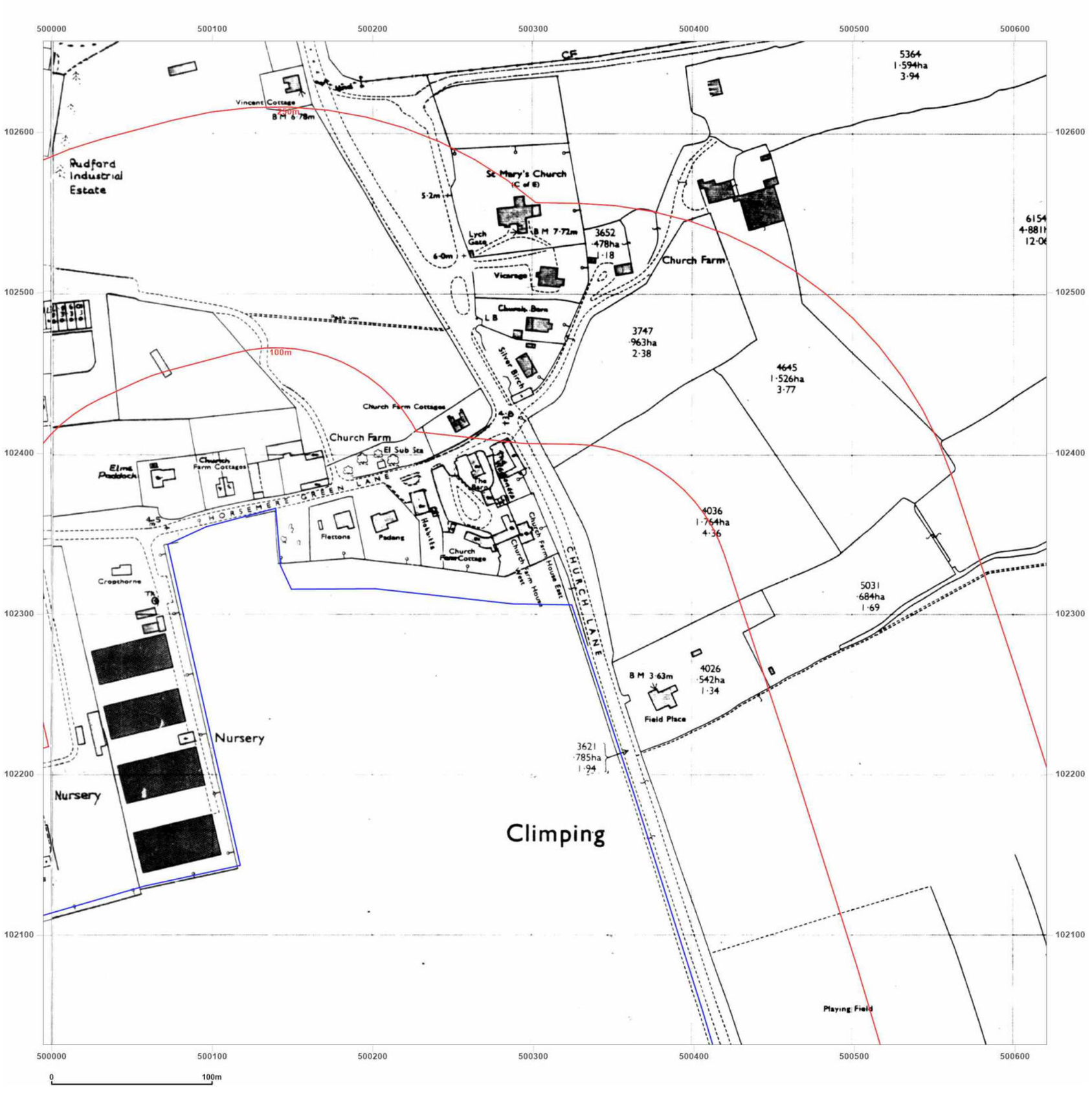
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

Map Name: National Grid

Map date: **1989-1991**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1975	Surveyed 1975
Revised 1983	Revised 1989
Edition N/A	Edition N/A
Copyright 1991	Copyright 1989
Levelled 1975	Levelled 1975

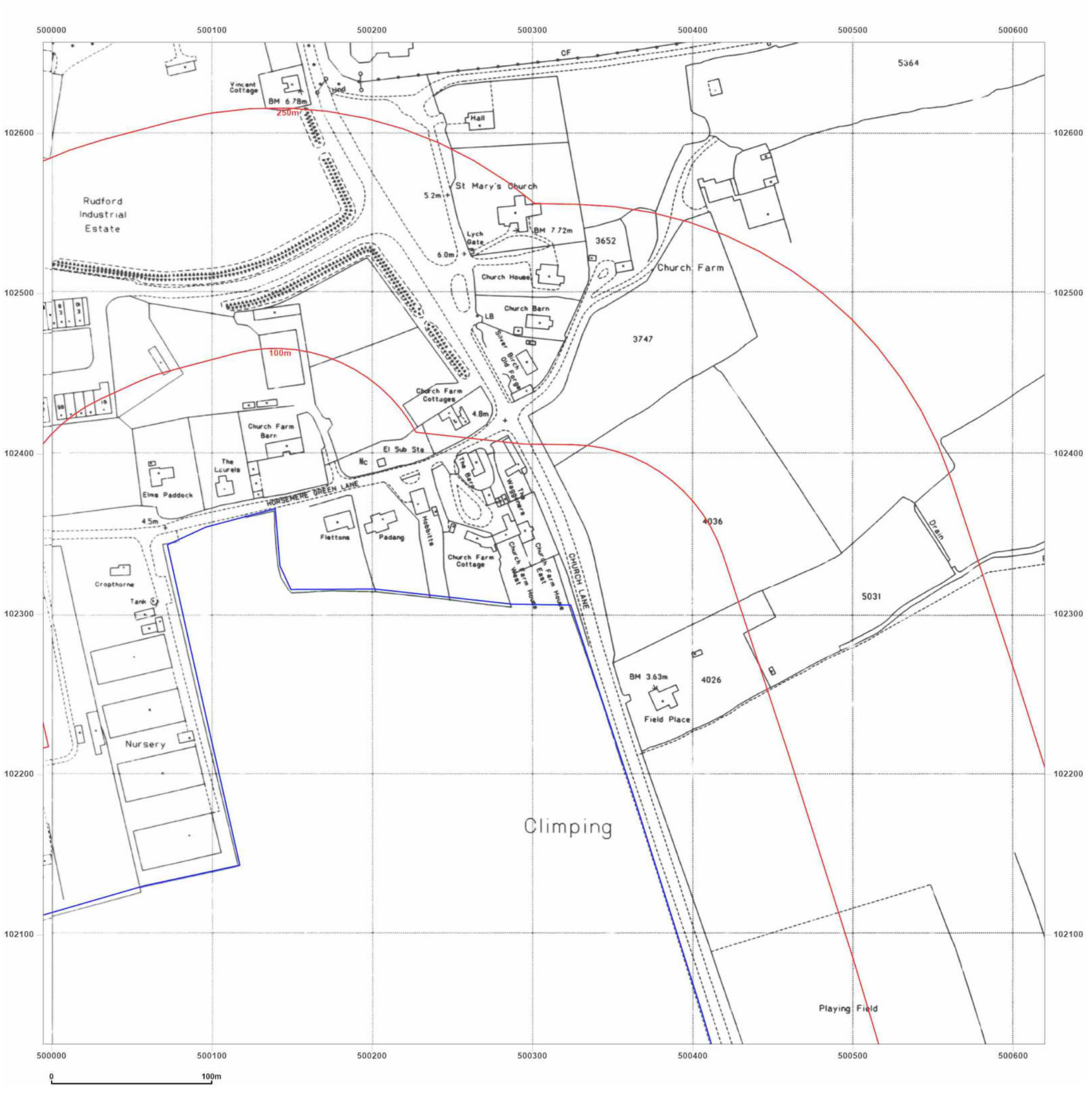
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI_LS_2_2
Grid Ref: 500307, 102344

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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

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

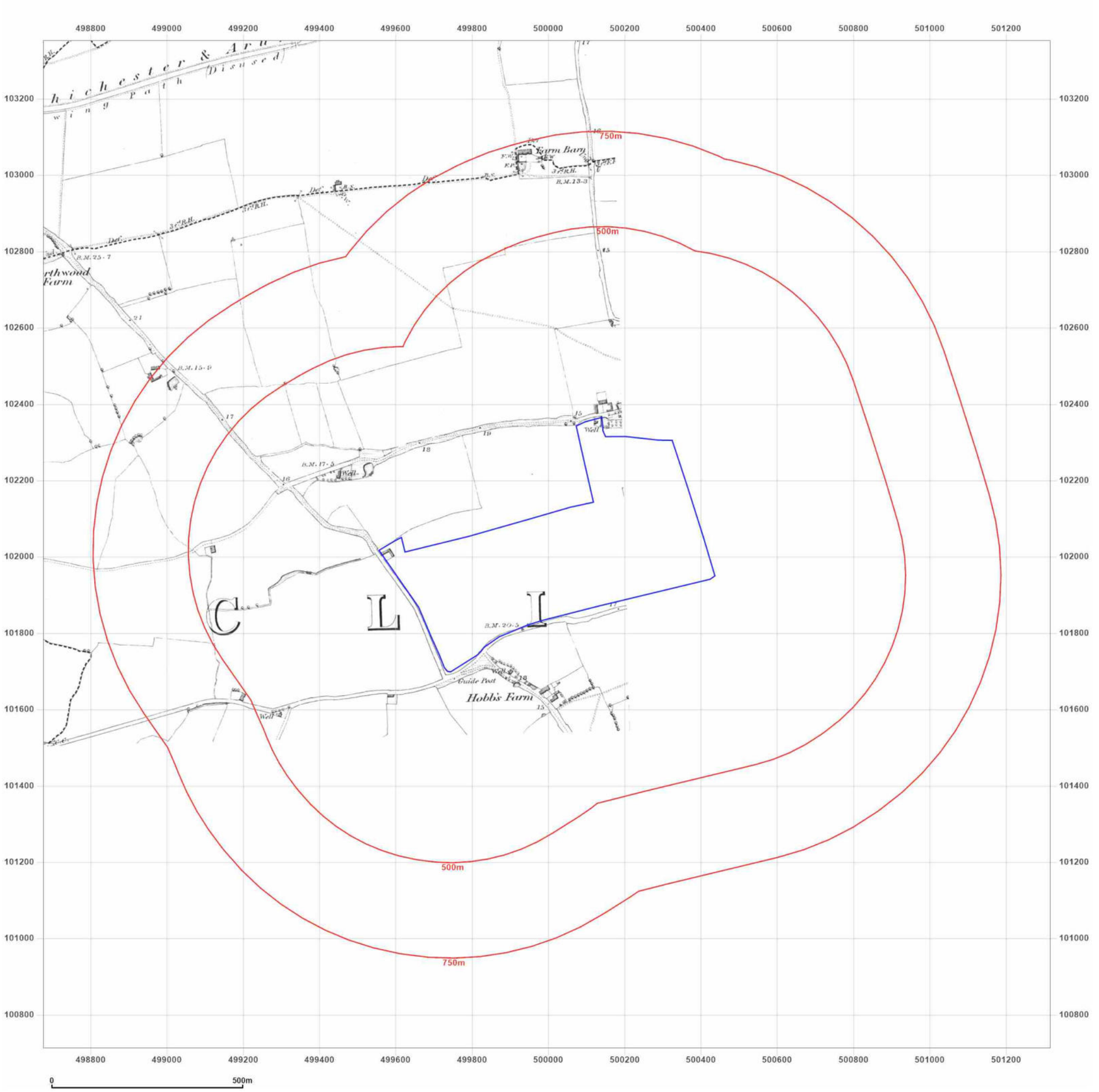
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: County Series

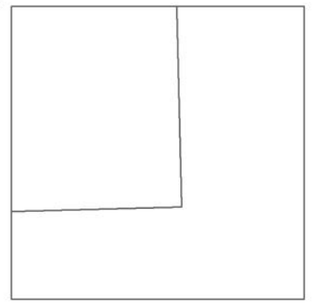
Map date: **1876**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A



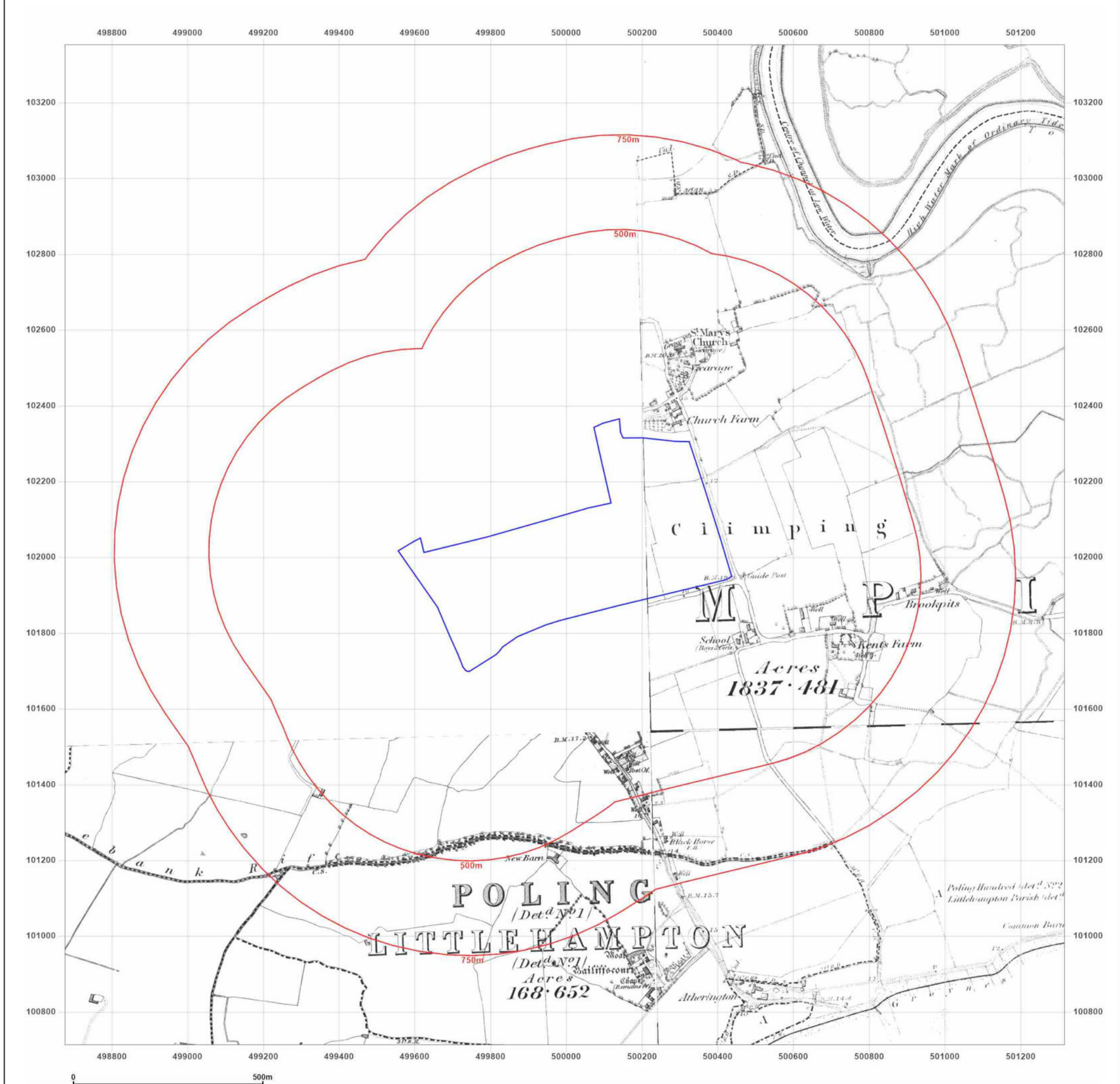
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: County Series

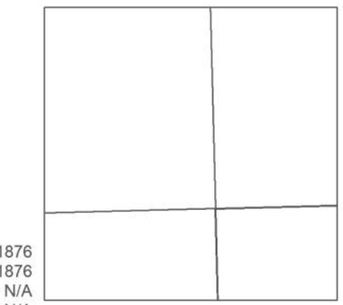
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Printed at: 1:10,560

N
W E
S

Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A

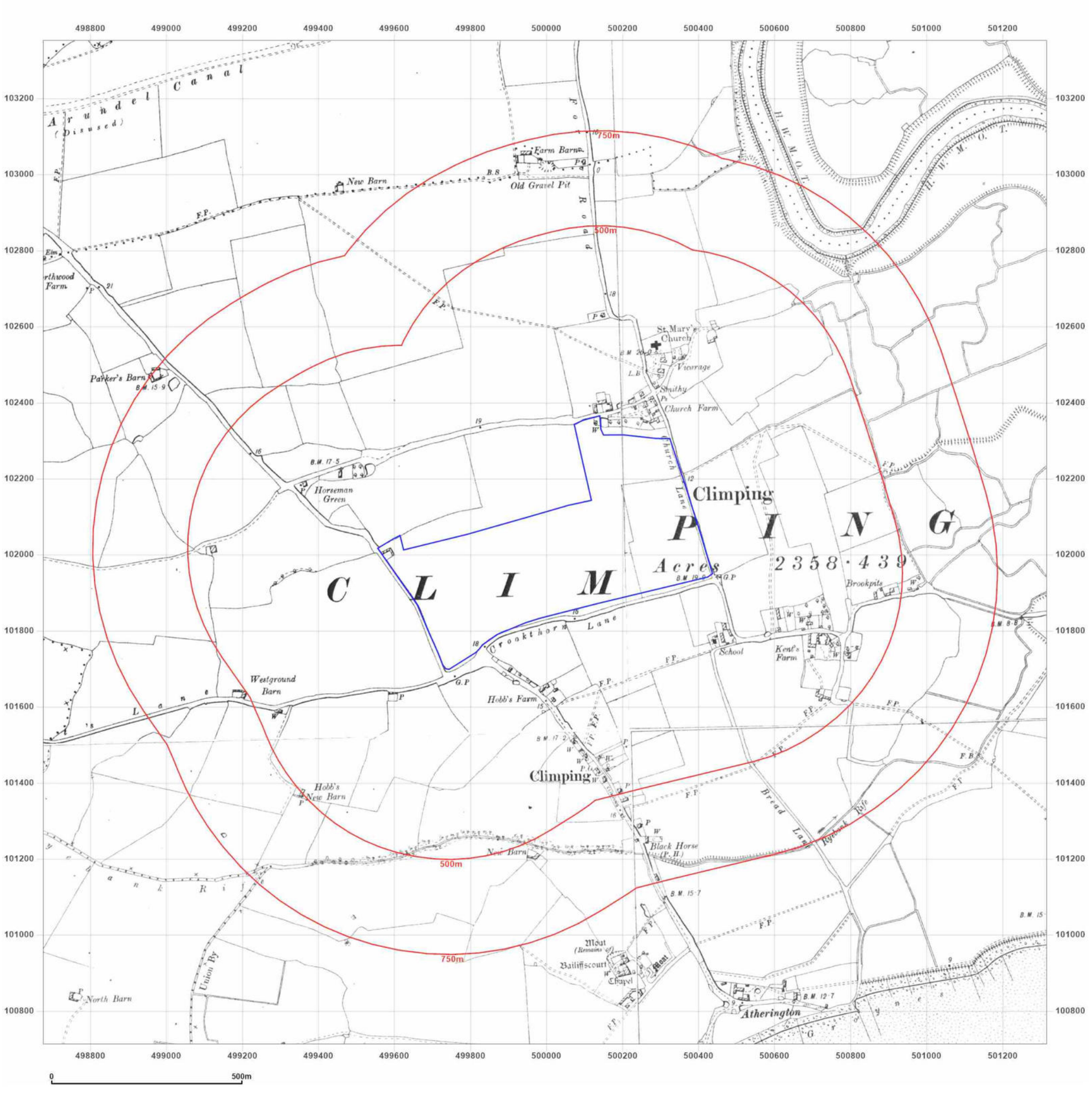
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

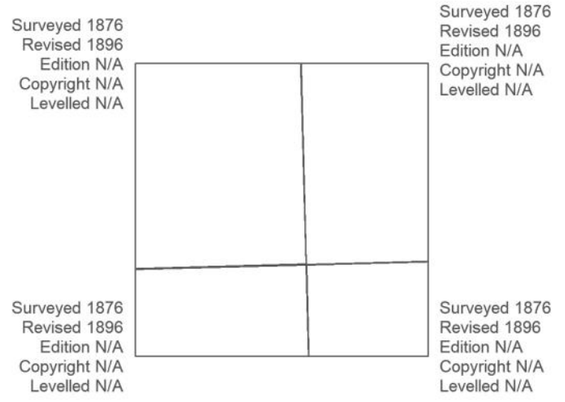
Map Name: County Series

Map date: **1896**

Scale: 1:10,560

Printed at: 1:10,560

N
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S



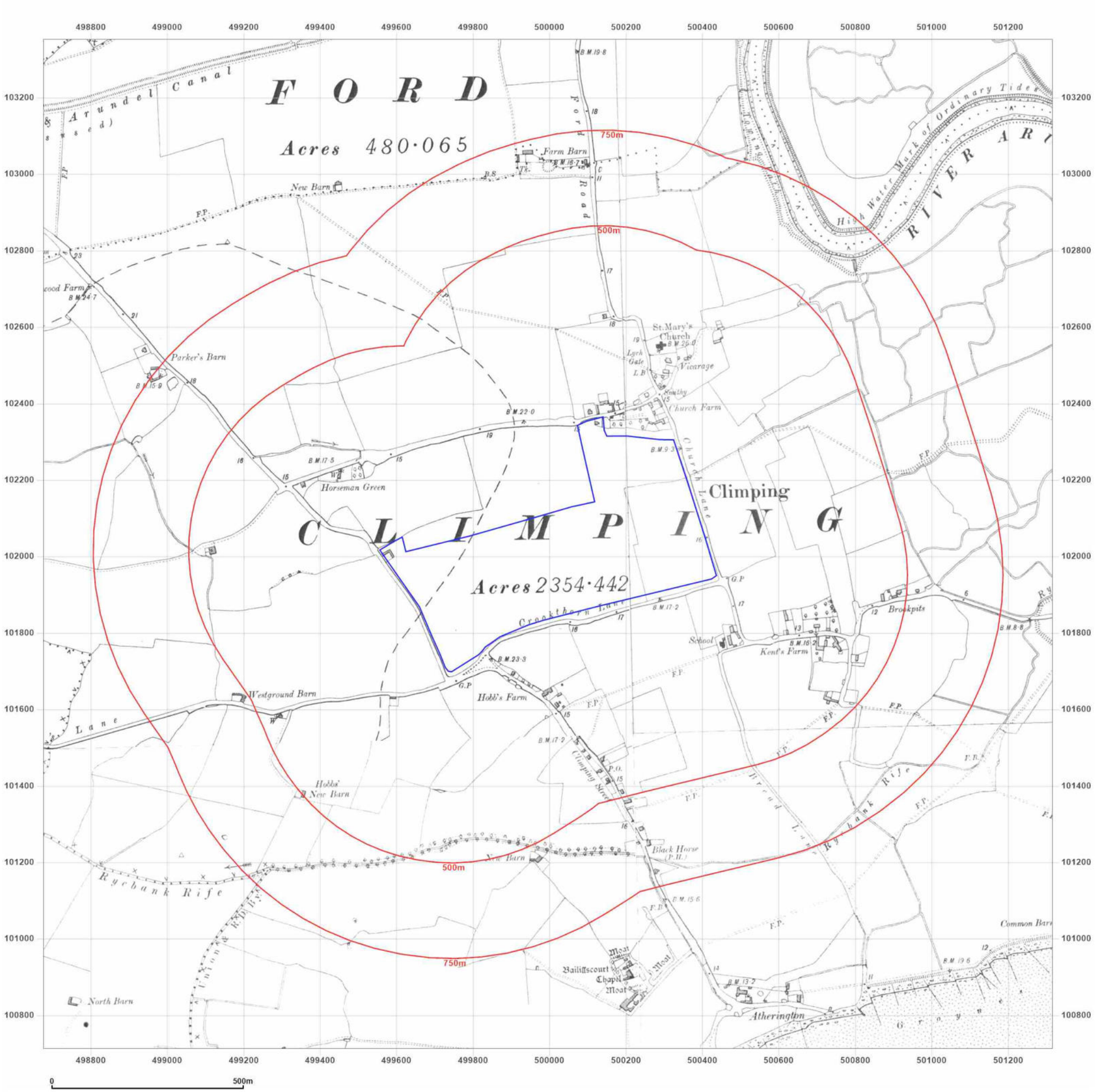
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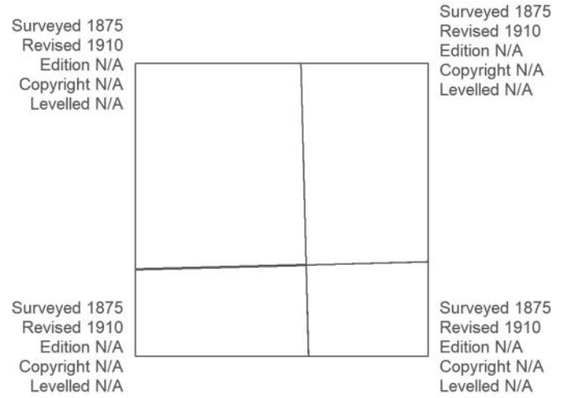
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Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: County Series
Map date: **1910**
Scale: 1:10,560
Printed at: 1:10,560

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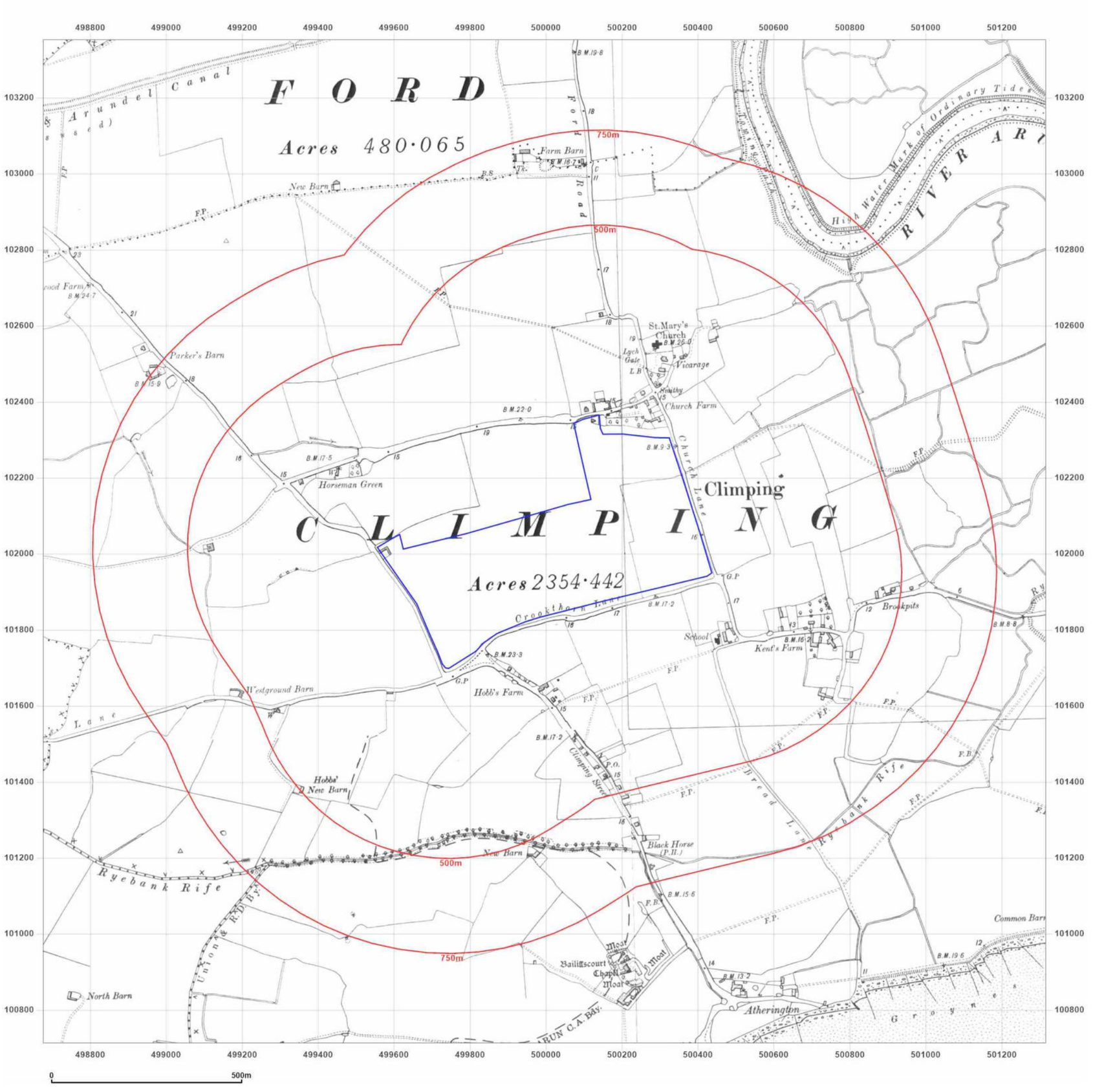
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Site Details:

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Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: County Series

Map date: **1910**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1875 Revised 1910 Edition N/A Copyright N/A Levelled N/A	Surveyed 1875 Revised 1910 Edition N/A Copyright N/A Levelled N/A
Surveyed 1875 Revised 1910 Edition N/A Copyright N/A Levelled N/A	Surveyed 1875 Revised 1910 Edition N/A Copyright N/A Levelled N/A

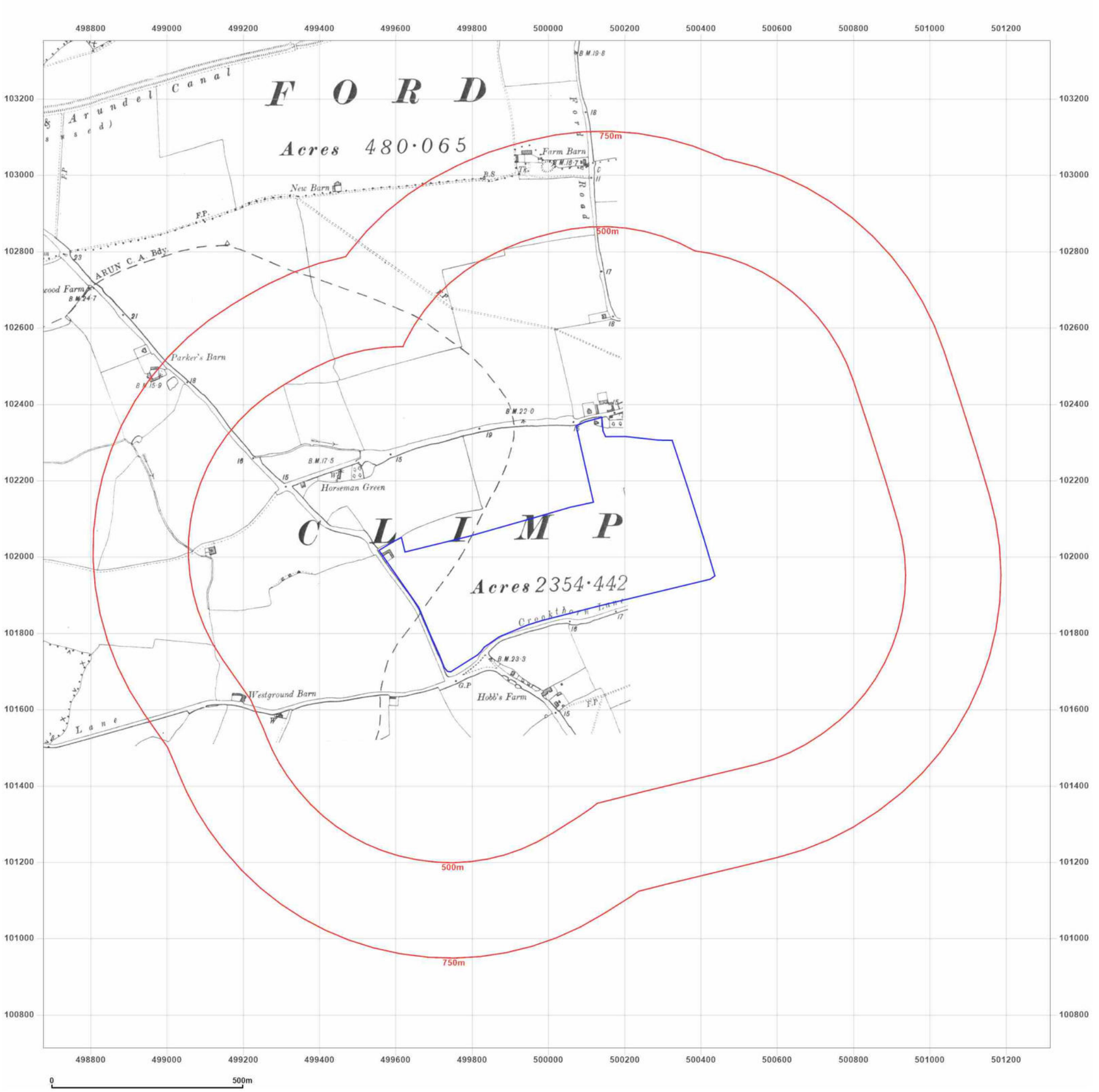
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Groundsure INSIGHTS

Site Details:

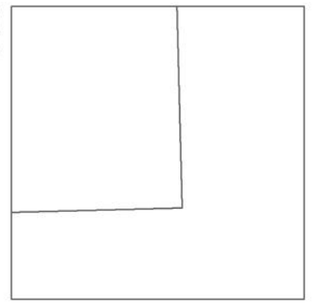
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Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: County Series
Map date: **1910**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed 1875
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A



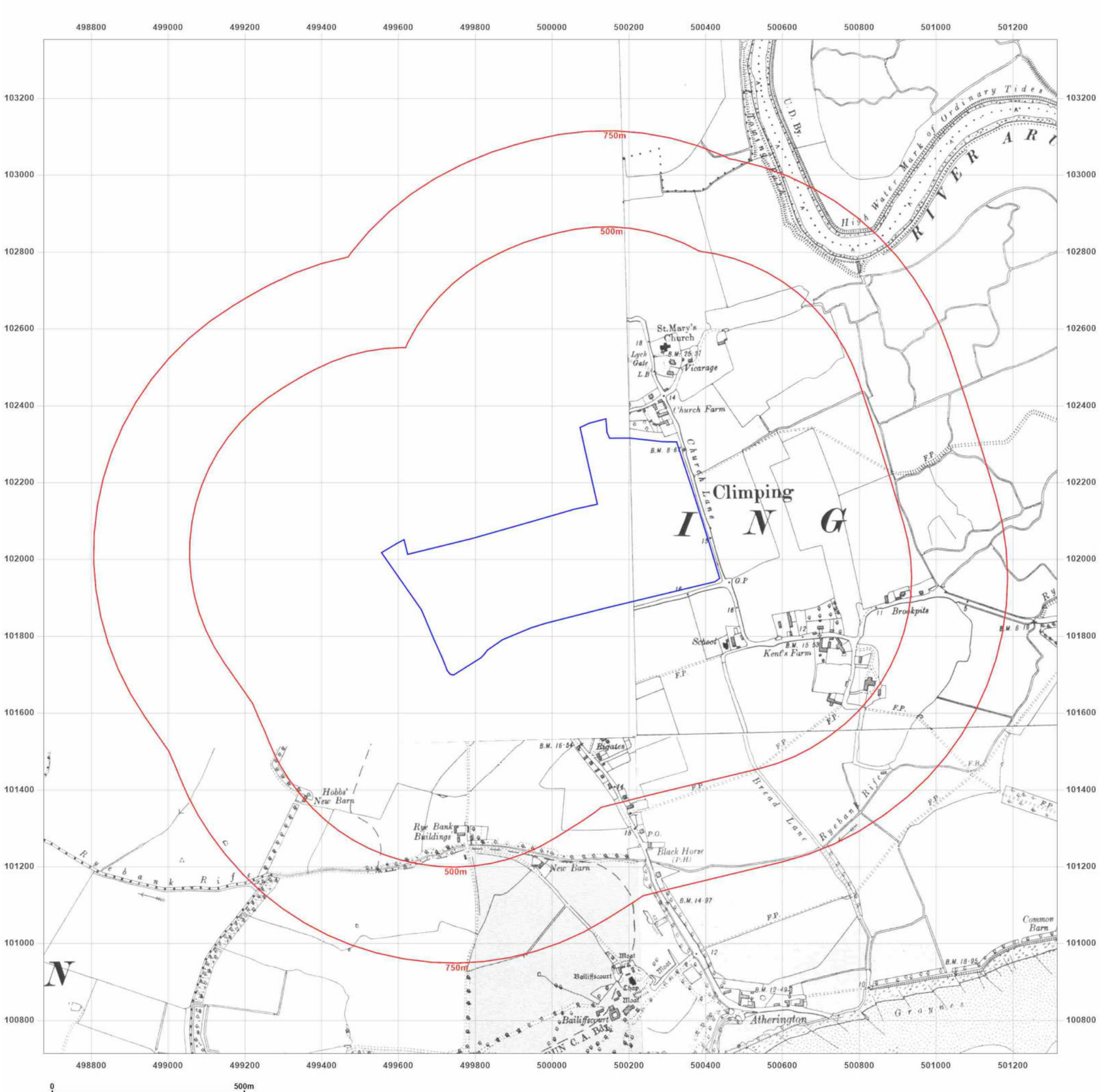
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: County Series
Map date: **1932**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed 1875
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

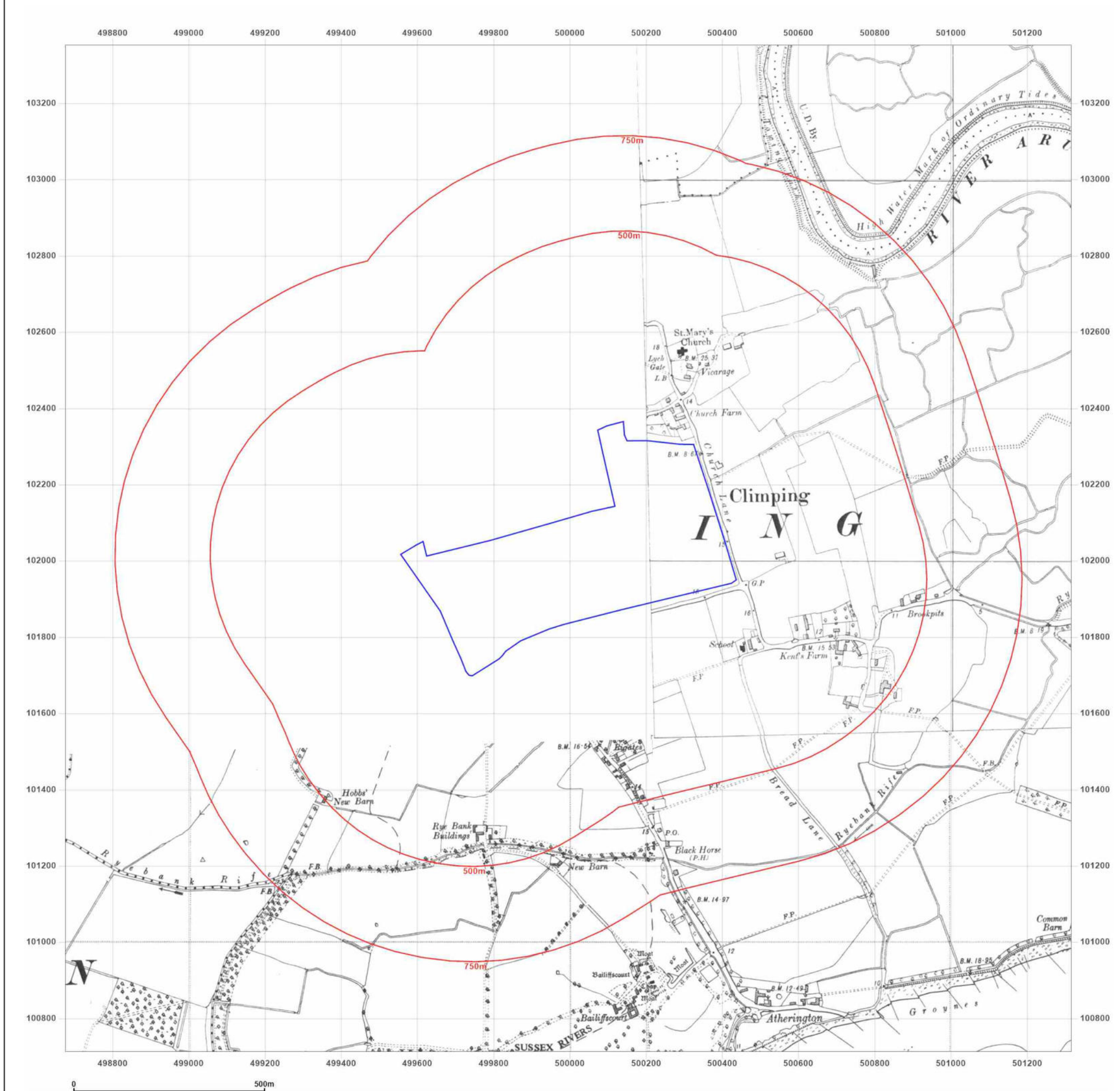
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: County Series
Map date: **1938-1940**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed 1875
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1940
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

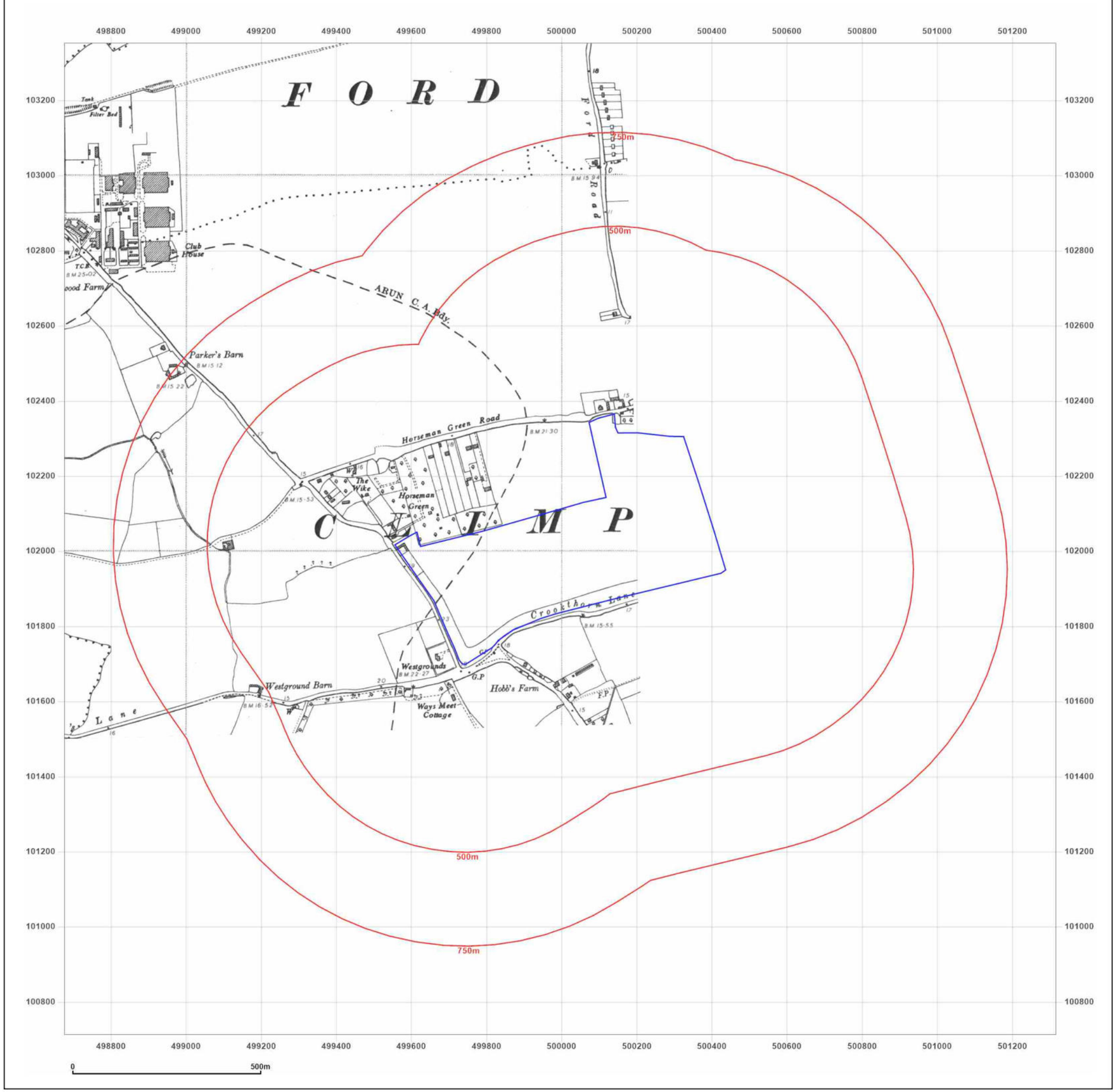
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Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: County Series

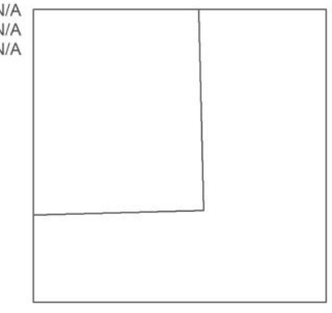
Map date: **1950**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1875
Revised 1950
Edition N/A
Copyright N/A
Levelled N/A



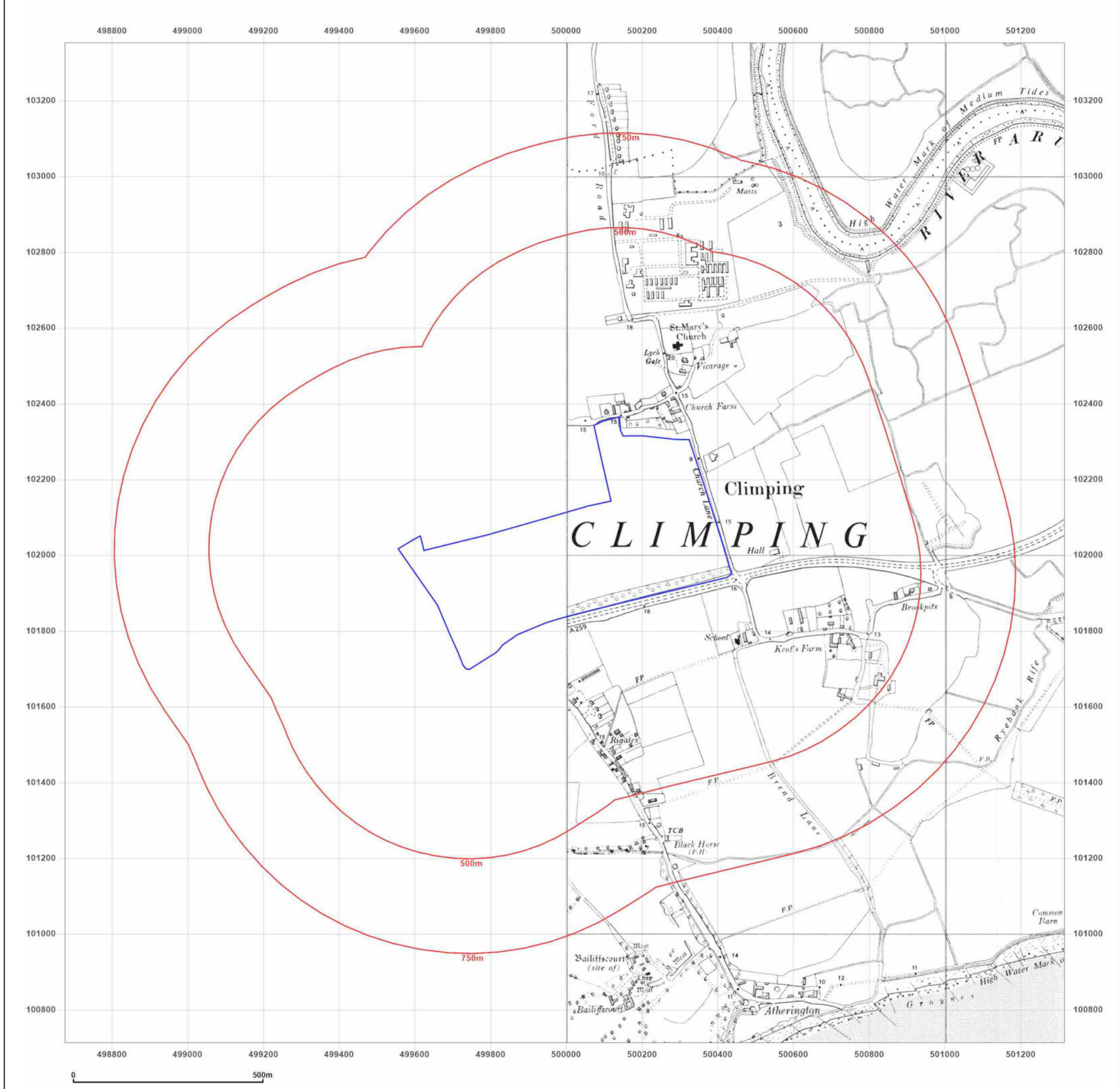
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: Provisional
Map date: **1957**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed 1875
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

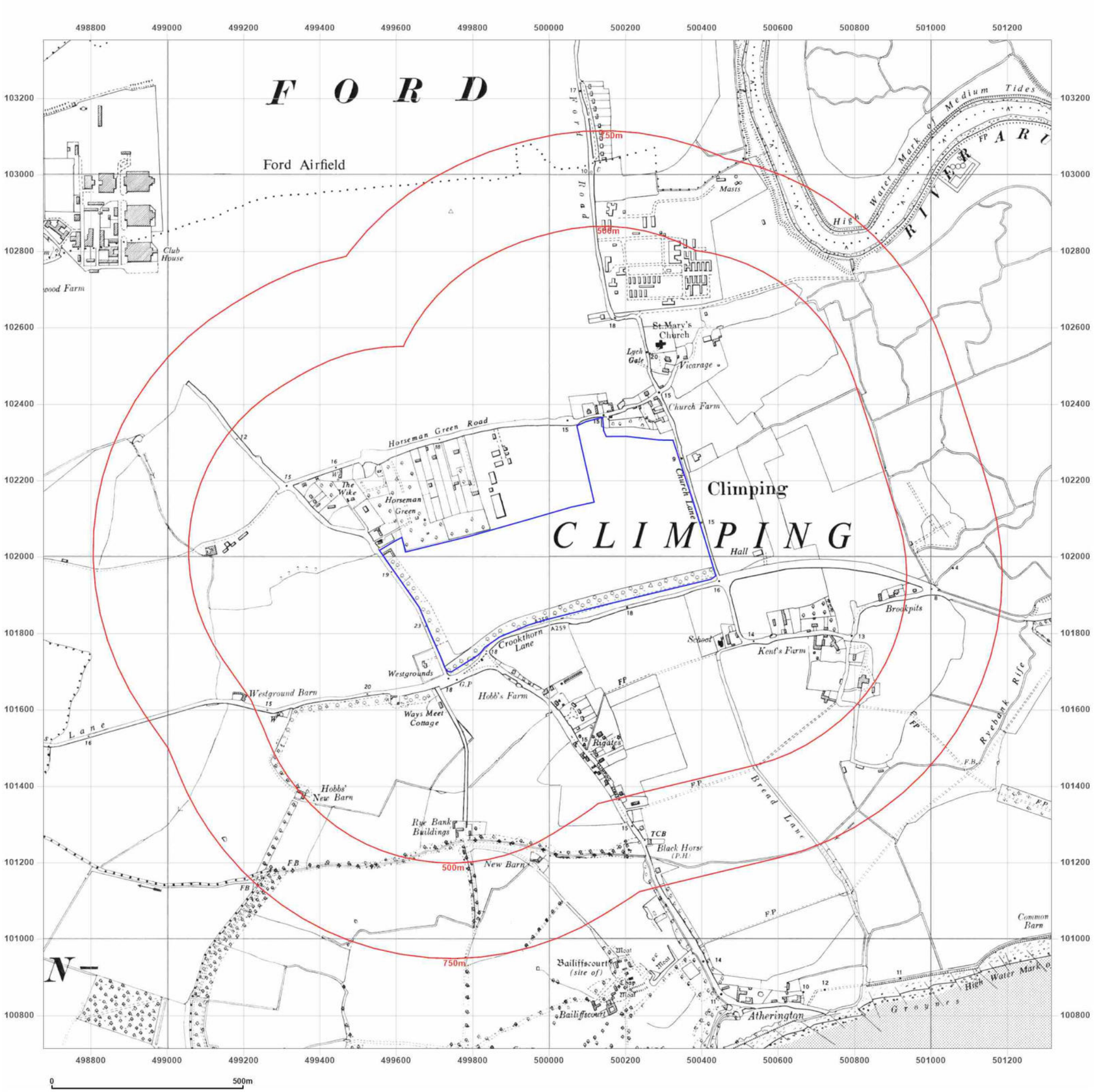
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: Provisional
Map date: **1957-1961**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed N/A
Revised 1961
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

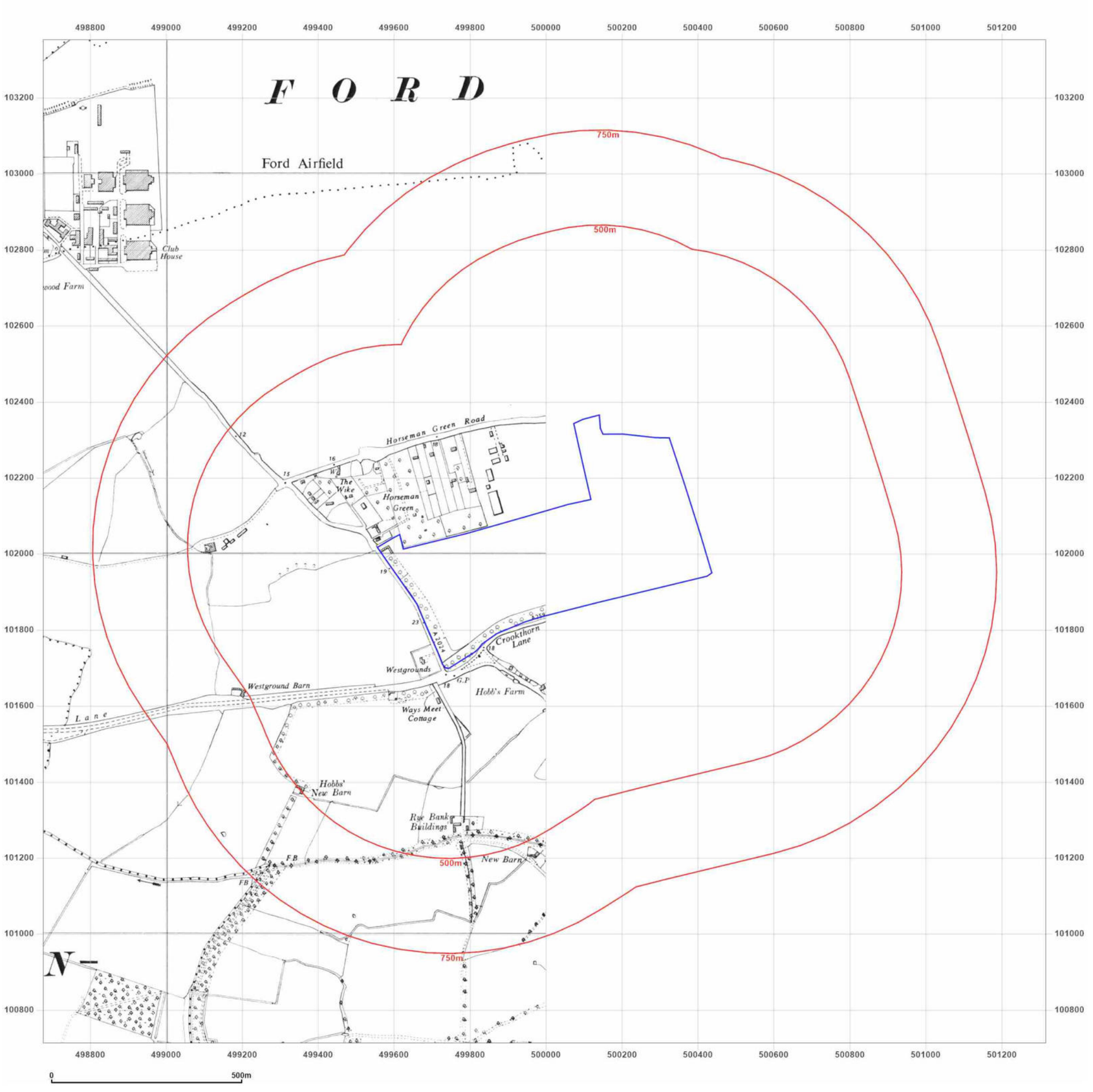
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: Provisional
Map date: **1966**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed N/A
Revised 1966
Edition N/A
Copyright N/A
Levelled N/A

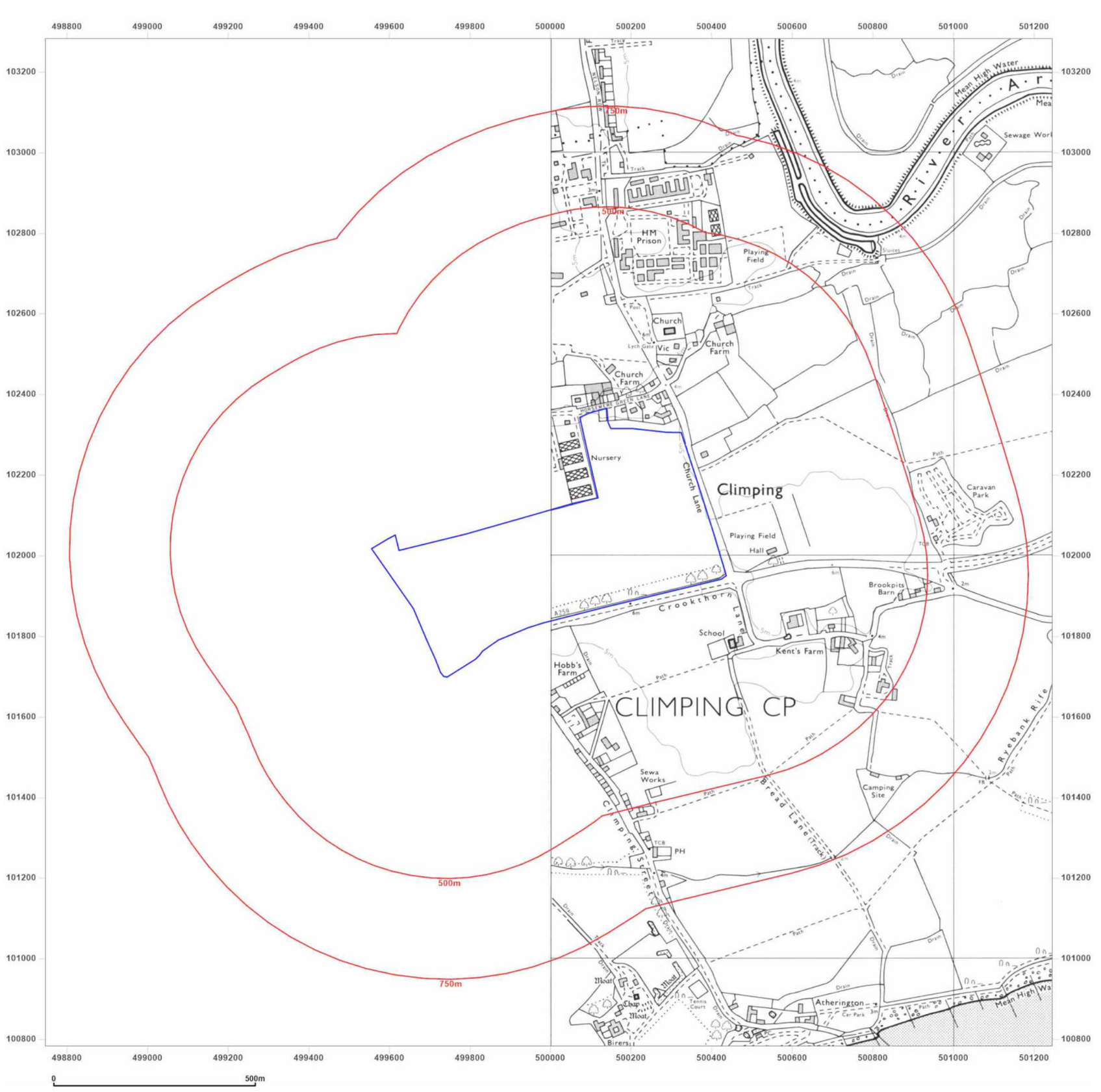
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: National Grid

Map date: **1974**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1973
Revised 1974
Edition N/A
Copyright N/A
Levelled N/A

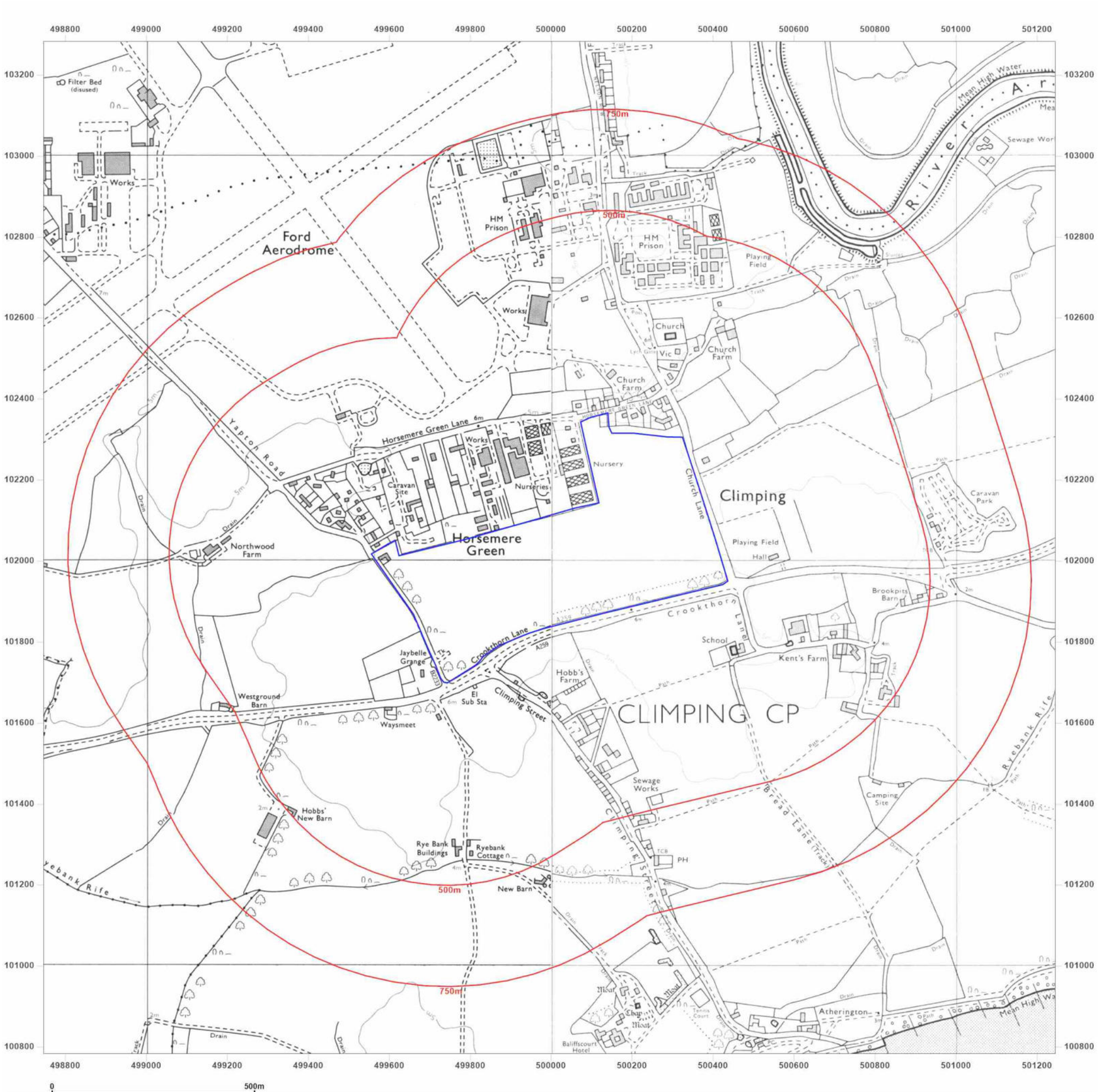
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: National Grid

Map date: **1980-1981**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1978
Revised 1979
Edition N/A
Copyright 1980
Levelled 1975

Surveyed 1981
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

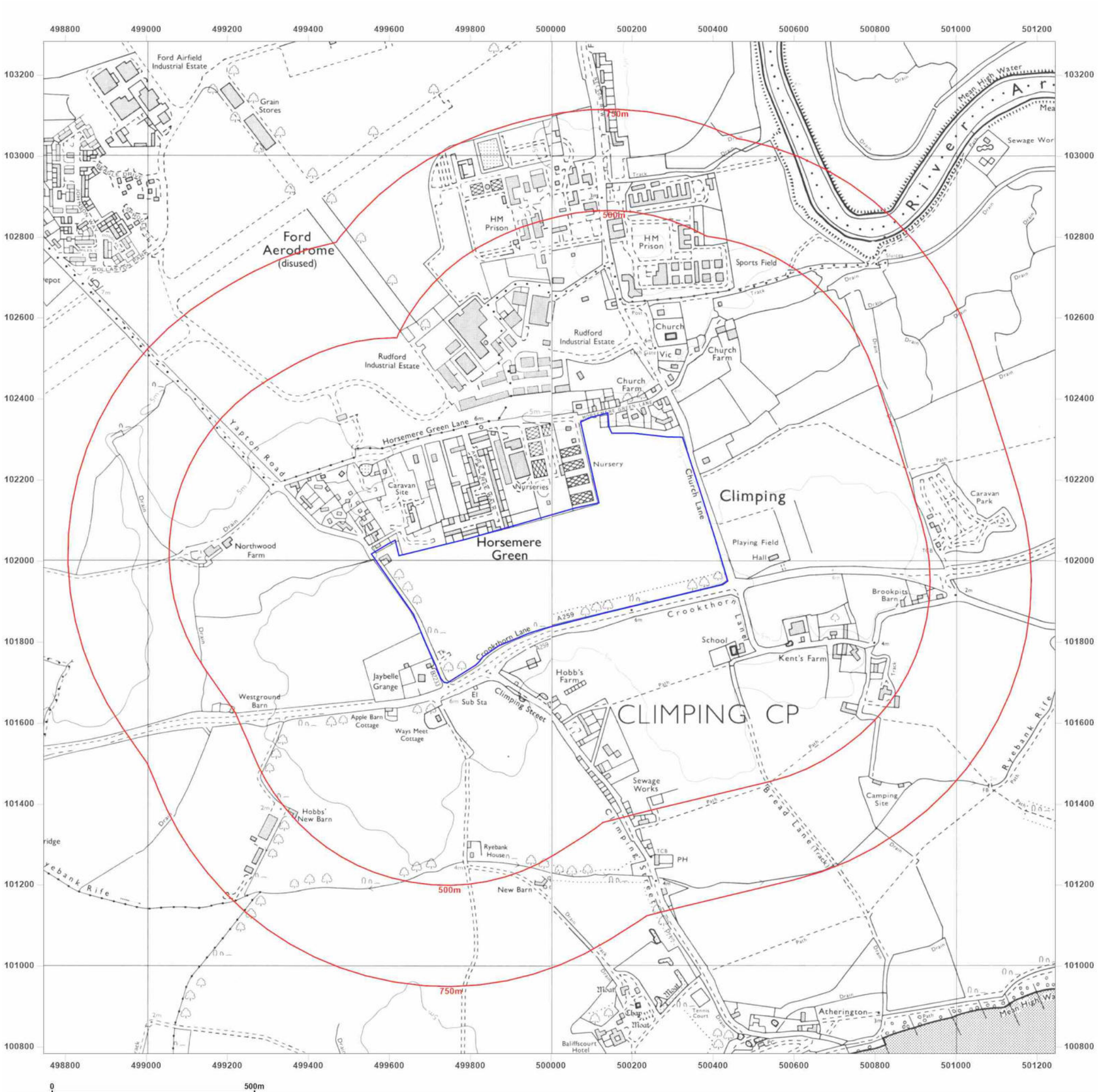
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: National Grid

Map date: **1991-1992**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1991
Revised 1991
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1981
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

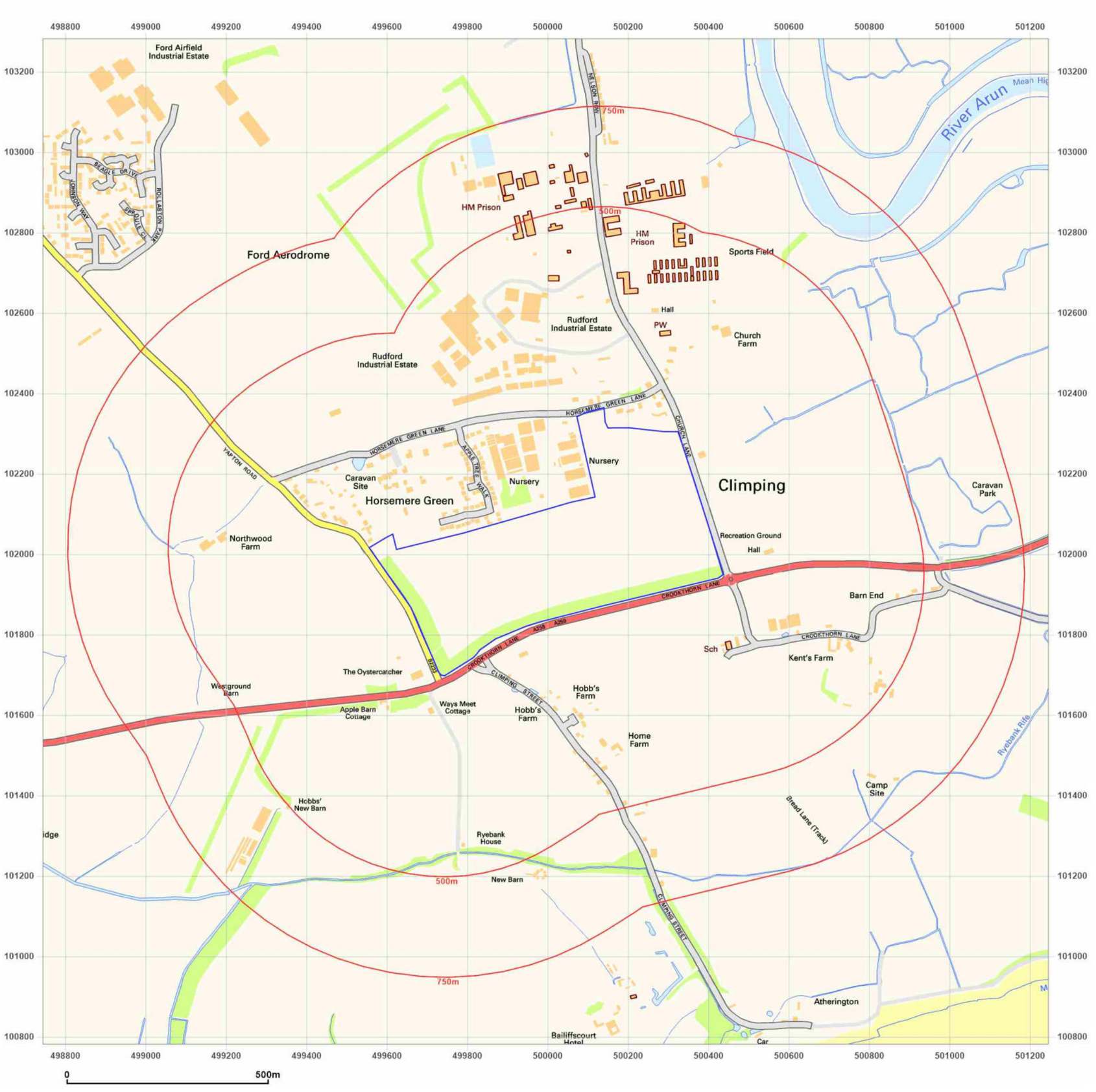
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
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2001

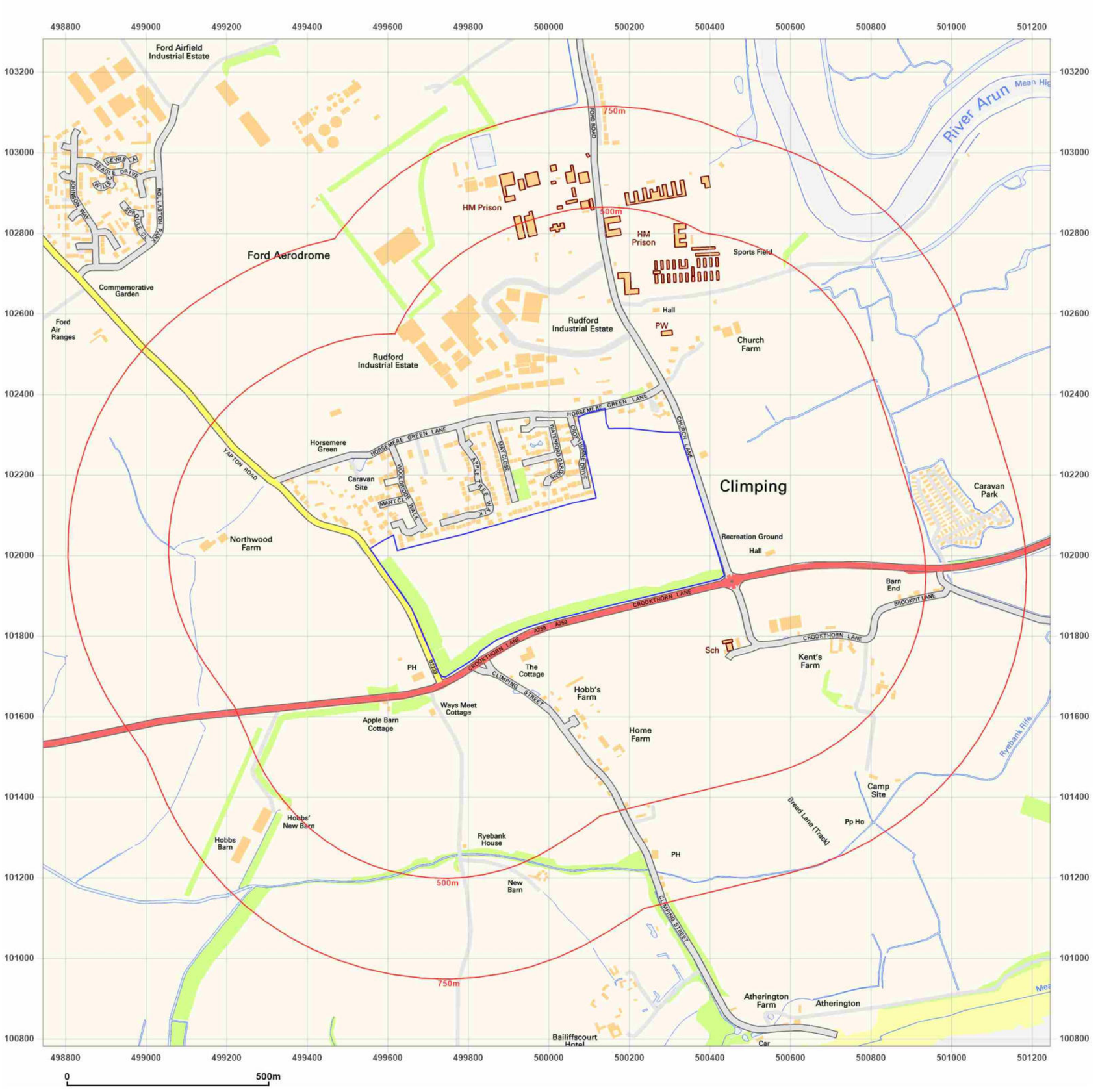
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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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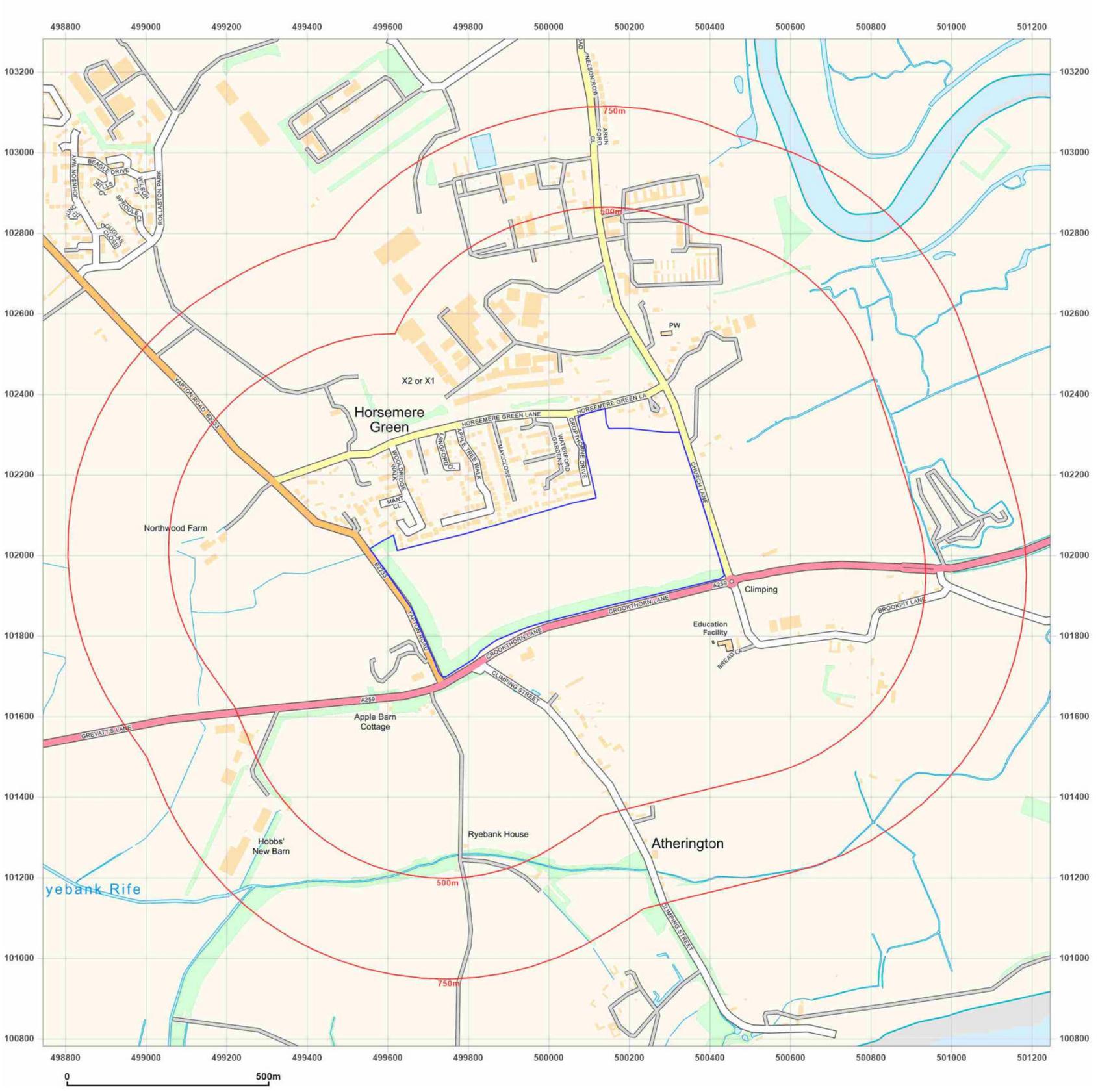
2010

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Groundsure INSIGHTS

Site Details:

Land adj. to Church Lane
Climping West Sussex BN17
5GG

Client Ref: GWPR5903 Church Lane Climping West Sussex
Report Ref: GS-WWI-VIB-TO9-1WI
Grid Ref: 499995, 102032

Map Name: National Grid
Map date: **2024**
Scale: 1:10,000
Printed at: 1:10,000

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APPENDIX D:
Trial Hole Logs

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE1	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.30			TOPSOIL: Brown slightly gravelly silty fine SAND. Gravel is fine and medium sub-angular of flint.
		0.50	D		0.70			Greyish brown slightly gravelly silty fine SAND. Gravel is fine and medium sub-angular of flint. (RIVER TERRACE DEPOSITS).
		0.80	D					Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
		1.00	D					
	▼	1.50	D		1.50			End of Borehole at 1.500m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.50m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE2	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Brown slightly gravelly silty fine SAND. Gravel is fine and medium sub-angular of flint.
		0.50	D					Orangish brown clayey fine SAND. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D		1.00			End of Borehole at 1.000m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

No Groundwater recorded.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE3	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine.
		0.50	D		0.50			Brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
								End of Borehole at 0.500m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

No Groundwater recorded.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE4	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint.
		0.50	D					Brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
		0.80	D					
	▼	1.00	D		1.00			End of Borehole at 1.000m

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Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.00m bgl.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE5	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine and medium sub-angular of flint.
		0.50	D					Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine and medium sub-angular of flint. (RIVER TERRACE DEPOSITS).
		0.80	D		0.70			Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
		1.00	D					
	▼	1.50	D		1.50			End of Borehole at 1.500m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.40m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE6	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine and medium sub-angular of flint.
	▼	0.50	D		0.50			Brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. (RIVER TERRACE DEPOSITS).
								End of Borehole at 0.500m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 0.50m bgl.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE7	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
	▼	0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is sub-angular of flint.
					0.50			Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine and medium sub-angular of flint. (RIVER TERRACE DEPOSITS).
								End of Borehole at 0.500m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 0.50m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE8	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.30			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine.
		0.50	D		0.60			Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine and medium sub-angular of flint. (RIVER TERRACE DEPOSITS).
		0.80	D					Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
	▼	1.00	D					
		1.50	D		1.50			End of Borehole at 1.500m

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Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.10m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE9	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine.
		0.50	D					Greyish brown slightly gravelly sandy CLAY. Sand is fine and medium. Gravel is sub-angular of flint. (RIVER TERRACE DEPOSITS).
		0.80	D		0.70			Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
		1.00	D					
	▼							
		1.50	D		1.50			End of Borehole at 1.500m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.30m bgl.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE10	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine and medium sub-angular of flint. (TOPSOIL)
		0.50	D					Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine and medium sub-angular of flint. (RIVER TERRACE DEPOSISTS).
		0.80	D		0.70			Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
		1.00	D					
	▼	1.50	D		1.50			End of Borehole at 1.500m

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Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.40m bgl.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE11	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Gravel is sub-angular of flint.
		0.50	D					Orangish brown gravelly clayey fine SAND. Gravel is fine to coarse sub-angular of flint. (RIVER TERRACE DEPOSITS).
	▼	0.80	D					
		1.00	D		1.00			End of Borehole at 1.000m

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4
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Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.00m bgl.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 18/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
BRE12	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine and medium sub-angular of flint.
	▼	0.50	D		0.50			Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
								End of Borehole at 0.500m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 0.50m bgl.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 22/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR1	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular of flint.
		0.50	B					Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D		0.80			Orangish brown sandy CLAY. Sand is fine to medium. (RIVER TERRACE DEPOSITS).
		1.00	D					
		1.50	D					
		2.00	D		2.00			End of Borehole at 2.000m

1
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4
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Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

No Groundwater recorded.
Roots recorded to 0.50m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 20/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR2	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					TOPSOIL: Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine and medium sub-angular of flint.
		0.50	D		0.50			Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.50	D					
		1.80	D		1.80			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
					2.20			End of Borehole at 1.800m

1 2 3 4 5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

No Groundwater recorded.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 19/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR3	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					TOPSOIL: Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint.
		0.50	D		0.50			Orangish brown sandy CLAY. Sand is fine to medium. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.50	D					
		2.00	D		2.00			End of Borehole at 2.000m

1
2
3
4
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Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

No Groundwater recorded.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 19/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR4	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular of flint.
		0.50	D					Brown sandy gravelly CLAY. Sand is fine. Gravel is fine to medium sub-angular to sub-rounded flint. (RIVER TERRACE DEPOSITS).
		0.80	D		0.80			Orangish brown sandy CLAY. Sand is fine to medium. (RIVER TERRACE DEPOSITS).
	▼	1.00	D					
		1.50	D					
		2.00	D		2.00			End of Borehole at 2.000m

1
2
3
4
5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.30m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 19/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR5	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.20			TOPSOIL: Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular of flint.
		0.50	B					Orangish brown sandy gravelly CLAY. Sand is fine. Gravel is fine to medium sub-angular to sub-rounded flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
	▼	1.50	D					
		2.00	D		2.00			End of Borehole at 2.000m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.50m bgl.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 19/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR6	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.20			TOPSOIL: Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular of flint.
		0.50	D					Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular of flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
	▼	1.50	D					
		2.00	D		2.00			End of Borehole at 2.000m

1 2 3 4 5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.40m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 19/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR7	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.20			TOPSOIL: Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular of flint.
		0.50	B					Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D		0.80			Orangish brown sandy CLAY. Sand is fine to medium. (RIVER TERRACE DEPOSITS).
	▼	1.00	D					
		1.50	D					
		2.00	D		2.00			End of Borehole at 2.000m

1 2 3 4 5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.30m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 22/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR8	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular of flint.
		0.50	D					Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular to sub-rounded flint. (RIVER TERRACE DEPOSISTS).
		0.80	D		0.70			Orangish brown sandy CLAY. (RIVER TERRACE DEPOSISTS).
		1.00	D					
	▼	1.50	D					
		2.00	D		2.10			End of Borehole at 2.100m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.70m bgl.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 22/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR9	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D					TOPSOIL: Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular of flint.
		0.50	B		0.50			Orangish brown sandy CLAY. Sand is fine to medium. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
	▼	1.50	D					
		2.00	D		2.00			End of Borehole at 2.000m

1
2
3
4
5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.70m bgl.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR10	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine. (TOPSOIL)
		0.50	B					Brown sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded of flint. Sand is fine. (RIVER TERRACE DEPOSITS).
		0.80	D		0.90			
		1.00	D					Light brown sandy gravelly CLAY. Gravel is fine and medium sub-angular to sub-rounded of flint. Sand is fine and medium. (RIVER TERRACE DEPOSITS).
	▼	1.50	D					
		2.00	D		2.10			End of Borehole at 2.100m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.40m bgl.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR11	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.20			Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. (TOPSOIL)
		0.50	B					Brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D		1.00			Orangish brown slightly gravelly fine SAND. Gravel is fine sub-rounded of flint. (RAISED BEACH DEPOSITS).
	▼	1.50	D		1.50			Light brown slightly gravelly fine SAND. Gravel is fine sub-rounded of flint. (RAISED BEACH DEPOSITS).
		2.00	D					
		2.20	D		2.20			End of Borehole at 2.200m

1 2 3 4 5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.50m bgl.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR12	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine. (TOPSOIL)
		0.50	D					Brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D		1.00			Orangish brown slightly gravelly fine SAND. Gravel is fine sub-rounded of flint. (RAISED BEACH DEPOSITS).
	▼	1.50	D					
		2.00	D		2.10			End of Borehole at 2.100m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.40m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR13	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular. Sand is fine. (TOPSOIL)
		0.50	B					Brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine. (RIVER TERRACE DEPOSITS).
		0.80	D		0.80			Orangish brown slightly gravelly fine SAND. Gravel is fine and medium sub-rounded of flint. (RAISED BEACH DEPOSITS).
		1.00	D					
	▼	1.50	D					
		2.00	D					
					2.10			End of Borehole at 2.100m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.50m bgl.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR14	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine. (TOPSOIL)
		0.50	D					Brown sandy gravelly CLAY. Gravel is fine to coarse sub-angular of flint. Sand is fine.
		0.80	D		0.80			Orangish brown slightly gravelly fine SAND. Gravel is fine sub-rounded of flint. (RAISED BEACH DEPOSITS).
		1.00	D					
	▼	1.50	D					
		2.00	D					
					2.20			End of Borehole at 2.200m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.50m bgl.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR15	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D		0.80			Orangish brown sandy CLAY. Sand is fine to medium. (RIVER TERRACE DEPOSITS).
		1.00	D					
	▼	1.50	D					
		2.00	D					
					2.20			End of Borehole at 2.200m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.50m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR16	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse sub-angular to sub-rounded flint. (RIVER TERRACE DEPSOITS).
		0.80	D		0.90			
		1.00	D					Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
	▼	1.50	D					
		2.00	D		2.20			End of Borehole at 2.200m

1 2 3 4 5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.50m bgl.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR17	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.20			Dark brown slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular of flint. Sand is fine. (TOPSOIL)
		0.50	B					Brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular of flint. Sand is fine. (RIVER TERRACE DEPOSITS).
		0.80	D					
	▼	1.00	D		1.00			Orangish brown clayey fine SAND. (RAISED BEACH DEPOSITS).
		1.50	D					
		2.00	D		2.00			End of Borehole at 2.000m

1 2 3 4 5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.00m bgl.
Roots recorded to 0.30m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR18	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse sub-angular to sub-rounded flint. (RIVER TERRACE DEPOSITS).
		0.80	D		0.80			Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
	▼	1.00	D					
		1.50	D					
		2.00	D					
					2.10			End of Borehole at 2.100m

1 2 3 4 5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.20m bgl.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 21/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR19	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.30			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse sub-angular to sub-rounded flint. (RIVER TERRACE DEPOSITS).
		0.80	D		0.80			Orangish brown sandy CLAY. Sand is fine. (RIVER TERRACE DEPSOIUTS).
		1.00	D					
	▼	1.50	D					
		2.00	D		2.10			End of Borehole at 2.100m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.50m bgl.
Roots recorded to 0.20m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 22/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR20	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown sandy gravelly CLAY. Sand is fine to medium. Gravel is fine to coarse sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D		0.90			
	▼	1.00	D					Orangish brown sandy CLAY. Sand is fine to medium. (RIVER TERRACE DEPOSITS).
		1.50	D					
		2.00	D		2.20			End of Borehole at 2.200m

1 2 3 4 5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 1.10m bgl.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 22/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR21	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	B		0.50			Brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to coarse sub-angular to sub-rounded flint. (RIVER TERRACE DEPOSITS).
	▼	0.80	D					Orangish brown sandy CLAY. Sand is fine to medium. (RIVER TERRACE DEPOSITS).
		1.00	D					
		1.50	D					
					1.80			End of Borehole at 1.800m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 0.80m bgl.
Roots recorded to 0.40m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 20/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR22	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	D					Orange, brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D		1.00			Orange, grey, brown, clayey SAND. Sand is fine. (RIVER TERRACE DEPOSITS).
		1.50	D					
					1.80			Orange, yellow, grey slightly clayey SAND. Sand fine. (RIVER TERRACE DEPOSITS).
		2.00	D		2.00			End of Borehole at 2.000m

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2
3
4
5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 0.55m bgl.
Roots recorded at 1.00m bgl.

Trial Pit Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 20/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
CBR23	TP			1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine sub-angular flint.
		0.50	B					Orange, brown very slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to coarse sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D		1.00			Orange, grey slightly clayey gravelly SAND. Sand fine to medium. Gravel is fine to coarse sub-angular to sub-rounded flint. (RIVER TERRACE DEPOSITS).
		1.50	D					
		2.00	D		2.00			End of Borehole at 2.000m

1 2 3 4 5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Groundwater recorded at 0.50m bgl.
Roots recorded at 2.00m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 19/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS1	WS			1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown gravelly CLAY. Gravel is fine to coarse sub-angular flint.
		0.50	D		0.60			Dark brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to coarse sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					Dark brown sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to coarse sub-angular flint. (RIVER TERRACE DEPOSITS).
		1.00	D					
		1.00	SPT	N=6 (2,1/1,1,2,2)	1.20			Brown very sandy Clay. Sand is fine. (RIVER TERRACE DEPOSITS).
		1.50	D					
		2.00	D		2.00			Light greyish brown slightly gravelly very wet Sand. Sand is fine. Gravel is fine to (RIVER TERRACE DEPOSITS).
		2.00	SPT	N=11 (2,3/2,4,2,3)				
		2.50	D					
		3.00	D					
		3.00	SPT	N=8 (2,2/2,2,2,2)				
		3.50	D					
		4.00	D					
		4.00	SPT	N=8 (2,2/2,3,1,2)				
		4.50	D					
		5.00	D		5.00			End of Borehole at 5.000m
		5.00	SPT	N=5 (2,2/2,1,1,1)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded to 2.80m bgl.
Roots recorded to 0.60m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 27/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS2	WS			1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown sandy gravely clay. Sand is fine. Gravel is fine to coarse sub-angular flint.
		0.50	D					Dark brown sandy gravely CLAY. Sand is fine. Gravel is fine to coarse sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.00	SPT	N=14 (3,2/3,3,4,4)				
		1.50	D		1.50			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		2.00	D					
		2.00	SPT	N=5 (0,2/1,2,1,1)				
	▼	2.50	D					
		3.00	D					
		3.00	SPT	N=5 (2,1/2,1,1,1)				
		3.50	D					
		4.00	D					
		4.00	SPT	N=26 (4,3/2,3,12,9)				
		4.50	D					
		5.00	D		5.00			End of Borehole at 5.000m
		5.00	SPT	N=46 (13,10/12,10,12,12)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded to 2.80m bgl.
Roots recorded to 0.80m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 27/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS3	WS			1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown sandy gravely CLAY. Sand is fine. Gravel is fine to coarse sub-angular.
		0.50	D					Dark brown sandy gravely Clay. Sand is fine. Gravel is fine to coarse sub-angular. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.00	SPT	N=8 (0,0/2,2,2,2)				
		1.50	D					
					1.70			Yellowish white gravely CLAY. Sand is fine. Gravels are fine to coarse sub-angular flint and chalk. (RIVER TERRACE DEPOSITS).
		2.00	D		2.00			Brown very sandy CLAY. Sand is fine. (RIVER TERRACE DEPOSITS).
		2.00	SPT	N=13 (3,2/2,3,4,4)				
		2.50	D					
		3.00	D		3.00			End of Borehole at 3.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No Groundwater recorded.
Roots recorded to 1.00m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 28/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS4	WS			1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown sandy gravely CLAY. Sand is fine. Gravel is fine to coarse sub-angular flint.
		0.50	D					Dark brown sandy gravely CLAY. Sand is fine to medium. Gravel is fine to medium to coarse sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.00	SPT	N=10 (2,2/2,2,3,3)				
		1.50	D					
		2.00	D		2.00			Dark brown slightly gravelly SAND. Sand is fine. Gravel is fine to sub-angular to sub-rounded flint. (RIVER TERRACE DEPOSITS).
		2.00	SPT	N=0 (0,0/0,0,0,0)				
		2.50	D					
	▼	3.00	D		3.00			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		3.00	SPT	N=6 (2,3/2,2,1,1)				
		3.50	D					
		4.00	D					
		4.00	SPT	N=4 (1,2/1,1,1,1)				
		4.50	D					
		5.00	D		5.00			End of Borehole at 5.000m
		5.00	SPT	N=43 (20,11/15,12,8,8)				

1 2 3 4 5 6 7 8 9 10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded to 3.00m bgl.
Roots recorded to 0.80m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 28/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS5	WS			1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	D					Dark brown slightly gravelly sandy CLAY. Sand is fine. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.00	SPT	N=5 (0,0/0,1,2,2)				
		1.50	D					
		2.00	D		2.00			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		2.00	SPT	N=2 (0,0/0,0,1,1)				
	▼	2.50	D					
		3.00	D					
		3.00	SPT	N=17 (2,4/3,3,5,6)				
		4.00	SPT	N=33 (4,5/5,8,10,10)	4.00			End of Borehole at 4.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded to 2.50m bgl.
Roots recorded to 1.00m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane, Climping	Client: Foreman Homes	Date: 28/03/2024
Location: West Sussex, BN17 5GG	Contractor: G&W	
Project No. : GWPR5921	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS7	WS			1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	D					Dark brown sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.00	SPT	N=6 (0,0/0,1,2,3)				
		1.50	D					
		2.00	D		2.00			
		2.00	SPT	N=26 (3,3/4,6,8,8)				Brownish yellow SAND. Sand is fine. (RIVER TERRACE DEPOSITS).
		2.50	D					
	▼	3.00	D					
		3.00	SPT	N=38 (5,6/9,9,10,10)				
		3.50	D					
		4.00	D		4.00			
		4.00	SPT	N=47 (6,8/11,12,12,12)				
		4.50	D					
		5.00	D					End of Borehole at 5.000m
		5.00	SPT	50 (9,15/50 for 225mm)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded to 3.00m bgl.
Roots recorded to 0.20m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH1	CP			1:50	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.30			TOPSOIL: Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.20	SPT	N=5 (1,1/1,1,1,2)				
		1.70	D					
		2.20	SPT	N=7 (2,1/2,2,1,2)				
		2.70	D					
		3.20	SPT	N=9 (2,2/2,2,2,3)				
		3.70	D		3.70			Brown, grey, yellow, gravelly clayey SAND. Sand is fine to medium. Gravel is fine to medium sub-angular to chalk and flint. (RIVER TERRACE DEPOSITS).
		4.20	SPT	N=12 (1,3/2,3,3,4)				
		4.70	D					
		5.20	SPT	N=6 (2,1/1,1,2,2)	5.20			Structureless CHALK, comprising off white, brown cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		5.90	D					
		6.50	SPT	N=10 (2,2/2,2,2,4)				
		7.20	D					
		8.00	SPT	N=23 (4,4/5,5,6,7)	8.00			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		8.70	D					
		9.50	SPT	N=16 (3,3/3,4,4,5)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 6.10m bgl.
Roots recorded to 0.50m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH1	CP			1:50	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.20	D					Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		11.00	SPT	N=17 (2,2/4,3,4,6)				
		11.70	D					
		12.50	SPT	N=26 (3,4/6,6,7,7)				
		13.20	D					
		14.00	SPT	N=28 (4,4/6,7,7,8)				
		14.70	D					
		15.50	SPT	N=30 (5,5/5,8,8,9)				
		17.00	SPT	N=34 (7,7/8,8,9,9)				
		17.20	D					
		17.70	D					
		18.50	SPT	N=37 (8,8/8,9,9,11)				
		19.20	D					
		20.00	SPT	N=37 (4,6/7,8,10,12)	20.00			End of Borehole at 20.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 6.10m bgl.
Roots recorded to 0.50m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH2	CP			1:50	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.30			TOPSOIL: Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.20	SPT	N=3 (1,0/1,0,1,1)				
		1.70	D					
		2.20	SPT	N=6 (1,1/1,1,2,2)				
		2.70	D					
		3.20	SPT	N=8 (1,1/2,2,2,2)				
		3.70	D					
	▼	4.20	SPT	N=12 (2,2/3,3,3,3)				
	▽	4.70	D		4.60			Brown, grey, yellow, gravelly clayey SAND. Sand is fine to coarse. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPSOITS).
		5.20	SPT	N=13 (2,2/3,3,4,3)				
		5.90	D					
		6.70	SPT	N=42 (10,12/18,11,7,6)	6.70			
					6.80			Dark grey cobbles of sub-angular to angular FLINT. Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		7.40	D					
		8.20	SPT	N=13 (2,2/3,3,3,4)				
		8.90	D					
		9.70	SPT	N=16 (3,3/3,4,4,5)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 4.60m bgl.
Roots recorded to 1.20m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH2	CP			1:50	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.40	D					Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		11.20	SPT	N=17 (4,4/3,4,4,6)				
		11.90	D					
		12.70	SPT	N=22 (4,4/5,5,6,6)				
		13.40	D		13.40			Dark grey cobbles of sub-angular to angular FLINT.
					13.70			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		14.20	SPT	N=21 (3,4/4,4,6,7)				
		14.90	D					
		15.70	SPT	50 (10,13/50 for 150mm)	15.60			Dark grey cobbles of sub-angular to angular FLINT.
					15.90			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		16.40	D					
		17.20	SPT	N=36 (6,8/8,8,9,11)				
		17.90	D					
		18.70	SPT	N=40 (8,8/7,10,10,13)				
		19.40	D					
		20.00	SPT	N=41 (6,6/9,9,11,12)	20.00			End of Borehole at 20.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 4.60m bgl.
Roots recorded to 1.20m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH3	CP			1:50	Sheet 1 of 3

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.30			TOPSOIL: Light to mid brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular to sub-rounded flint.
		0.50	D					Light to mid brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular to sub-rounded flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.20	SPT	N=5 (1,0/1,1,1,2)				
		1.70	D					
		2.20	SPT	N=6 (1,1/1,2,2,1)				
		2.70	D					
		3.20	SPT	N=9 (2,1/2,2,3,2)				
		3.70	D		3.70			Light brown, grey, cream, gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to coarse sub-angular to sub-rounded flint and chalk. (RIVER TERRACE DEPOSITS).
		4.20	SPT	N=9 (3,1/2,2,2,3)	4.40			Structureless CHALK, comprising off white, brown cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		4.70	D					
	▼	5.20	SPT	N=6 (1,1/1,1,2,2)				
		5.90	D		5.90			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		6.50	SPT	N=9 (2,3/2,2,2,3)				
		7.20	D					
		8.00	SPT	N=10 (3,2/2,2,3,3)				
		8.70	D					
		9.50	SPT	N=15 (3,4/4,4,4,3)	9.50			Dark grey cobbles of sub-angular to angular FLINT.

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 5.30m bgl.
Roots recorded to 0.80m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH3	CP			1:50	Sheet 2 of 3

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.20	D		10.20			Dark grey cobbles of sub-angular to angular FLINT.
		11.00	SPT	N=29 (5,6/7,7,7,8)				Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		11.70	D					
		12.50	SPT	N=23 (3,4/4,6,6,7)				
		13.20	D					
		14.00	SPT	N=33 (5,6/7,8,8,10)				
		14.70	D					
		17.00	SPT	40 (8,10/40 for 225mm)	17.00			Dark grey cobbles of sub-angular to angular FLINT.
		17.20	D		17.40			Structureless CHALK, comprising off white, cream, brown sandy GRAVEL. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. Clasts are weak medium dense. (Class Dc in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		17.70	D					
		18.50	SPT	N=44 (7,9/9,11,11,13)				
		19.20	D					
					20.00			

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 5.30m bgl.
Roots recorded to 0.80m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH3	CP			1:50	Sheet 3 of 3

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		20.00	SPT	N=46 (8,8/11,11,12,12)				End of Borehole at 20.000m

21
22
23
24
25
26
27
28
29
30

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 5.30m bgl.
Roots recorded to 0.80m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH4	CP			1:50	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.40			TOPSOIL: Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown, grey, yellow, gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to coarse sub-angular to sub-rounded chalk and flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.20	SPT	N=6 (1,1/1,1,2,2)				
		1.70	D					
		2.20	SPT	N=8 (1,1/2,1,2,3)				
		2.70	D					
	▼	3.20	SPT	N=6 (1,1/1,1,2,2)	3.20			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		3.70	D					
		4.20	SPT	N=9 (2,2/2,2,2,3)				
		4.70	D					
		5.20	SPT	N=10 (2,1/2,2,2,4)				
		5.90	D					
		6.50	SPT	N=10 (2,2/2,2,3,3)				
		7.20	D					
		8.00	SPT	N=17 (4,3/4,4,4,5)				
		8.70	D					
		9.50	SPT	44 (10,10/44 for 225mm)	9.60			Dark grey cobbles of sub-angular to angular FLINT.
					9.90			

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 3.30m bgl.
Roots recorded to 1.00m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH4	CP			1:50	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.20	D					Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		11.00	SPT	N=18 (3,3/4,4,4,6)				
		11.70	D					
		12.50	SPT	N=20 (3,5/3,5,6,6)				
		13.20	D					
		14.00	SPT	N=25 (4,4/6,6,6,7)				
					14.20			Dark grey cobbles of sub-angular to angular FLINT.
					14.50			Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		14.70	D					
		15.50	SPT	N=29 (5,5/7,7,7,8)				
		17.00	SPT	N=35 (6,7/8,8,9,10)				
		17.20	D					
		17.70	D					
		18.50	SPT	N=37 (4,8/8,9,9,11)				
		19.20	D					
		20.00	SPT	N=42 (6,7/9,9,11,13)	20.00			End of Borehole at 20.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 3.30m bgl.
Roots recorded to 1.00m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH5	CP			1:50	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.30			TOPSOIL: Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown, grey gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.20	SPT	N=5 (1,0/1,1,1,2)				
		1.70	D					
		2.20	SPT	N=7 (2,1/2,2,1,2)	2.20			Brown, grey, yellow, gravelly very sandy CLAY. Sand is fine to coarse. Gravel is fine to medium sub-angular-sub-rounded flint and chalk. (RIVER TERRACE DEPOSITS).
		2.70	D					
		3.20	SPT	N=7 (2,4/2,2,1,2)				
		3.70	D					
		4.20	SPT	N=10 (4,3/3,2,2,3)				
		4.70	D		4.70			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		5.20	SPT	N=9 (2,2/3,2,2,2)				
	▼	5.90	D					
		6.70	SPT	N=9 (2,2/2,2,3,2)				
		7.40	D					
		8.20	SPT	50 (11,14/50 for 225mm)	8.40			Dark grey cobbles of sub-angular to angular FLINT.
		8.90	D		8.60			Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK
		9.70	SPT	N=22 (12,13/6,4,6,6)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 6.40m bgl.
Roots recorded to 0.40m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH5	CP			1:50	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.40	D					Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		11.20	SPT	N=50 (8,6/11,13,17,9)	11.30			
					11.60			Dark grey cobbles of sub-angular to angular FLINT.
		11.90	D					Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		12.70	SPT	N=18 (2,3/3,4,4,7)				
		13.40	D					
		14.20	SPT	N=25 (6,5/6,6,6,7)				
		14.90	D					
		15.70	SPT	45 (8,12/45 for 225mm)	15.90			
								Dark grey cobbles of sub-angular to angular FLINT.
		16.40	D		16.30			Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		17.20	SPT	N=39 (8,8/8,9,11,11)				
		17.90	D					
		18.70	SPT	N=41 (7,9/9,10,10,12)				
		19.40	D					
		20.00	SPT	N=44 (8,8/8,11,11,14)	20.00			End of Borehole at 20.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 6.40m bgl.
Roots recorded to 0.40m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH6	CP			1:50	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.30			TOPSOIL: Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown, grey gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.20	SPT	N=4 (1,0/1,1,1,1)				
		1.70	D					
		2.20	SPT	N=8 (2,1/2,2,2,2)				
		2.70	D					
		3.20	SPT	N=8 (2,1/2,1,2,3)				
		3.70	D					
		4.20	SPT	N=8 (2,1/2,2,2,2)				
	▼	4.70	D		4.70			Brown, grey, yellow, gravelly clayey SAND. Sand is fine to coarse. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPSOITS).
		5.20	SPT	N=7 (2,2/2,1,2,2)				
	▼	5.90	D		6.10			Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
	△	6.50	SPT	N=9 (2,3/2,2,2,3)				
		7.20	D					
		8.00	SPT	N=22 (4,6/8,6,4,4)				
		8.70	D					
		9.50	SPT	N=12 (3,2/2,3,3,4)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 4.60m and 6.60m bgl.
Roots recorded to 1.00m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH6	CP			1:50	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.20	D					Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		11.00	SPT	N=16 (4,4/3,4,4,5)				
		11.70	D					
		12.50	SPT	N=24 (3,6/5,6,6,7)				
		13.20	D					
		14.00	SPT	N=28 (4,4/6,7,7,8)				
		14.70	D					
		15.50	SPT	N=27 (6,6/7,7,6,7)				
		17.00	SPT	44 (10,10/44 for 225mm)	17.00			Dark grey cobbles of sub-angular to angular FLINT.
		17.20	D		17.30			Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		17.70	D					
		18.50	SPT	N=46 (9,9/11,11,12,12)				
		19.20	D					
		20.00	SPT	N=41 (8,8/9,9,10,13)	20.00			End of Borehole at 20.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 4.60m and 6.60m bgl.
Roots recorded to 1.00m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH7	CP			1:50	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.30			TOPSOIL: Brown, grey slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint.
		0.50	D					Brown, grey gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular flint. (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00	D					
		1.20	SPT	N=4 (1,0/1,1,1,1)				
		1.70	D					
		2.20	SPT	N=7 (2,1/2,1,2,2)				
		2.70	D					
		3.20	SPT	N=9 (2,1/2,2,2,3)				
		3.70	D					
		4.20	SPT	N=7 (1,1/1,2,2,2)				
		4.70	D					
		5.20	SPT	N=7 (1,1/1,1,2,3)	5.20			Structureless CHALK, comprising off white, cream, brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular fine to coarse chalk. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		5.90	D					
		6.50	SPT	N=10 (2,2/2,3,2,3)				
		7.20	D					
		8.00	SPT	N=12 (2,2/2,3,3,4)				
		8.70	D					
		9.50	SPT	N=9 (2,1/2,2,2,3)	9.50			Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 5.60m bgl.
Roots recorded to 1.70m bgl.

Percussion Drilling Log

Project Name: Land adj. to Church Lane	Client: Foreman Homes	Date: 21/05/2024 - 06/06/2024
Location: Climping West Sussex BN17 5GG	Contractor: LAS	
Project No. : GWPR6003	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BH7	CP			1:50	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.20	D					Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		11.00	SPT	N=13 (2,2/2,3,3,5)				
		11.70	D					
		12.50	SPT	N=21 (4,4/5,5,5,6)				
		13.20	D					
		14.00	SPT	N=32 (12,15/10,8,7,7)	14.10			Dark grey cobbles of sub-angular to angular FLINT.
					14.40			Structureless CHALK, comprising off white, cream, gravelly sandy SILT. Sand is fine to medium. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. Black specs recorded within chalk fragments. (Class Dm in accordance with CIRIA 574). (LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK AND PORSTDOWN CHALK FORMATION).
		14.70	D					
		15.50	SPT	N=30 (6,6/7,7,8,8)				
		17.00	SPT	N=33 (3,5/7,8,8,10)				
		17.20	D					
		17.70	D					
		18.50	SPT	N=34 (6,6/7,8,8,11)				
		19.20	D					
		20.00	SPT	N=38 (7,7/8,9,9,12)	20.00			End of Borehole at 20.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 5.60m bgl.
Roots recorded to 1.70m bgl.

APPENDIX E:
CPT Testing Report

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

IN SITU
SITE INVESTIGATION



STATIC CONE PENETRATION TEST

FACTUAL REPORT

CLIENT: Ground and Water Limited

PROJECT: Church Lane, Climping,
West Sussex BN17 5GG

Project	**Church Lane, Climping, West Sussex, BN17 5GG**
Project No.	**1240182**
Client	**Ground and Water Limited**
Address	**Unit 2, The Long Barn, Norton Farm, Selborne, GU34 3NB**

Attention: Francis Williams

Dear Francis,

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,
In Situ Site Investigation Limited

[redacted]

Darren Ward
Director

Report Issue

Issue	Date	Prepared	Sign	Checked	Sign	Approved	Sign
02	12/04/2024	Chloe Donovan	[redacted]	Darren Ward	[redacted]	Darren Ward	[redacted]

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1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Church Lane at the request of Ground and Water Ltd. The site investigation consisted of completing 33 Static Piezocone Penetration Tests (CPTU), and 33 Magnetometer Tests to provide information on the soil conditions and derived geotechnical parameters at:

Church Lane,
Climping,
West Sussex
BN17 5GG

All test locations were provided by the client. A site map is included in the end of Appendix A of this report (if provided by the client). The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in the *Project Summary Table* in *Appendix A.1* and on each CPTU log included in Appendix B of this report.

The fieldwork was carried out from 13th March 2024 to 15th March 2024 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *ISO 22476-1:2022(E)*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Darren Holder & Ryan Robinson
Date Started	13th March 2024
Date Finished	15th March 2024
In Situ S.I. Project Manager	Darren Ward

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.2*.

Table 2.2 Rig Summary	
Rig Name	**Rig Description**
CPT017	20 Tonne Track Mounted CPT Rig

2.1.2 CPTU Cone

Details of electric CPTU cone (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2022*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	**Cross-section area**	**Filter position**
S15-CFIP.1186	15cm^2	u_2
S15-CFIP.1983	15cm^2	u_2

A full datasheet of the cone used is shown in *Appendix A.3*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary
33 CPTU to a maximum depth of 6.71m. Each test measured Cone Resistance, q_c, Sleeve Friction, f_s, Porewater Pressure in the shoulder position, u_2, Inclination in X and Y axes. 33 MAG tests to a maximum depth of 6.71m. Each MAG test measured Magnetic Field X (nT), Magnetic Field Y (nT) and Magnetic Field Z (nT).
Provision of factual report with estimated soil type, derived geotechnical parameters & AGS data file.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with *ISO 22476-1:2022(E)* standard by the cone manufacturer. The cone calibration certificate for the cone used at this site are presented in *Appendix A.4*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000 CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test ISO 22476-1:2022(E)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.1*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 20 mm/s ± 5 mm/s except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B*.

2.1.6 *In Situ Pore Pressure (u_0)*

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. For this report, the groundwater level is assumed at 0.5m below ground surface, for calculation purposes. The in situ pore pressure, u_0 values are presented on the pore pressure plot, on *CPT Log 01,* which is included in *Appendix B*.

2.2 POSITIONING

Positioning and surveying of all investigated locations was the responsibility of the client. The site map and position of the tests are presented in Appendix A.9.

3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections *3.1*, *3.2* and *3.3*.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c, sleeve friction, f_s, porewater pressure measurements with filter in shoulder position, u_2 and inclination for *x* and *y* axis, I_x, I_y, were recorded for every *10 mm* of penetration keeping a constant speed of *20 mm/s ± 5 mm/s*, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *ISO 22476-1:2022(E)*, *Lunne et al. (1997)* and *Robertson (2015)*. Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al. (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c, is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in *MPa*, on *CPT Log 01*, in *Appendix B*, scale *0-20 MPa* with a minor scale printing on the same graph at *0-4 MPa*.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s, is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in *kPa*, on *CPT Log 01*, in *Appendix B*, using a scale of *0-500 kPa*.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2, is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

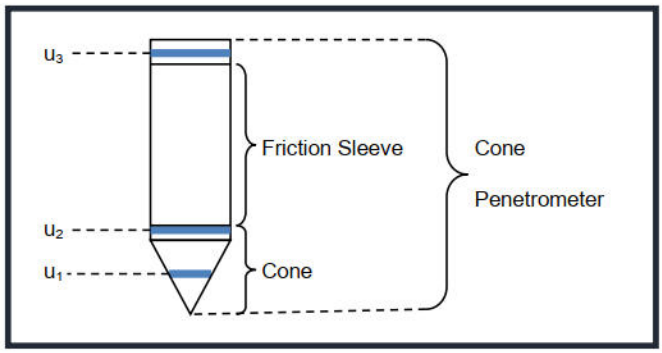


Figure 3.1: *Diagram showing pore pressure filter locations (after Lunne et al., 1997)*

3.2.4 Inclination (I_x, I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than *15 m*, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3 ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne *et al.*, 1997).

$$Fricton\ Ratio\ (R_f) = \left(\frac{Sleeve\ Friction\ (f_s)}{Cone\ Resistance\ (q_c)}\right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The friction

ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et al. (1986)*, which is shown in Figure 3.2. The results are presented on *CPT Log 01*, in *Appendix B*.

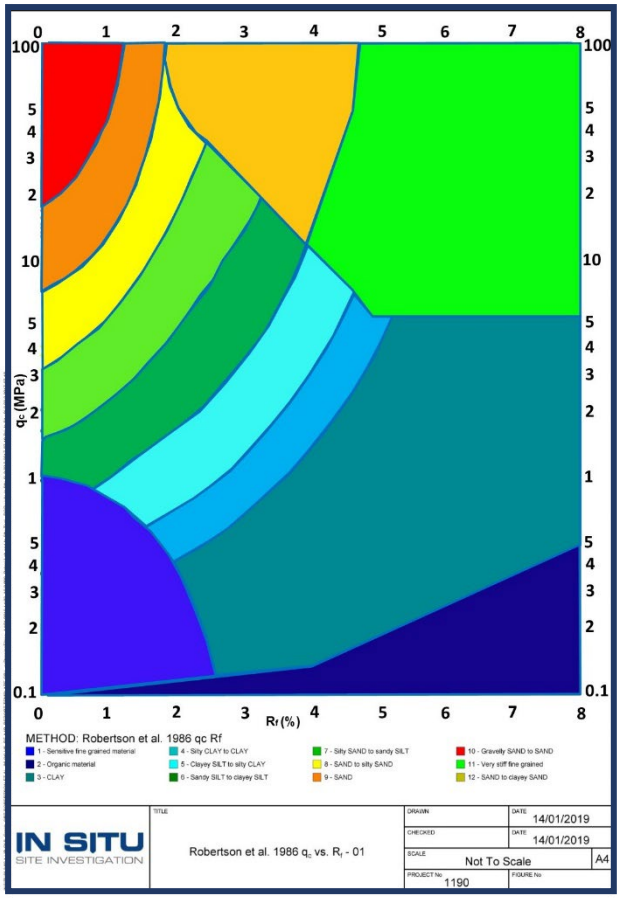


Figure 3.2: *Robertson et al., 1986 soil behaviour type chart.*

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

u_2	is pore pressure measured between the cone and the friction sleeve
u_0	is equilibrium pore pressure
σ_{vo}	is total overburden stress
q_t	is cone resistance corrected for unequal end area effects

3.4 APPLIED CORRECTIONS

3.4.1 Corrected Cone Resistance (q_t)

For each penetration test, the measured cone resistance, q_c, can be corrected for the ‘‘unequal area effect’’ due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et *al.,* 1997:

$$q_t = q_c + [u_2.(1 - \alpha)]$$

where

α is the cone area ratio

The cone area ratio used for this project is stated on both the cone calibration certificate and the data footer. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in *ISO 22476-1:2022*.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in *m*
l is penetration length, in *m*
C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + tan^2\beta_1 + tan^2\beta_2}}$$

where

β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *CPT Log 02* and *CPT Log 03* in *Appendix B*.

Please, note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c, was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3*, *Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A5* Symbol List) can be combined into one Soil Behaviour Type Index, I_c, *(Lunne et al., 1997)*.

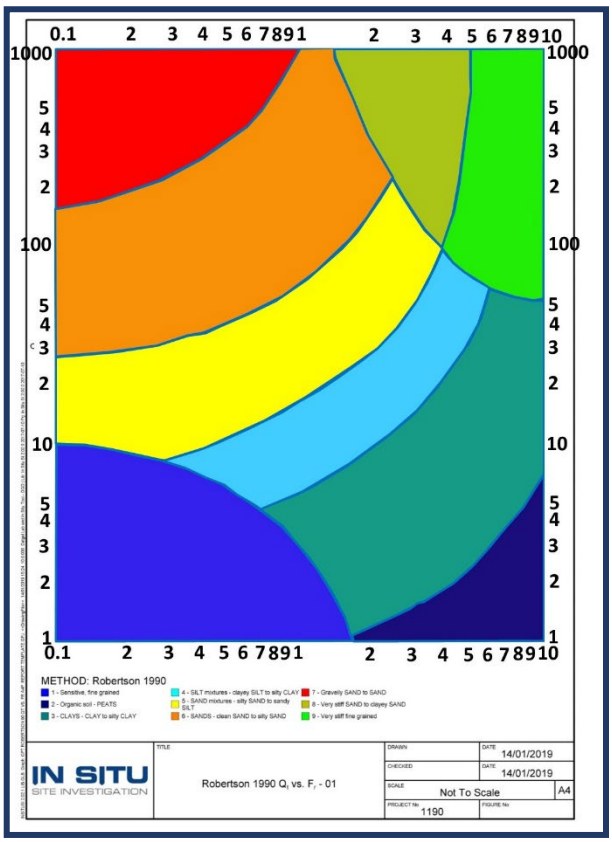


Figure 4.1: *Robertson 1990 soil behaviour type chart.*

The soil behaviour type index, I_c, can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - logQ_t)^2 + (logF_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of *1.0*, which applies well to clay-like soils

F_R is the normalized friction ratio, in *%*

The boundaries of soil behaviour type are then given in terms of the index, I_c, presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones *1*, *8* and *9*. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than *80%* compared with soil samples *(Robertson, 2015).*

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

** Heavily over consolidated or cemented*

Table 4.1: *Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c.(Robertson, 2010)*

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived *N* value of *SPT, N_{60}*, is strongly and directly related to the cone resistance, q_c.

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)*, *Jefferies and Davies (1998)* and Robertson (2012):

1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_C}{4.6}\right)}$$

2) *Jefferies and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_C}{4.75}\right)}$$

3) *Robertson (2012)*

$$N_{60} = \frac{\frac{q_c}{p_a}}{10^{1.1268 - 0.2817 I_C}}$$

where

q_c	is the cone resistance
p_a	is the atmospheric pressure equal to *100 kPa*
I_c	is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that these methods provide a better estimation of the N_{60} value than the actual measured *N*, due to the poor repeatability of SPT test. However, in fine grained soil with high sensitivity these methods may overestimate N_{60} *(Jefferies and Davies, 1991).* The third method suggested by *Robertson (2012)* provides improved estimates of N_{60} for insensitive clays.

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r, is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for ***clean predominantly quartz sands***. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density then less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

1) Baldi et al., (1986)

$$D_r = \frac{1}{C_2} \cdot ln\left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}}\right) \cdot 100$$

where

C_1 is a consolidation coefficient which is *157* for normally consolidated soils and *181* for over consolidated soils

C_2 is a consolidation coefficient which is *2.41* for normally consolidated soils and *2.46* for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamiolkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot ln\left(\frac{q_t/\sigma_{atm}}{\sqrt{\sigma'_{v0}/\sigma_{atm}}}\right) + C_1\right]$$

where

C_1 is a compressibility coefficient which is *-0.675* for average compressible soils, *≤1.0* for high compressible soils and carbonate or calcareous sands and *≥-2.0* for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot \left(1.2 + 0.05 \cdot log(t/100)\right)}\right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

C_1 is a compressibility coefficient which is *-0.91* for low compressible sands, *1.0* for medium compressible sands and *1.09* for high compressible sands

t is time in years

4.4 FRICTION ANGLE (φ')

Friction angle, *φ'*, is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

1) Mayne and Campanella, (2005)

$$\varphi' = 29.5^0 \cdot B_q^{0.121} \cdot \left[0.256 + 0.336 \cdot B_q + logQ_t\right]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

2) Robertson and Campanella, (1983)

$$\varphi' = \tan^{-1}\left(0.1 + 0.38 \cdot log\left(\frac{q_t}{\sigma'_{v0}}\right)\right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

3) Kulhawy and Mayne, (1990)

$$\varphi' = 17.6^0 + 11.0^0 \cdot log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily over consolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies $0.1 < B_q < 1.0$. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility, the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (*FC*)

The fines content, *FC*, in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al. (1998)* as presented below:

1) Robertson and Wride (1998)

$$I_C < 1.26: FC = 0$$
$$1.26 \leq I_C \leq 3.5: FC(\%) = 1.75I_C^{3.25} - 3.7$$
$$3.5 < I_C: FC = 100\%$$

2) Suzuki et al. (1998)

$$FC(\%) = 2.8I_C^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u, from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from *10* (*6* for very soft sensitive fine grained soils) to *20*. In this report 3 values are considered: *15*, *17.5* and *20*. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)
σ_{vo} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than *2.60*.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear in the direction of loading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u.

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}} \left(\frac{1}{f_s}\right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s.

2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays, $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot log(V_S) - 1.61 \cdot log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth

V_s is the shear wave velocity, calculated as $V_S = 118.8 \cdot log\left(f_s\right) + 18.5$

G_s is the specific gravity of solids, typically between *2.40* and *2.90*

5.0 MAGNETOMETER TESTS MEASUREMENTS

All measured parameters of MAG tests carried with the combined CPTU and MAG cone are shown in *Appendix B*.

5.1 DATA PROCESSING

The measured parameters, Magnetic Field X (nT), Magnetic Field Y (nT) and Magnetic Field Z (nT) were recorded for every *10 mm* of penetration.

The measured magnetometer data from the site works is processed and presented using specialised CPT software. During processing the three measured components are combined to give the total magnetic field strength.

5.1.1 Zero Measurements and Data quality

Before and after each MAG test, zero measurements are recorded for each magnetic channel of the cone. The zero measurements are presented on the logs in *Appendix B*. This is a routine quality check carried out on site.

The quality of the data was typically good. The summary of MAG tests is presented in *Appendix A.1*

5.2 MEASURED AND DERIVED PARAMETERS

5.2.1 Magnetic Field X, Magnetic Field Y and Magnetic Field Z

The measured parameters, Magnetic Field X, Magnetic Field Y and Magnetic Field Z are measured on site. The results are presented in *nT*, on *MAG Log*, in *Appendix B*, scale *-100000 to 100000 nT*.

5.2.2 Total Magnetic Field

Total Magnetic Field is calculated based on each measured Magnetic Field, using the formula below:

$$Magnetic\ Field\ Total = \sqrt{MAGX^2 + MAGY^2 + MAGZ^2}$$

where

MAGX	is the Magnetic Field measured in X direction
MAGY	is the Magnetic Field measured in Y direction
MAGZ	is the Magnetic Field measured in Z direction

The results are presented in *nT*, on *MAG Log*, in *Appendix B*, using a scale of *0-100000 nT*.

5.2.3 Magnetic Field Gradient

Magnetic Field Gradient is calculated as the difference between two consecutive values of Total Magnetic Field.

The results are presented in *nT/cm*, on *MAG Log*, in *Appendix B*, using a scale of *-500 to 500 nT/cm*.

6.0 CHALK

In order to provide an estimate of the Chalk Grade Classification as defined by Ward et al. (1968) and Wakeling (1969) a modified correlation originally derived by Power (1982) has been used. This is presented in figure 6.1 and has been used to give the degree of weathering quoted on the soil type estimates on the cone penetration graphs.

It should be noted that the correlation is approximate and that Chalk at different locations can differ from that described by Ward et al. at one particular site (Mundford in Norfolk). The descriptions in figure 6.1 are typical, and do not necessarily relate to this site. Simplified descriptions are therefore presented on the logs. It should also be noted that the Chalk grade classification was derived to describe the chalk mass. Localised variations in the cone resistance do not necessarily represent changes in Classification. Peaks may represent flints or local indurated zones.

GRADE	TYPICAL BRIEF DESCRIPTION (After Wakeling,1969)	FRICTION RATIO (%)	CONEEND RESISTANCE(MPa)
		(modifiedfromPower,1982)	
6	Extremely soft structureless CHALK containing small lumps of intact chalk.	-	Below 5
5	Structureless remoulded CHALK containing lumps of intact chalk.	0.75 – 1.00	5-10
4	Rubbly partly-weathered CHALK with bedding and jointing. Joints10-60mm apart and open to 20mm and often infilled with soft remoulded chalk and fragments.	1.00 – 1.25	10-15
3	Rubbly to blocky unweathered CHALK. Joints 60-200mm apart and open to 20mm and often infilled with fragments.	1.25 – 1.50	15-20
2	Blocky medium-hard CHALK. Joints more than 200mm apart and closed.	1.50 – 2.00	More than 20
1	As for grade2 but hard and brittle.	No penetration-	No penetration

Figure 6.1: Chalk classification table modified from Power (1992).

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APPENDIX A

APPENDIX A1 – Project Summary Sheet

Piezocone Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
DP104	5.99	15/03/2024	S15-CFIP.1186	Test completed at target depth.
DP105	5.99	15/03/2024	S15-CFIP.1186	Test completed at target depth.
DP106	5.99	15/03/2024	S15-CFIP.1186	Test completed at target depth.
DP107	6.00	15/03/2024	S15-CFIP.1186	Test completed at target depth.
DP108	4.81	13/03/2024	S15-CFIP.1983	Test refused on total pressure.
DP109	6.00	13/03/2024	S15-CFIP.1983	Test completed at target depth.
DP110	6.00	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP111	6.57	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP117	5.33	15/03/2024	S15-CFIP.1186	Test refused on tip resistance.
DP118	6.00	15/03/2024	S15-CFIP.1186	Test completed at target depth.
DP119	5.99	15/03/2024	S15-CFIP.1186	Test completed at target depth.
DP120	5.98	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP121	5.99	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP122	6.01	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP128	6.00	15/03/2024	S15-CFIP.1186	Test completed at target depth.
DP129	6.00	15/03/2024	S15-CFIP.1186	Test completed at target depth.
DP130	6.00	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP131	4.05	14/03/2024	S15-CFIP.1186	Test refused on total pressure.
DP132	6.00	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP133	5.99	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP137	6.00	15/03/2024	S15-CFIP.1186	Test completed at target depth.
DP138	5.12	15/03/2024	S15-CFIP.1186	Test refused on tip resistance.
DP141	5.98	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP143	5.99	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP144	6.00	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP148	6.00	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP149	6.01	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP150	5.99	14/03/2024	S15-CFIP.1186	Test completed at target depth.

DP151	6.00	13/03/2024	S15-CFIP.1983	Test completed at target depth.
DP152	6.06	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP153	5.98	14/03/2024	S15-CFIP.1186	Test completed at target depth.
DP154	6.71	13/03/2024	S15-CFIP.1983	Test completed at target depth.
DP155	6.00	13/03/2024	S15-CFIP.1983	Test completed at target depth.

Piezocone Test Coordinates

HOLE ID	Eastings	Northings	Elevation
DP104	499852.18	102054.49	6.64
DP105	499925.76	102077.70	6.16
DP106	500013.27	102089.59	5.94
DP107	500058.95	102112.87	5.83
DP108	500161.58	102170.69	5.39
DP109	500203.43	102180.64	5.58
DP110	500265.93	102197.83	5.41
DP111	500326.62	102218.87	4.70
DP117	500018.54	102025.96	5.95
DP118	500086.00	102041.64	6.01
DP119	500155.62	102060.39	5.82
DP120	500223.38	102079.19	5.31
DP121	500285.87	102096.21	5.32
DP122	500348.96	102145.73	4.90
DP128	500036.08	101955.81	6.03
DP129	500103.30	101973.78	5.90
DP130	500169.99	102019.03	5.86
DP131	500231.47	102043.11	5.45
DP132	500299.44	102053.38	5.48
DP133	500370.56	102077.63	5.21
DP137	499914.53	101842.98	6.30
DP138	499982.47	101869.55	5.98
DP141	500185.44	101952.28	5.57
DP143	500323.00	101984.73	5.68

DP144	500394.42	102005.63	5.80
DP148	500187.27	102241.31	4.80
DP149	500244.26	102263.60	5.03
DP150	500309.62	102280.76	4.17
DP152	500164.23	102301.41	5.19
DP153	500233.91	102304.41	4.94
DP154	500119.88	102321.94	5.41
DP155	500132.62	102333.86	5.44

MAG Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	MAG Status	Test Remarks
DP104	5.99	15/03/2024	Clear 5.4m onwards	Test completed at target depth.
DP105	5.99	15/03/2024	Clear 4.0m onwards	Test completed at target depth.
DP106	5.99	15/03/2024	Clear 3.6m onwards	Test completed at target depth.
DP107	6.00	15/03/2024	Clear 2.4m onwards	Test completed at target depth.
DP108	4.81	13/03/2024	Clear 3.0m onwards	Test refused on total pressure.
DP109	6.00	13/03/2024	Clear 5.0m onwards	Test completed at target depth.
DP110	6.00	14/03/2024	Clear 3.4m onwards	Test completed at target depth.
DP111	6.57	14/03/2024	Clear 5.6m onwards	Test completed at target depth.
DP117	5.33	15/03/2024	Clear 3.4m onwards	Test refused on tip resistance.
DP118	6.00	15/03/2024	Clear 4.0m onwards	Test completed at target depth.
DP119	5.99	15/03/2024	Clear 3.8m onwards	Test completed at target depth.
DP120	5.98	14/03/2024	Clear 5.2m onwards	Test completed at target depth.
DP121	5.99	14/03/2024	Clear 1.0m onwards	Test completed at target depth.
DP122	6.01	14/03/2024	Clear 4.0m onwards	Test completed at target depth.
DP128	6.00	15/03/2024	Clear 4.4m onwards	Test completed at target depth.
DP129	6.00	15/03/2024	Clear 2.0m onwards	Test completed at target depth.
DP130	6.00	14/03/2024	Clear 3.0m onwards	Test completed at target depth.
DP131	4.05	14/03/2024	Clear 3.4m onwards	Test refused on total pressure.
DP132	6.00	14/03/2024	Clear 4.0m onwards	Test completed at target depth.
DP133	5.99	14/03/2024	Clear 4.4m onwards	Test completed at target depth.
DP137	6.00	15/03/2024	Clear 4.2m onwards	Test completed at target depth.
DP138	5.12	15/03/2024	Clear 2.4m onwards	Test refused on tip resistance.
DP141	5.98	14/03/2024	Clear 2.6m onwards	Test completed at target depth.
DP143	5.99	14/03/2024	Clear 3.2m onwards	Test completed at target depth.
DP144	6.00	14/03/2024	Clear 5.2m onwards	Test completed at target depth.
DP148	6.00	14/03/2024	Clear 3.2m onwards	Test completed at target depth.
DP149	6.01	14/03/2024	Clear 1.0m onwards	Test completed at target depth.
DP150	5.99	14/03/2024	Clear 5.0m onwards	Test completed at target depth.
DP151	6.00	13/03/2024	Clear 2.0m onwards	Test completed at target depth.
DP152	6.06	14/03/2024	Clear 3.0m onwards	Test completed at target depth.

DP153	5.98	14/03/2024	Clear 4.6m onwards	Test completed at target depth.
DP154	6.71	13/03/2024	Clear 2.2m onwards	Test completed at target depth.
DP155	6.00	13/03/2024	Clear 3.0m onwards	Test completed at target depth.

KEY for MAG Status	
Clear	Clear of UXO.
Clear 1.0m onwards	Disturbance of magnetic field to depth shown due to artificial ground but otherwise clear.
Obstruction	Buried obstruction or refused test due to geology. Change location, then re-test.
Low risk 2.3m	Low risk anomaly at depth shown. Unlikely to be UXB, and clear below.
Suspected existing pile	Disturbance of magnetic field at depth of 0-7.0m, clear below.
Anomaly x metres	Significant magnetic anomaly at depth shown.

APPENDIX A2 – CPT Rig Datasheet

RIGS

20 TONNE CPT TRACK MOUNTED RIG (CPT017)

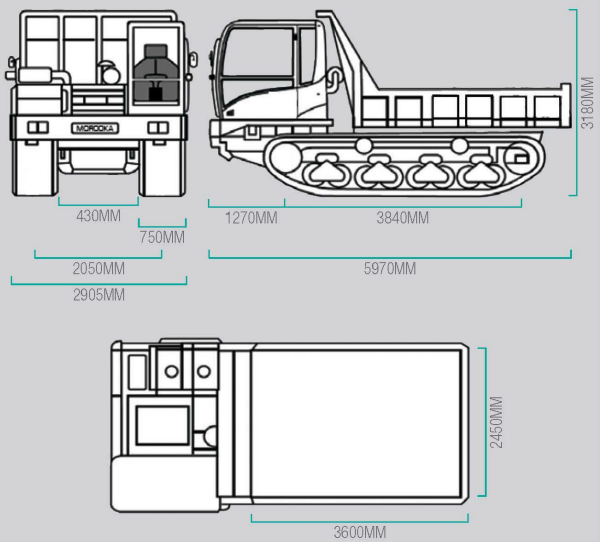
We have a variety of rigs giving us the capacity to meet our clients' needs and specifications for each individual project.

This rubber tracked rig weighs 20 tonnes and is able to push up to a depth of 40 metres, depending on the ground conditions. It has low ground bearing pressure and is ideal for soft, boggy sites which are inaccessible for our wheeled rigs.

CPT RIG DETAILS

DRIVE SYSTEM	RUBBER TRACKED
TOTAL WEIGHT	20 TONNES
GROUND BEARING PRESSURE	35kPA
CPT RAM THRUST CAPACITY	20 TONNES
MAXIMUM PENETRATION	30-40M DEPENDING ON THE GROUND CONDITIONS.
PERFORMANCE RATES	100-150M OF TESTING A DAY, DEPENDING ON ACCESS TO POSITIONS.
TYPICAL SITES FOR THIS RIG	SOFT, BOGGY SITES. THE RIG HAS LOW GROUND BEARING PRESSURE.

CPT RIG DIMENSIONS




Shrewsbury



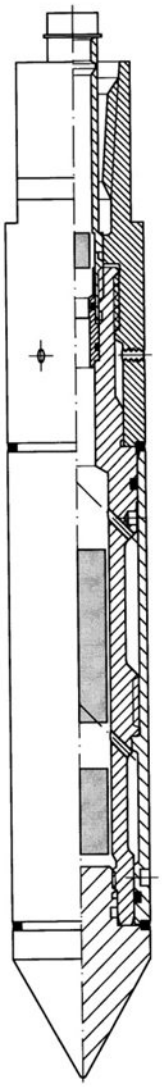
Heading North on our low loader


Falkirk, Scotland

IN SITU SITE INVESTIGATION INSITUSI.COM

APPENDIX A3 – Cone Datasheet

GeoPoint Systems bv
Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
ING bank : 68.23.01.396
Postbank : 5226758
BTW nr. : NL806331677801



SPECIFICATIONS S15 SERIES ELECTRICAL CONES

The electronic subtraction cones have been developed to address the durability problems inherent in other cone designs. The unit consists of a single element temperature compensated strain gauge transducer for measuring both cone resistance and local sleeve friction. This design is therefore more robust than a compression type cone. The cone support electronics package is located directly behind the transducer. The precision strain gauge amplifiers and power supply eliminate the effects of cable resistance on the measurements. A standard subtraction cone is capable of measuring simultaneously the following channels: Tip, Local friction, Pore pressure, Temperature and Inclination.

GENERAL SPECIFICATIONS

Cone Tip Section Area	1,500 mm2
Friction Sleeve Surface	22,500 mm2
Total Length	325 mm
Weight	4200 g
Power Supply	± 15 VDC, 100 mA.
Output	0 – 10 VDC*
Working Temperature	0 - 60˚C
Storage Temperature	- 40 to + 85˚C
Connector	Lemo 10 pins (others on request)

TIP RESISTANCE

Range	100/150* kN
Accuracy	0.25 % FS
Maximum Load	150 % of range
Cone Area Ratio	0.75

LOCAL SLEEVE FRICTION

Range	100/150* kN
Accuracy	0.50 % FS
Maximum Load	150 %
Sleeve Area Ratio	1.0 (EA)

PORE PRESSURE

Range	1/2/5/10* MPa
Accuracy	0.5 % FS
Maximum Load	150 % of range

INCLINATION

Range	25 ˚ (biaxial)
Accuracy	< 2 ˚

All our equipment complies with the ISSMGE, ASTM, DIN and NEN Standards.

**Other output and voltage ranges available on request. Loadcells may be calibrated for lower ranges.*

APPENDIX A4 – Cone Calibration Certificate

Eijkelkamp GeoPoint
SoilSolutions

Rijkstraatweg 22F
2171 AL Sassenheim
The Netherlands

T +31 71 301 9251
E info@eijkelkamp-geopoint.com
I eijkelkamp-geopoint.com

Cone Calibration Certificate

Certificate:	**GS-1186-020**	
Instrument Type:	Magnetometer 250 µT(analog)	
Model:	S15-CFIIPM	
Serial number:	1186	
Calibration date:	21-09-2023	
Client:	In Situ	
Calibrated by:	R.Wesselink	
Calibration instruments		
Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
NMi certificate	2461165.00501	
Calibration conditions		
Ambient temperature:	22.7	°C
Atmospheric pressure:	999	mBar
Cone specifications		
Cone base area:	1500	mm2
Load tip resistance (nom.):	50	kN
Friction sleeve area:	22500	mm2
Load tip + local friction (nom.):	50	kN
Load friction sleeve (nom.):	22.5	kN
Load pore pressure (nom.):	2	MPa
Inclination (nom.):	+/- 20	°
Temperature compensation (all channels):	0...+40	°C
Maximum overload capacity (all channels):	50	%
Cone area ratio (a):	0.79	
Max. Inaccuracy, relative to measurement value:	1.0	%

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0212		0205		0258			
	0	0	0	0	0	0	0	2486	2406
	5	0302	5	0309	0.4	1348	-20	0481	0305
	10	0603	10	0619	0.8	2694	20	4468	4451
	15	0904	15	0927	1.2	4033			
	20	1208	20	1238	1.6	5370			
	25	1509	25	1550	2.0	6699			
	30	1812	30	1859					
	35	2113	35	2168					
	40	2414	40	2478					
	45	2716	45	2788					
	50	3018	50	3097					

Max. error, abs. qc:	35 kPa
Max. error, abs. fs:	5 kPa
Max. error, abs. u2:	10 kPa
Max. error, abs. I:	1 °

This calibration is compliant with Eijkelkamp GeoPoint SoilSolutions internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (Inter-)National Standards.

Approved by: R. Mosterd
Date: 21-09-2023

[redacted]

Eijkelkamp GeoPoint SoilSolutions
V.A.T. NO. NL 8584.21.422.B01
Trade Reg. Arnhem no. 70686149
IBAN NL43 RABO 0326 7904 38
BIC: RABONL2U

Eijkelkamp GeoPoint
SoilSolutions

Rijkstraatweg 22F
2171 AL Sassenheim
The Netherlands

T +31 71 301 9251
E info@eijkelkamp-geopoint.com
I eijkelkamp-geopoint.com

Cone Calibration Certificate

Certificate:	**GS-1983-009**	
Instrument Type:	Magnetometer 250 µT(analog)	
Model:	S15-CFIIPM	
Serial number:	1983	
Calibration date:	31-10-2023	
Client:	In Situ	
Calibrated by:	R.van Loon	
Calibration instruments		
Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
NMi certificate	2461165.00501	
Calibration conditions		
Ambient temperature:	20.6	°C
Atmospheric pressure:	1002	mBar
Cone specifications		
Cone base area:	1500	mm2
Load tip resistance (nom.):	50	kN
Friction sleeve area:	22500	mm2
Load tip + local friction (nom.):	50	kN
Load friction sleeve (nom.):	22.5	kN
Load pore pressure (nom.):	2	MPa
Inclination (nom.):	+/- 20	°
Temperature compensation (all channels):	0...+40	°C
Maximum overload capacity (all channels):	50	%
Cone area ratio (a):	0.79	
Max. Inaccuracy, relative to measurement value:	1.0	%

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0272		0213		0224			
	0	0	0	0	0	0	0	2396	2549
	5	0289	5	0303	0.4	1551	-20	0388	0622
	10	0580	10	0607	0.8	3096	20	4390	4520
	15	0871	15	0910	1.2	4633			
	20	1159	20	1214	1.6	6164			
	25	1451	25	1517	2.0	7685			
	30	1742	30	1821					
	35	2031	35	2121					
	40	2321	40	2424					
	45	2614	45	2722					
	50	2903	50	3020					

Max. error, abs. qc:	35 kPa
Max. error, abs. fs:	5 kPa
Max. error, abs. u2:	10 kPa
Max. error, abs. I:	1 °

This calibration is compliant with Eijkelkamp GeoPoint SoilSolutions internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (Inter-)National Standards.

Approved by:
Date:

[redacted]

Eijkelkamp GeoPoint SoilSolutions
V.A.T. NO. NL 8584.21.422.B01
Trade Reg. Arnhem no. 70686149

IBAN NL43 RABO 0326 7904 38
BIC: RABONL2U

APPENDIX A5 – Symbol List

English

a	is area ratio of the cone ($= {}^{A_n}/_{A_c}$)
A	is area
A_c	is projected area of the cone
A_n	is cross sectional area of load cell or shaft
A_s	is area of friction sleeve
A_{sb}	is bottom end area of friction sleeve
A_{st}	is top end area of friction sleeve
B_q	is pore pressure parameter ($= {}^{(u_2 - u_0)}/_{(q_t - \sigma_{v0})}$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max} - e}{e_{max} - e_{min}} x100\%$)
e	is void ratio
e_{max}	is maximum void ratio
e_{min}	is minimum void ratio
E	is Young's modulus
f_s	is unit sleeve friction resistance
f_t	is sleeve friction corrected for pore pressure effects
F_s	is total force acting on friction sleeve
F_R	is normalized friction ratio ($= {}^{f_s}/_{(q_t - \sigma_{v0})}$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G_0	is initial or maximum shear modulus, shear stiffness
I_c	is soil behavior type index
I_r	is rigidity index ($= {}^{G}/_{s_u}$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= {}^{\sigma'_{h0}}/_{\sigma'_{v0}}$)
L	is length
m_v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N_{60}	is SPT energy ratio
N_k	is cone factor
N_{ke}	is cone factor
N_{kt}	is cone factor
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100\ kPa$)
q_c	is measured cone resistance
q_e	is effective cone resistance ($= q_t - u_2$)
q_n	is net cone resistance ($= q_t - \sigma_{v0}$)
q_t	is corrected cone resistance ($= q_c - (1 - a)u_2$)
Q_c	is total force acting on the cone
Q_t	is normalized cone resistance ($= {}^{q_t - \sigma_{v0}}/_{\sigma'_{v0}}$)

R_f is friction ratio ($= \left({}^{f_t}/_{q_t}\right) x100\%$ or alternatively $= \left({}^{f_t}/_{q_t}\right) x100\%$)
s_u is undrained shear strength
s_{ur} is remoulded undrained shear strength
S_t is sensitivity
t is time
t_{50} is time for 50% dissipation of excess pore water pressure
T_{50} is time factor at $U = 50\ \%$
u is pore water pressure
u_0 is in situ pore pressure
u_1 is pore pressure measured on the cone
u_2 is pore pressure measured behind the cone
u_3 is pore pressure measured behind sleeve friction
Δu is excess pore water pressure
U is normalized excess pore pressure
V_s is shear wave velocity
z is depth

Greek

α is constant
α is cone roughness
β is constant
β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees
γ is unit weight of soil
γ_w unit weight of water
Δ is change
Δu is excess pore pressure ($= u - u_0$)
μ is Poisson's ratio
ρ is density
ψ is state parameter
σ, σ' is normal stress (total, effective)
σ_h, σ_h' is horizontal stress (total, effective)
σ_v, σ_v' is horizontal stress (total, effective)
σ_{v0},σ_{v0}' is overburden stress (total, effective)
τ_{av} is average cyclic shear stress
τ_{cy} is cyclic shear stress
φ' is effective friction angle

APPENDIX A6 – Abbreviations

ASTM	American Society for Testing and Materials
CPTU	Cone Penetration Test with Pore Pressure Measurement (Piezocone Test)
CRR	Cyclic Resistance Ratio
CSR	Cyclic Stress Ratio
GWT	Ground Water Table
NC	Normally Consolidated
OC	Over consolidated
OCR	Over consolidation Ratio
PL	Limit Pressure
SCPT	Seismic Cone Penetration
SDMT	Seismic Dilatometer Marchetti
SPT	Standard Penetration Test
TC	Technical Committee

APPENDIX A7 – Glossary

CPT
Cone Penetration Test.

Cone
The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer
The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods.*

Cone resistance, q_c
The total force acting on the cone, Q_c, divided by the projected area of the cone, A_c. $q_c = {Q_c}/{A_c}$

Corrected cone resistance, q_t
The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected sleeve friction, f_t
The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data acquisition system
The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test
A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter element
The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction ratio, R_f
The ratio, expressed as a percentage of the *sleeve friction*, f_s, to the *cone resistance*, q_c, both measured at the same depth.

Friction reducer
A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction sleeve
The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized cone resistance, Q_c or Q_t
The *cone resistance* expressed in a non-dimensional form and taking account of stress changes *in situ*, $Q_c = {(q_c - \sigma_{v0})}/{\sigma'_{v0}}$, or when the *corrected cone resistance* is used $Q_t = {(q_t - \sigma_{v0})}/{\sigma'_{v0}}$. where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net cone resistance, q_n
The *corrected cone resistance* minus the vertical total stress. $q_n = q_t - \sigma_{v0}$

Normalized friction ratio, F_r
The *sleeve friction* normalized by the *net cone resistance*.

Piezocone
A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, *u*
The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore pressure ratio, B_q
The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods
The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine
The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve friction, f_s
The total frictional force acting on the *friction sleeve*, F_s, divided by its *surface area*, A_s. $f_s = {F_s}/{A_s}$

APPENDIX A8 – Soils Description Tables

GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT N value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300

APPENDIX A9 – Site Map



APPENDIX B

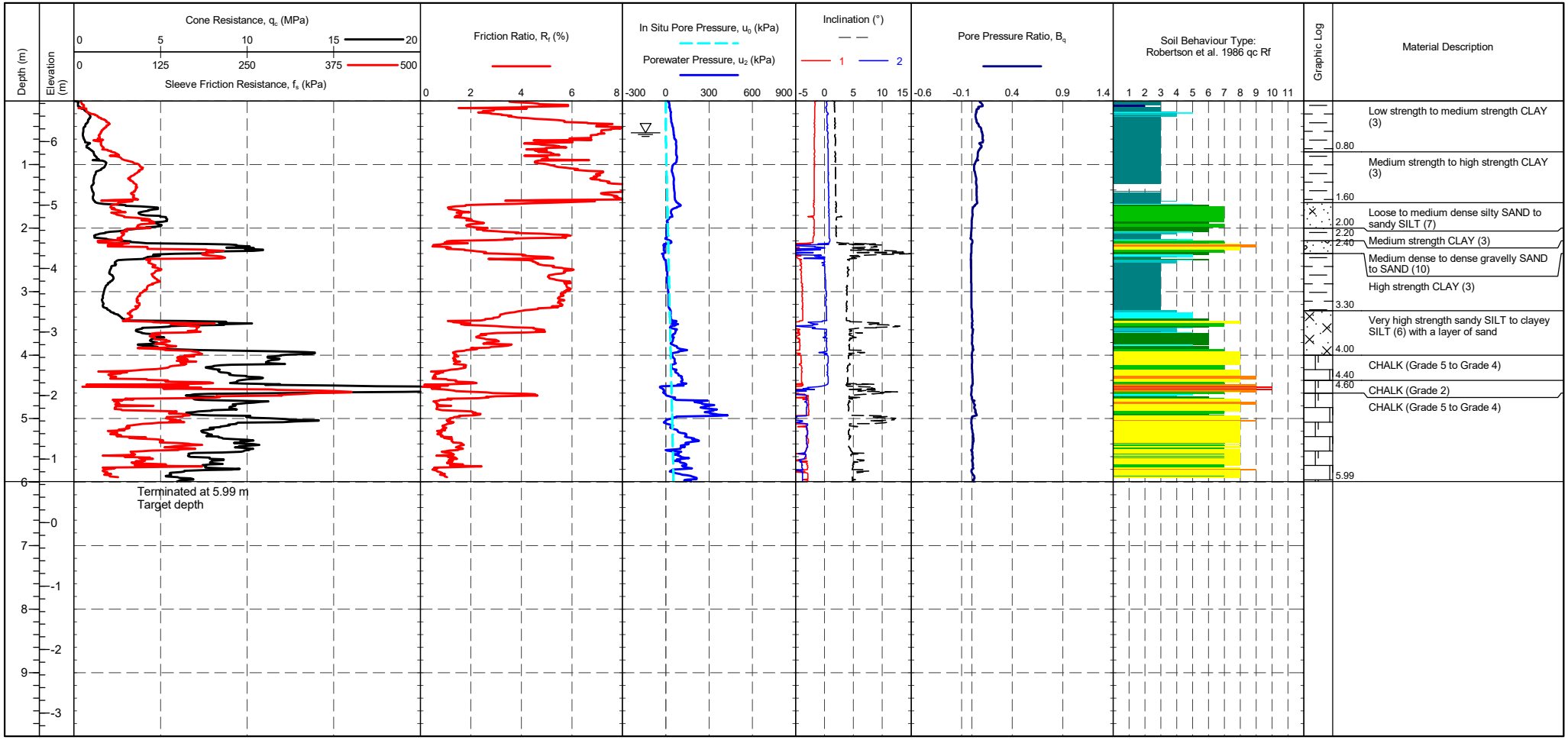
Cone Penetration Measured Parameters and Geotechnical Derived Parameters

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP104**

CLIENT : Ground and Water	EASTING : 499852.182 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102054.485 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 6.637 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	217 mV	-0.044 MPa
Sleeve	213 mV	206 mV	-0.005 kPa
Pore Pressure 2	260 mV	225 mV	-0.01 kPa
X-Y Inclinometer	2335 mV	2336 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

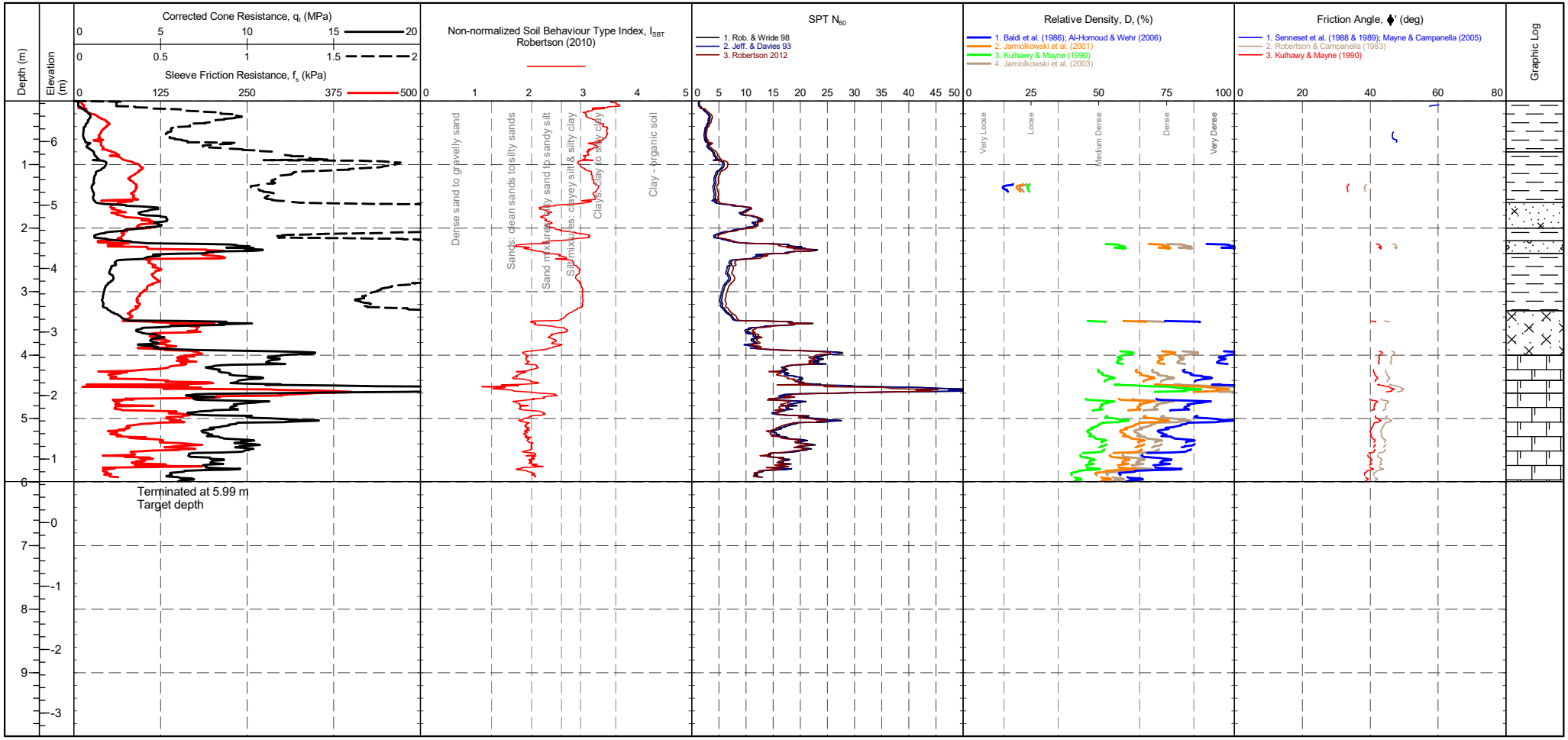
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP104**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 499852.182 m NORTHING : 102054.485 m ELEVATION : 6.637 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	221 mV	217 mV	-0.044 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	213 mV	206 mV	-0.005 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	260 mV	225 mV	-0.01 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2335 mV	2336 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

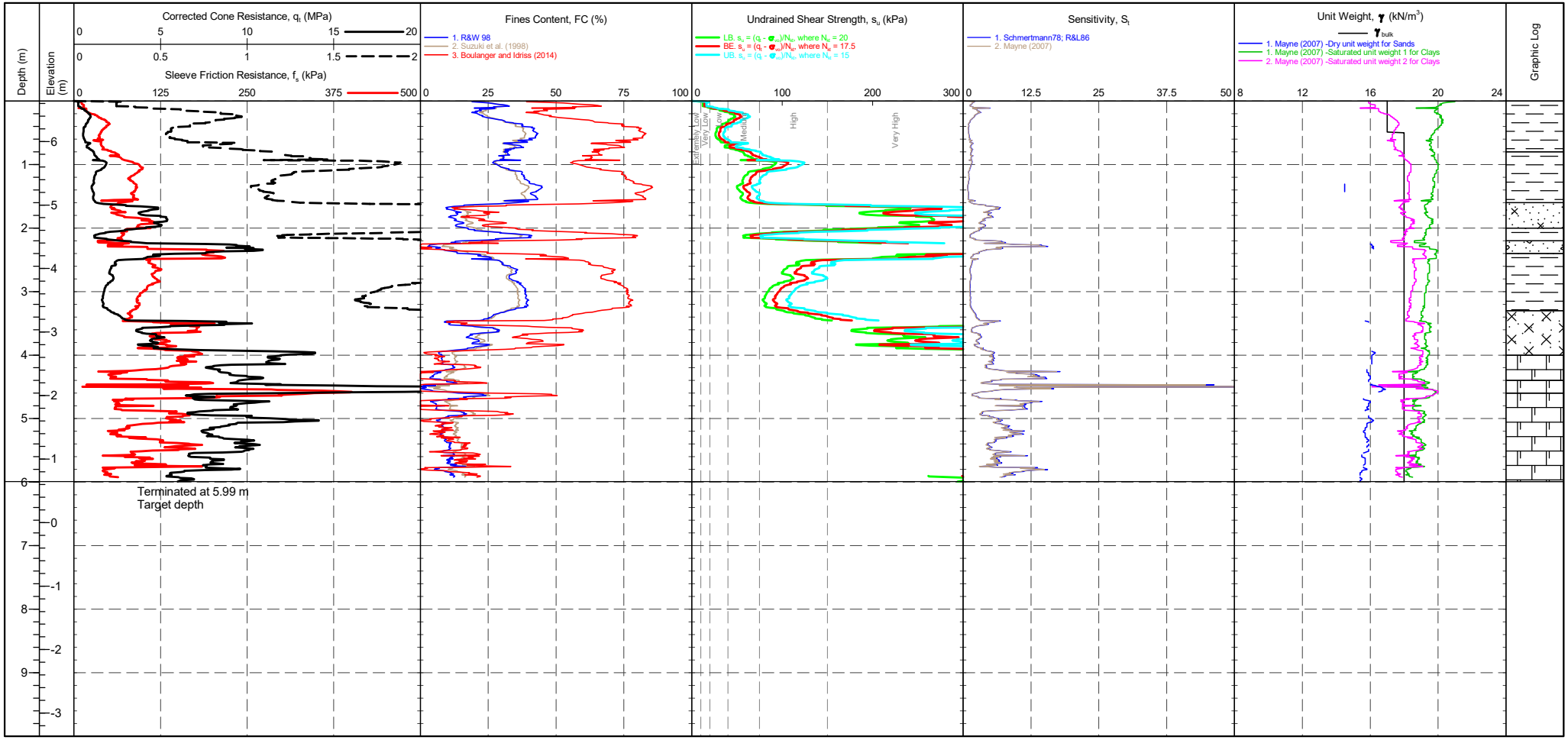
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP104**

CLIENT : Ground and Water	EASTING : 499852.182 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102054.485 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 6.637 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



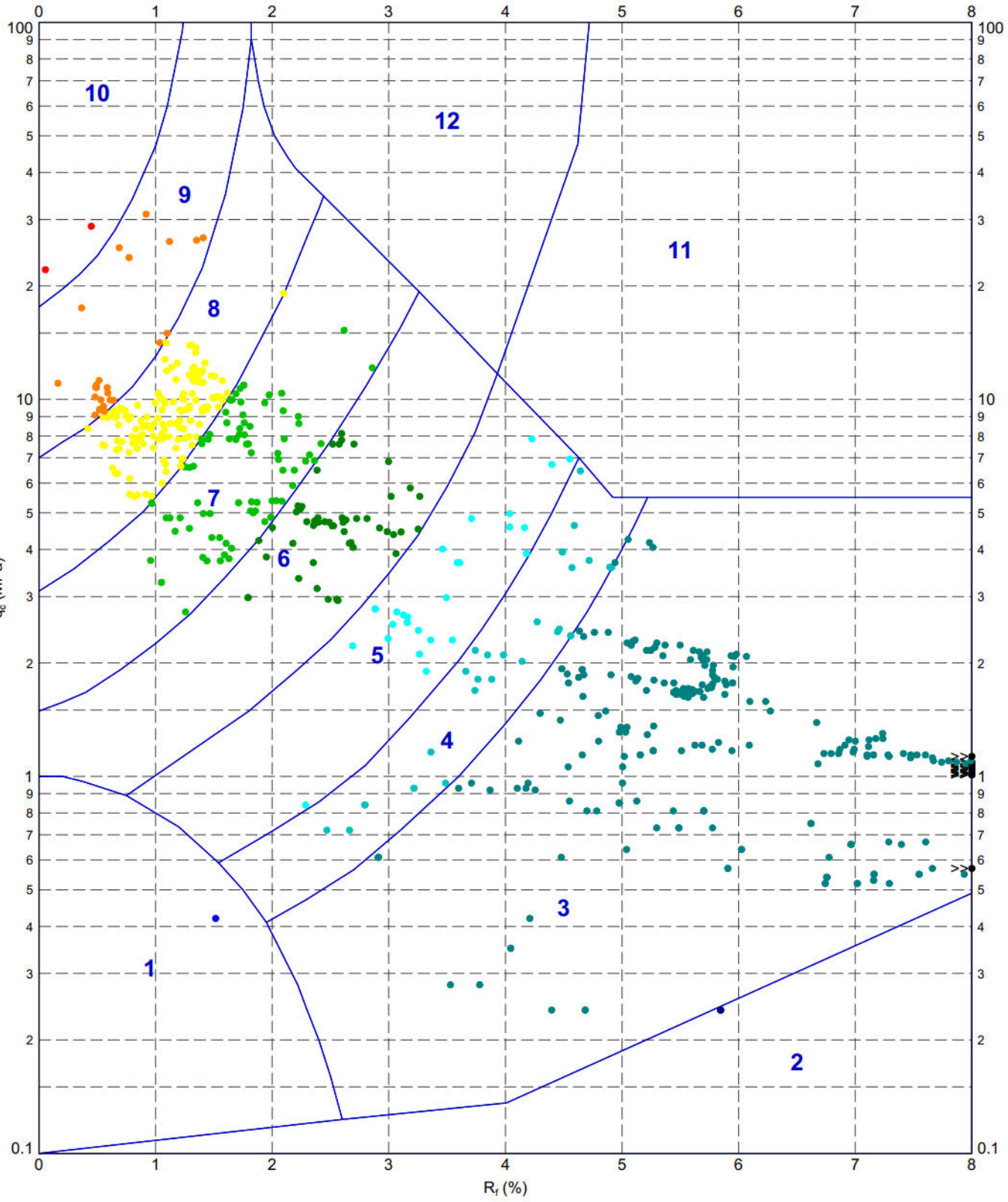
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	221 mV	217 mV	-0.044 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	213 mV	206 mV	-0.005 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	260 mV	225 mV	-0.01 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2335 mV	2336 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP104

DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE Not To Scale	A4
PROJECT No 1240182	FIGURE No

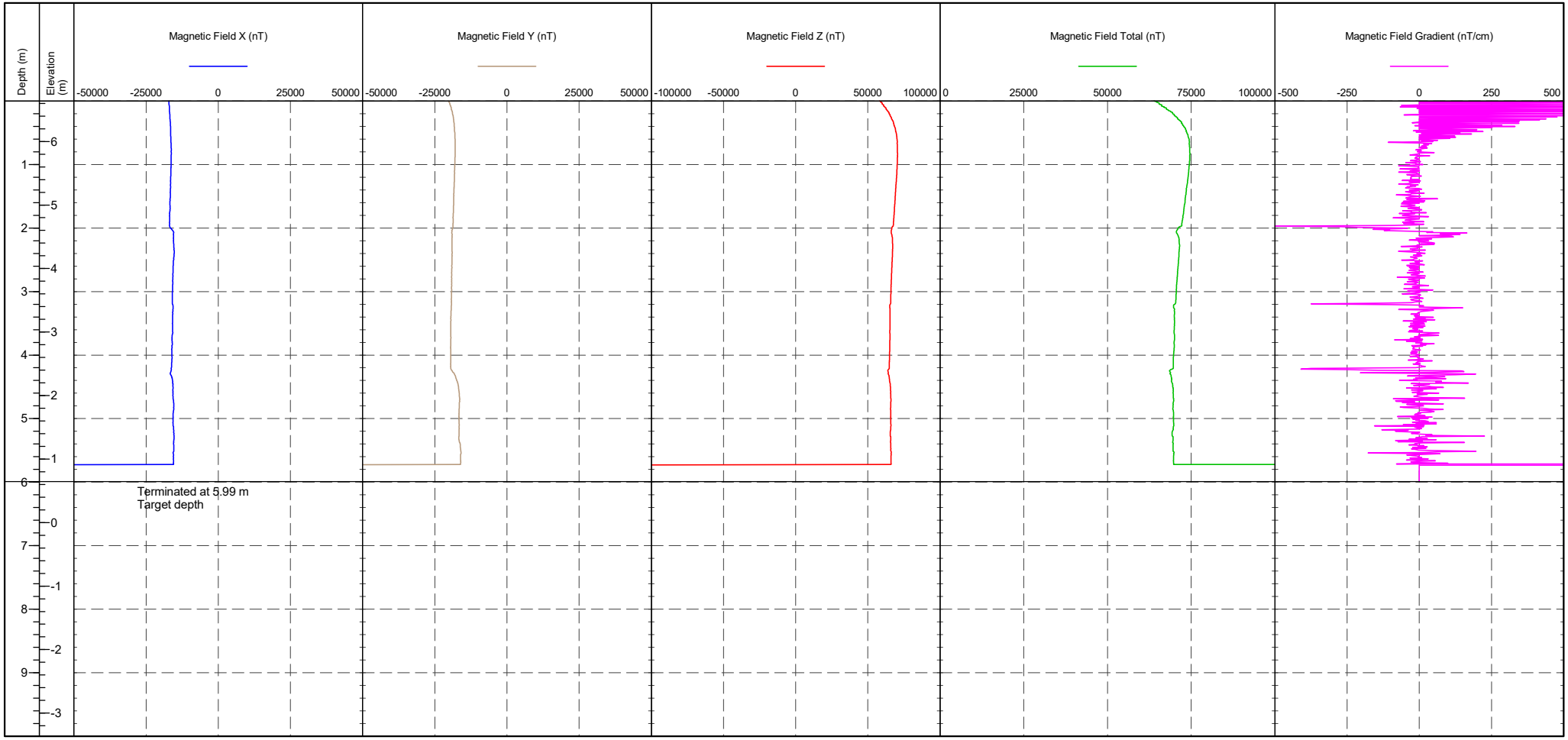
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:27 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prp: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP104**

CLIENT : Ground and Water	EASTING : 499852.182 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102054.485 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 6.637 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



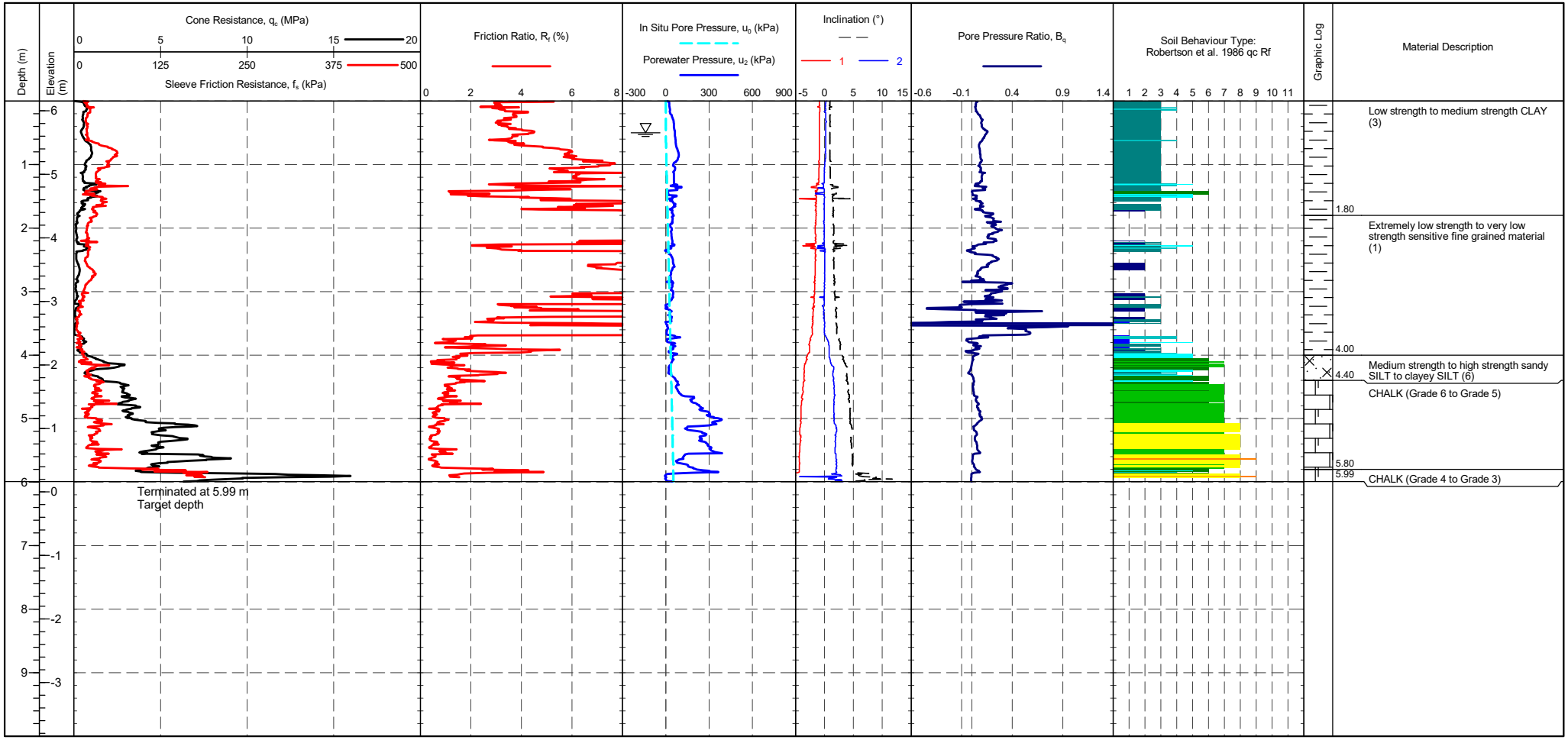
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	221 mV	217 mV	-0.044 MPa
				Sleeve	213 mV	206 mV	-0.005 kPa
				Pore Pressure 2	260 mV	225 mV	-0.01 kPa
				X-Y Inclinometer	2335 mV	2336 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP105**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 499925.761 m NORTHING : 102077.699 m ELEVATION : 6.155 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1186 CALIBRATION DATE : 09/08/2021 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES	

Transducer	Pre	Post	Difference
Tip	219 mV	218 mV	-0.011 MPa
Sleeve	208 mV	209 mV	0.001 kPa
Pore Pressure 2	243 mV	273 mV	0.009 kPa
X-Y Inclinometer	2395 mV	2386 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

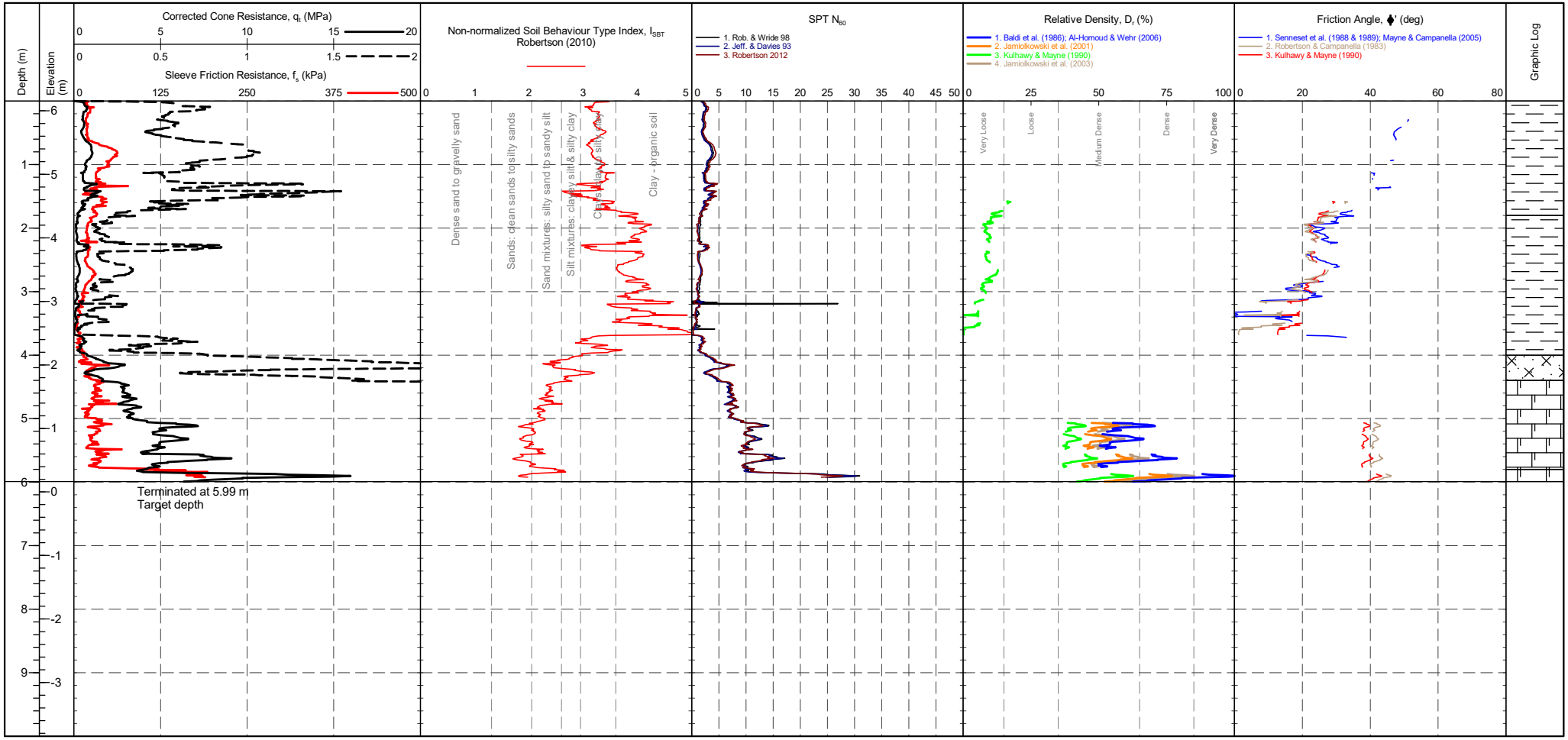
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP105**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 499925.761 m NORTHING : 102077.699 m ELEVATION : 6.155 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	219 mV	218 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	208 mV	209 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	243 mV	273 mV	0.009 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2395 mV	2386 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

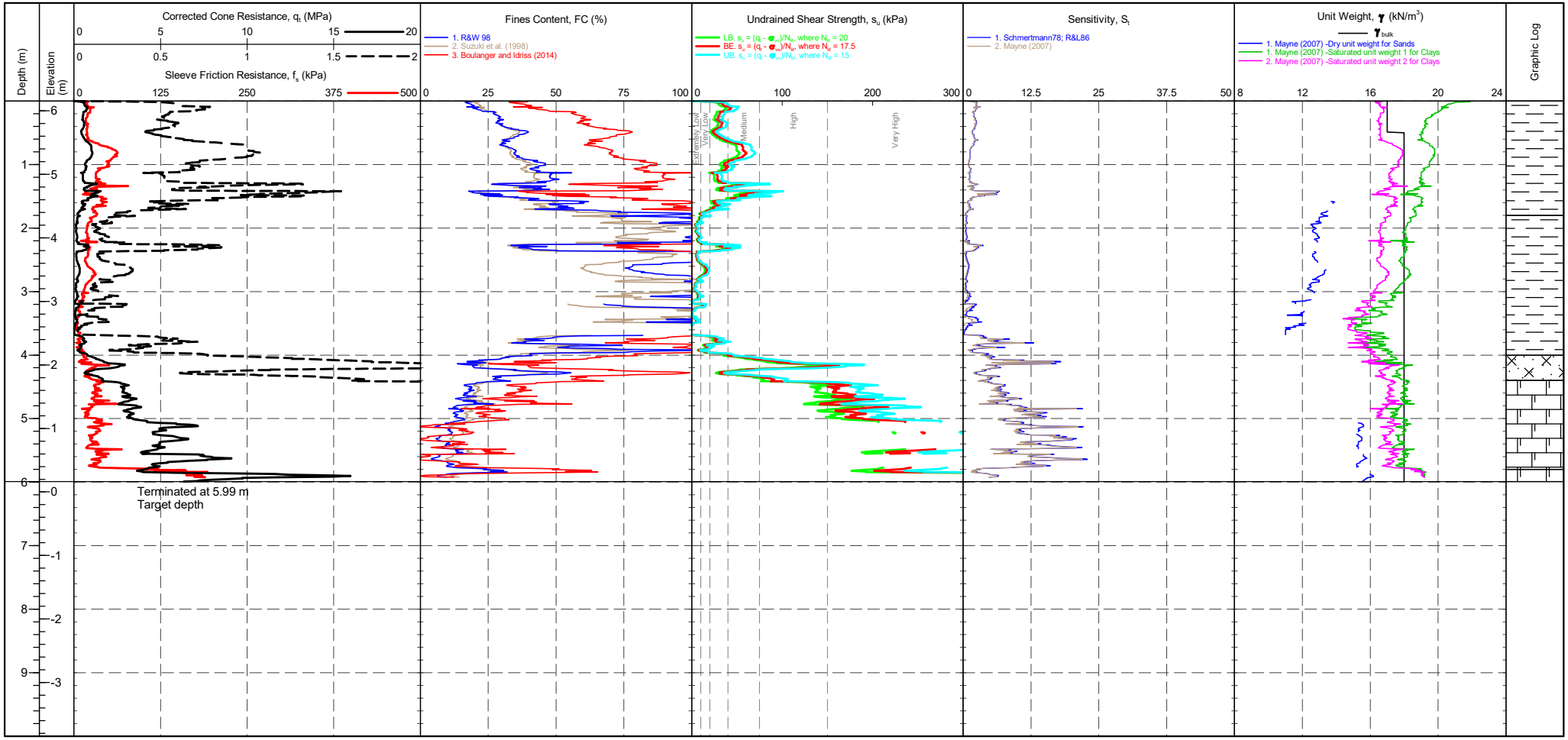
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP105**

CLIENT : Ground and Water	EASTING : 499925.761 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102077.699 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 6.155 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



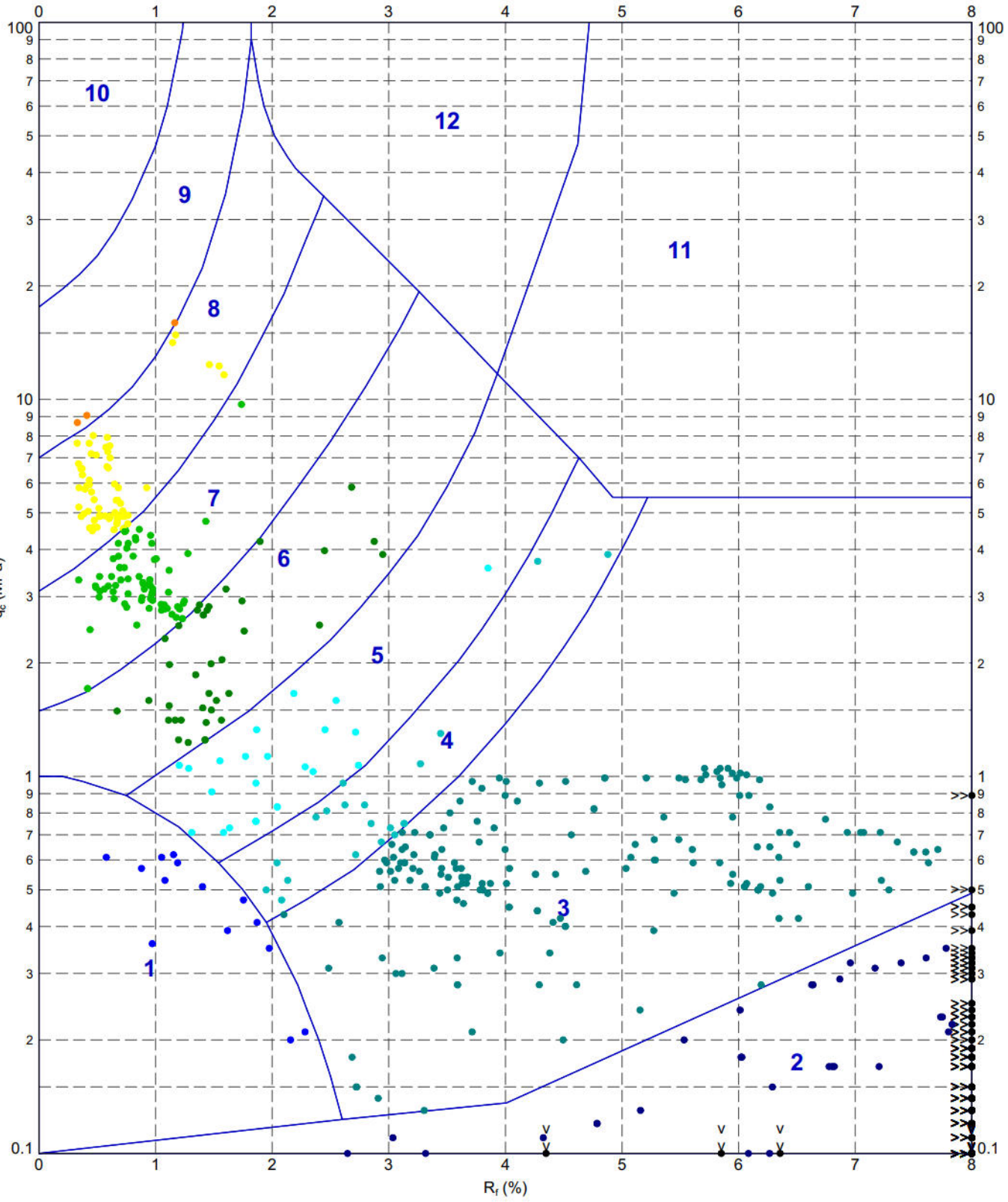
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	219 mV	218 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	208 mV	209 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	243 mV	273 mV	0.009 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2395 mV	2386 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP105

DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE Not To Scale	A4
PROJECT No 1240182	FIGURE No

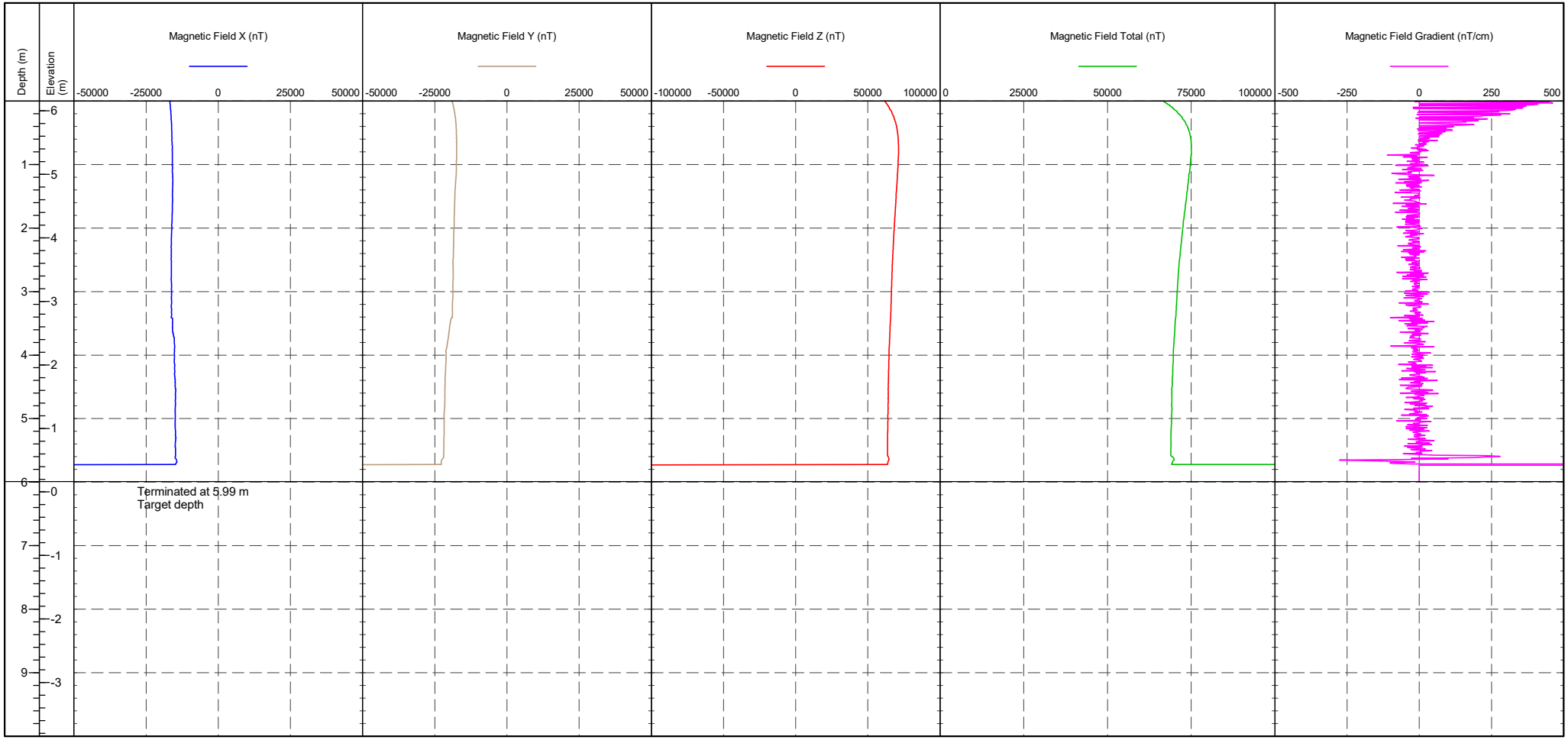
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:28 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prp: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP105**

CLIENT : Ground and Water	EASTING : 499925.761 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102077.699 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 6.155 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



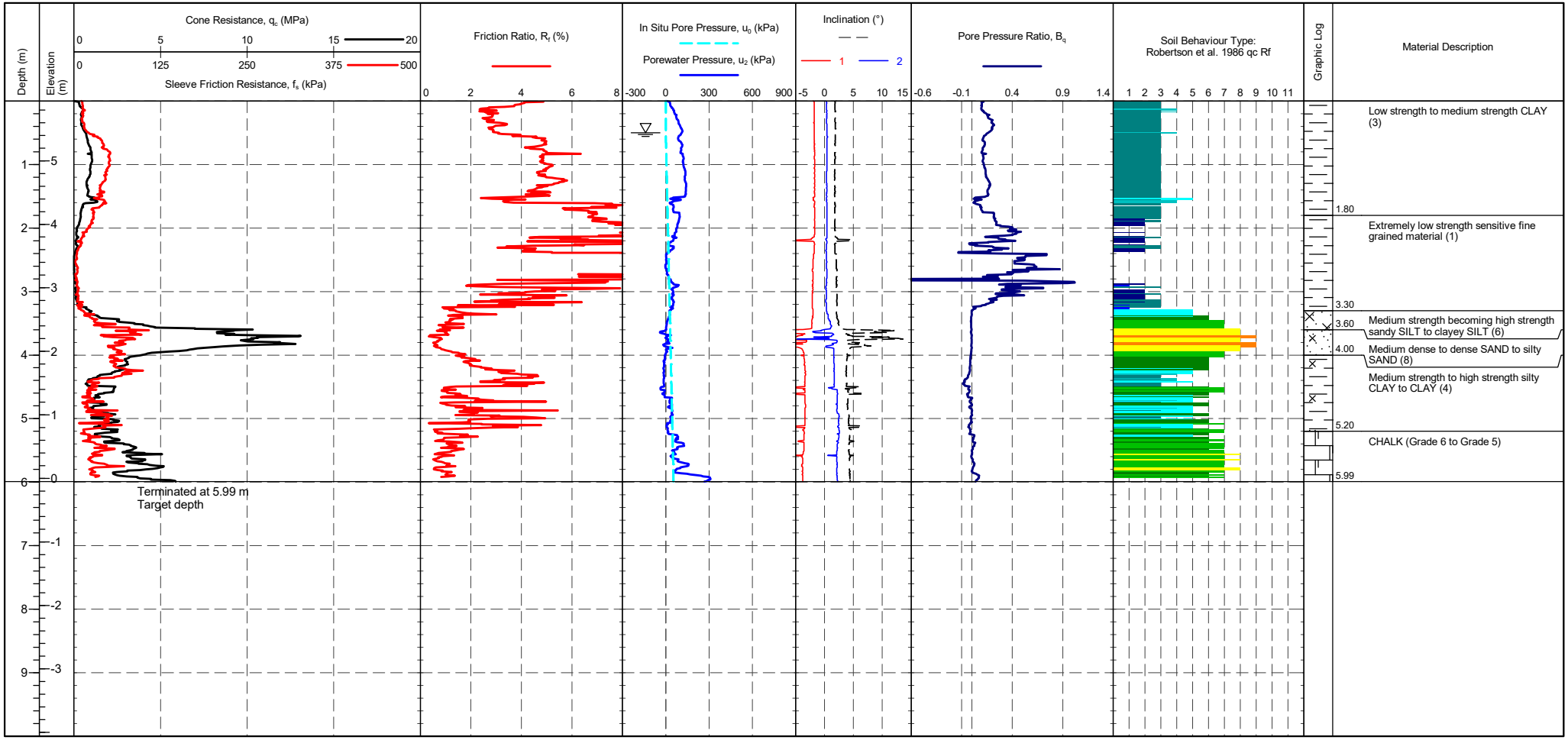
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	219 mV	218 mV	-0.011 MPa
				Sleeve	208 mV	209 mV	0.001 kPa
				Pore Pressure 2	243 mV	273 mV	0.009 kPa
				X-Y Inclinometer	2395 mV	2386 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP106**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500013.265 m NORTHING : 102089.586 m ELEVATION : 5.941 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



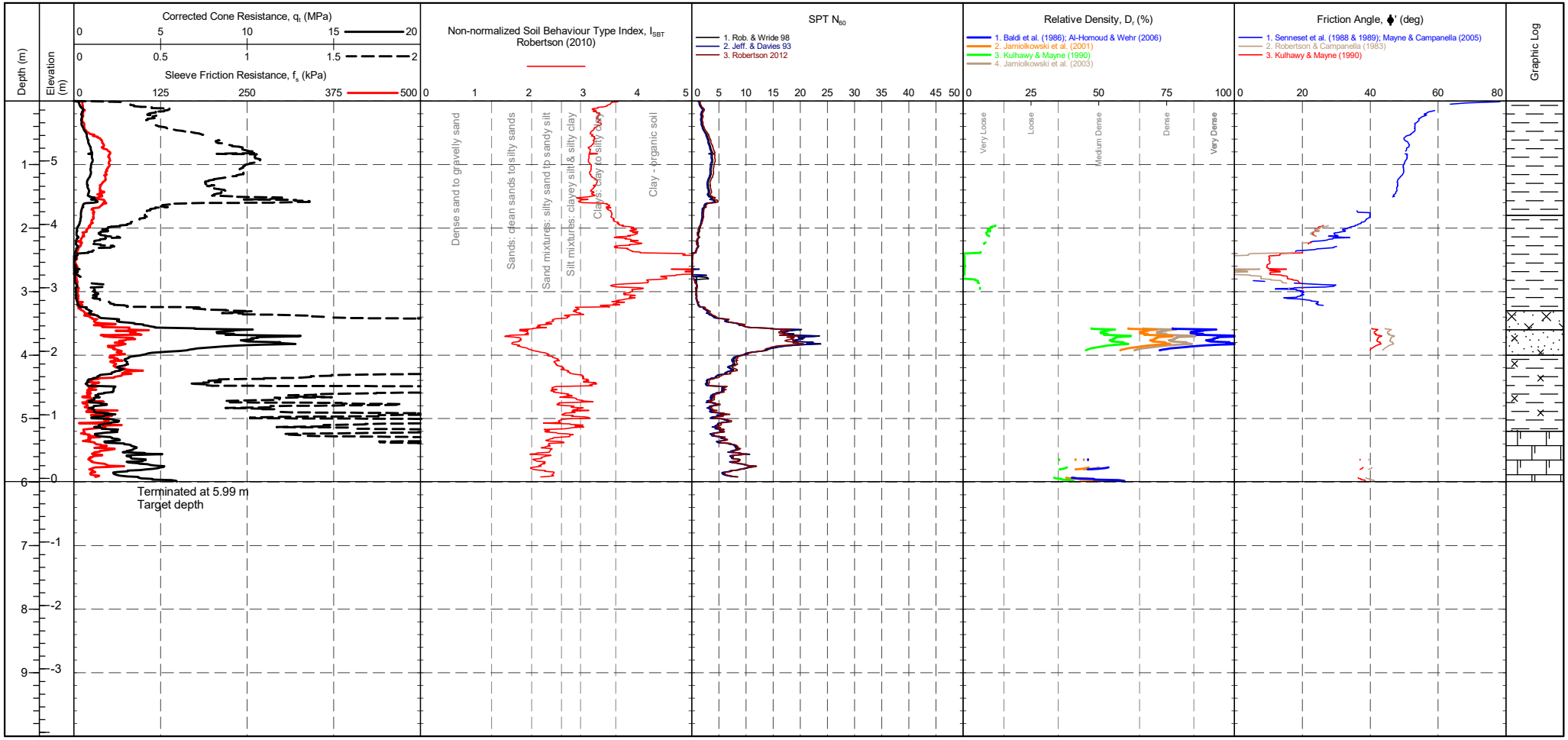
CONE ID : S15-CFIP.1186 CALIBRATION DATE : 09/08/2021 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES Transducer: Pre / Post / Difference Tip: 219 mV / 219 mV / 0 MPa Sleeve: 210 mV / 211 mV / 0.001 kPa Pore Pressure 2: 269 mV / 271 mV / 0.001 kPa X-Y Inclinometer: 2286 mV / 2284 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND Groundwater Level Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP106**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500013.265 m NORTHING : 102089.586 m ELEVATION : 5.941 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	219 mV	219 mV
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	210 mV	211 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	269 mV	271 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2286 mV	2284 mV

Transducer	Difference
Tip	0 MPa
Sleeve	0.001 kPa
Pore Pressure 2	0.001 kPa
X-Y Inclinometer	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

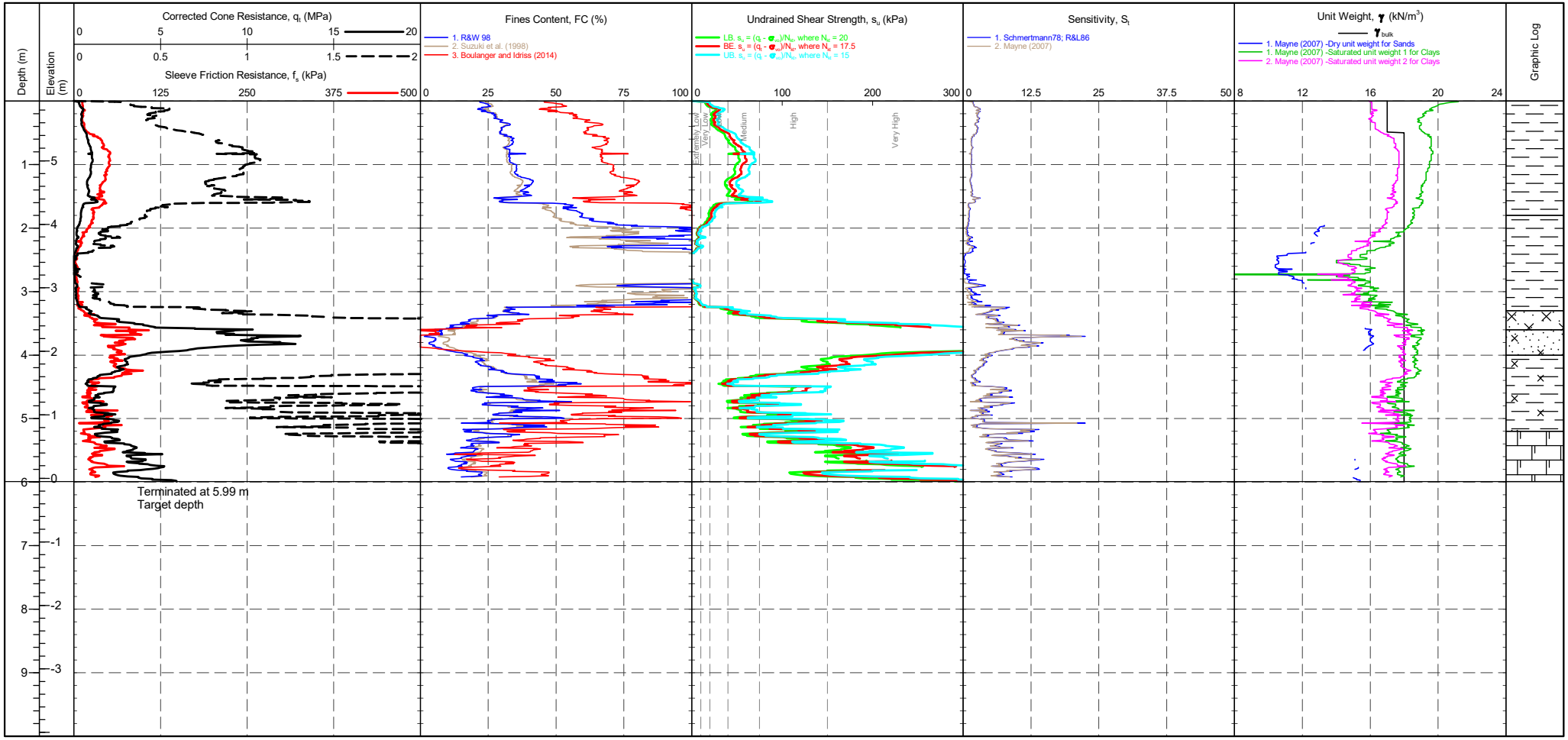
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP106**

CLIENT : Ground and Water	EASTING : 500013.265 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102089.586 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.941 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



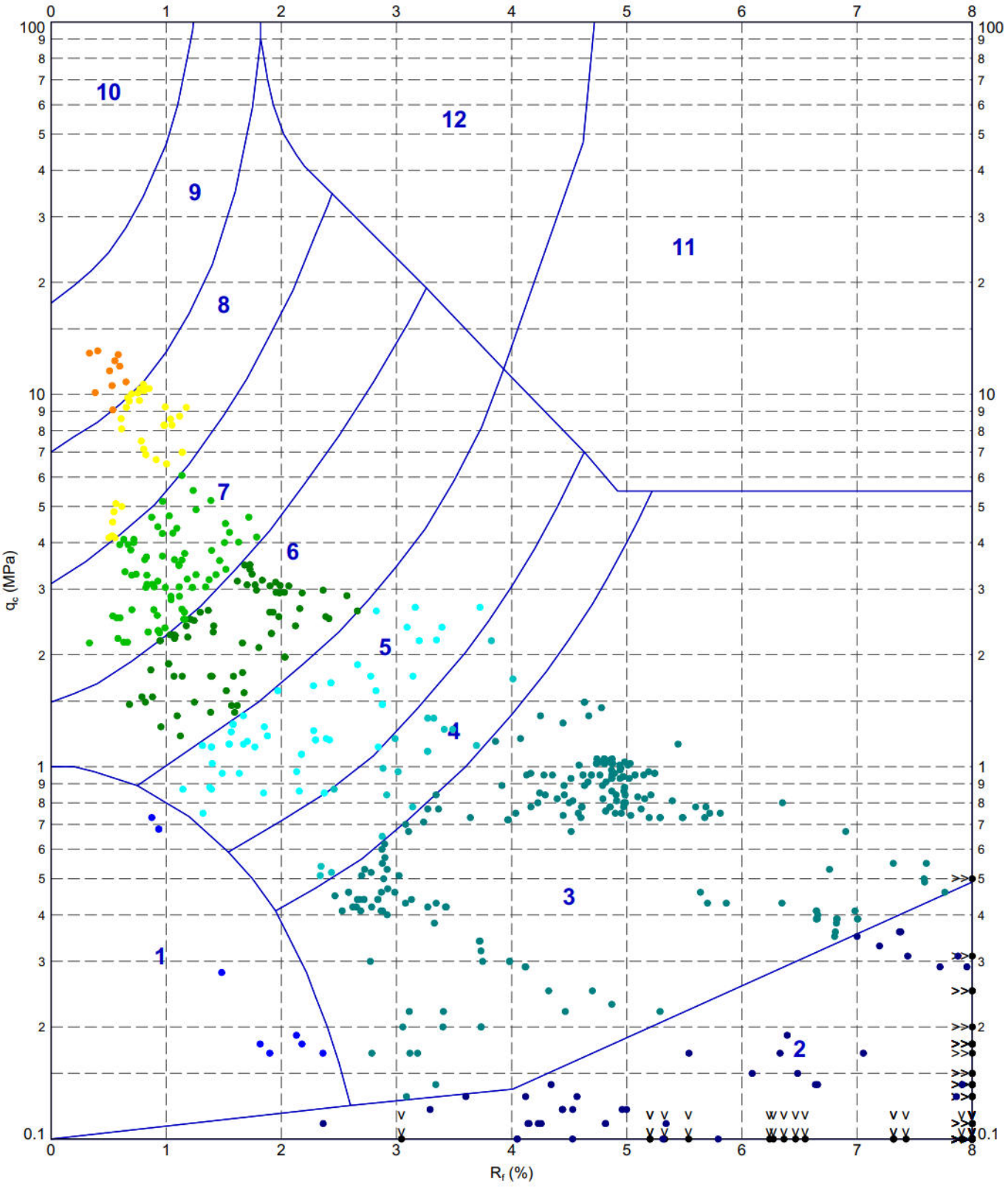
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	219 mV	219 mV	0 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	210 mV	211 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	269 mV	271 mV	0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2286 mV	2284 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP106

DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE Not To Scale	A4
PROJECT No 1240182	FIGURE No

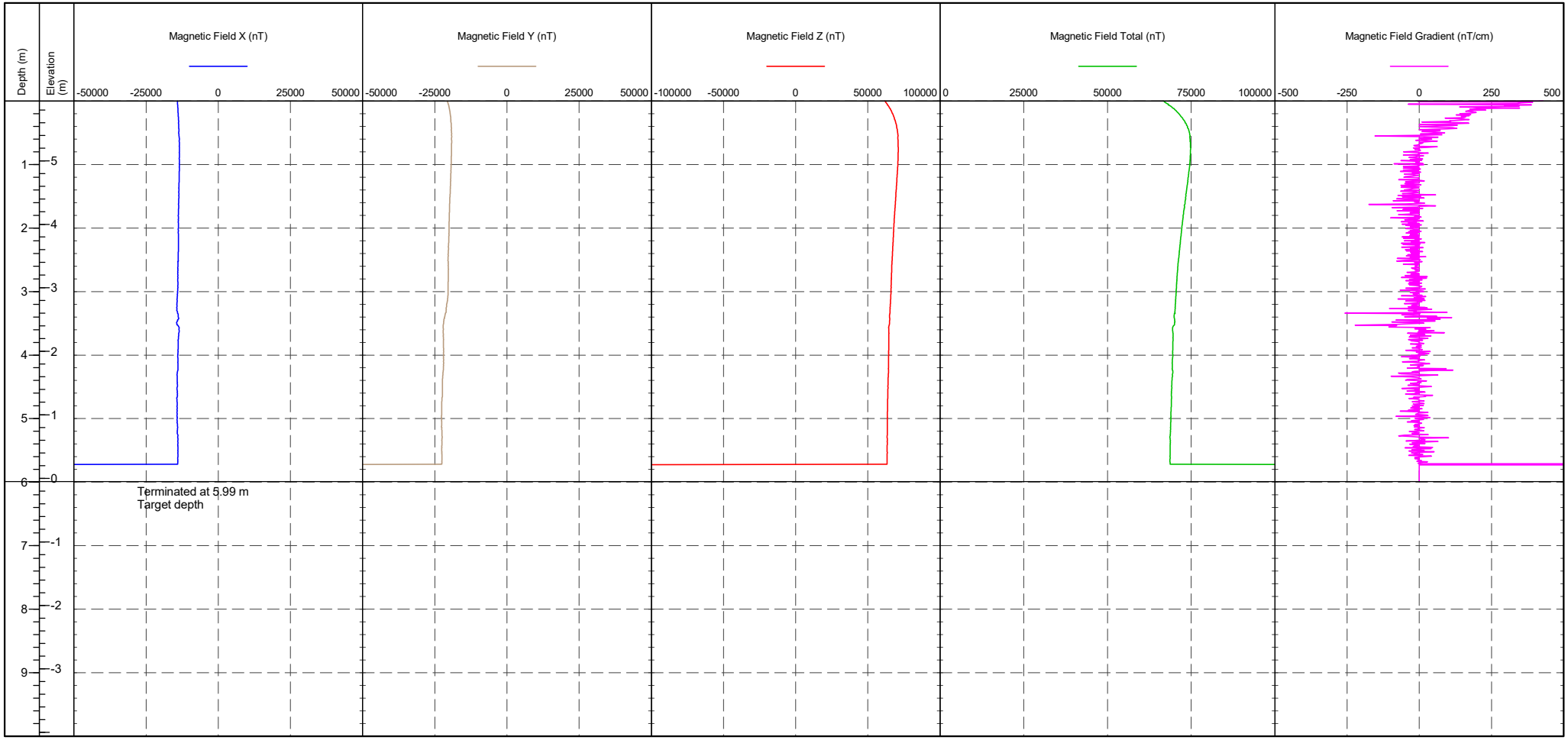
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:29 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP106**

CLIENT : Ground and Water	EASTING : 500013.265 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102089.586 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.941 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



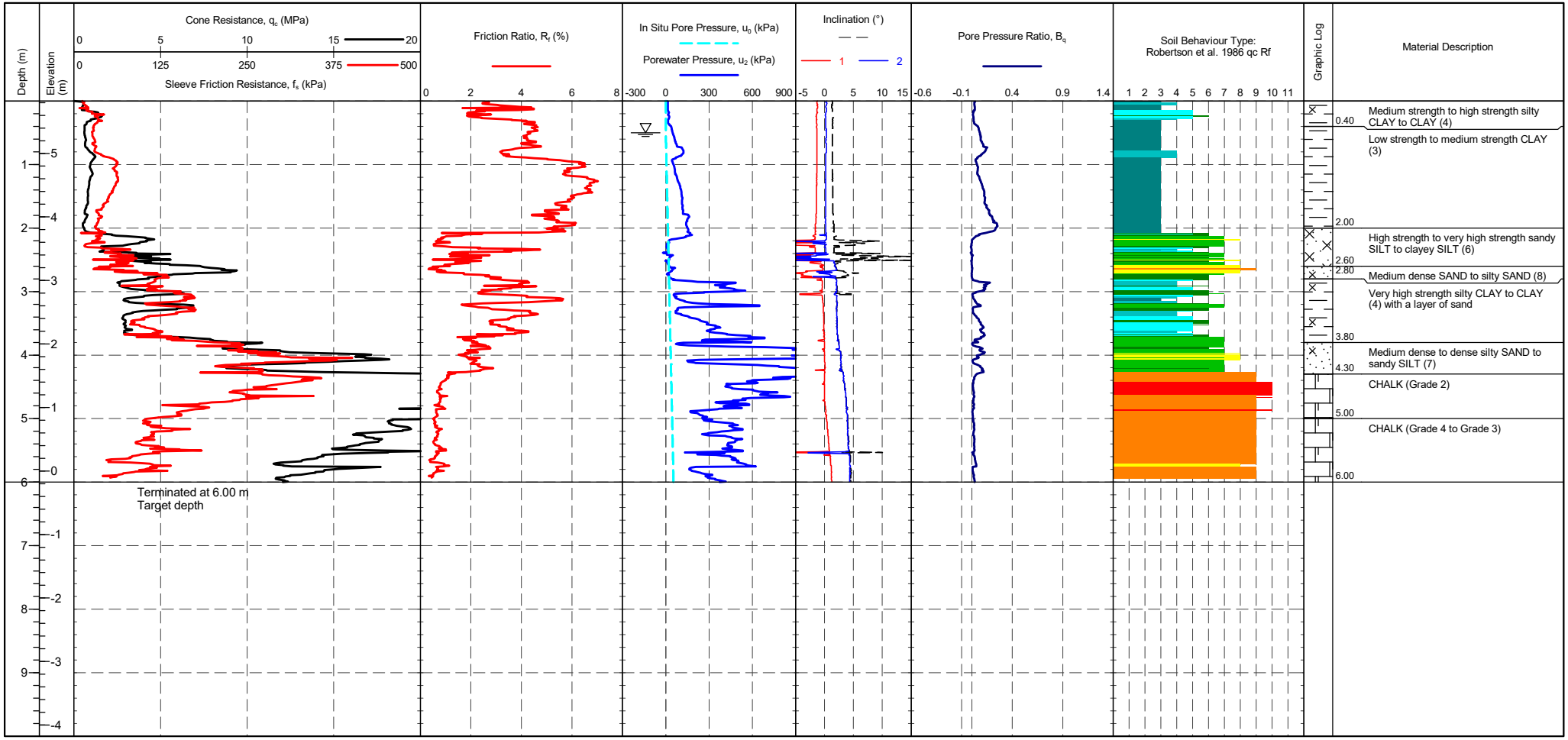
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	219 mV	219 mV	0 MPa
				Sleeve	210 mV	211 mV	0.001 kPa
				Pore Pressure 2	269 mV	271 mV	0.001 kPa
				X-Y Inclinometer	2286 mV	2284 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP107**

CLIENT : Ground and Water	EASTING : 500058.948 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102112.874 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.825 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	220 mV	219 mV	-0.011 MPa
Sleeve	211 mV	212 mV	0.001 kPa
Pore Pressure 2	266 mV	315 mV	0.015 kPa
X-Y Inclinometer	2381 mV	2365 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

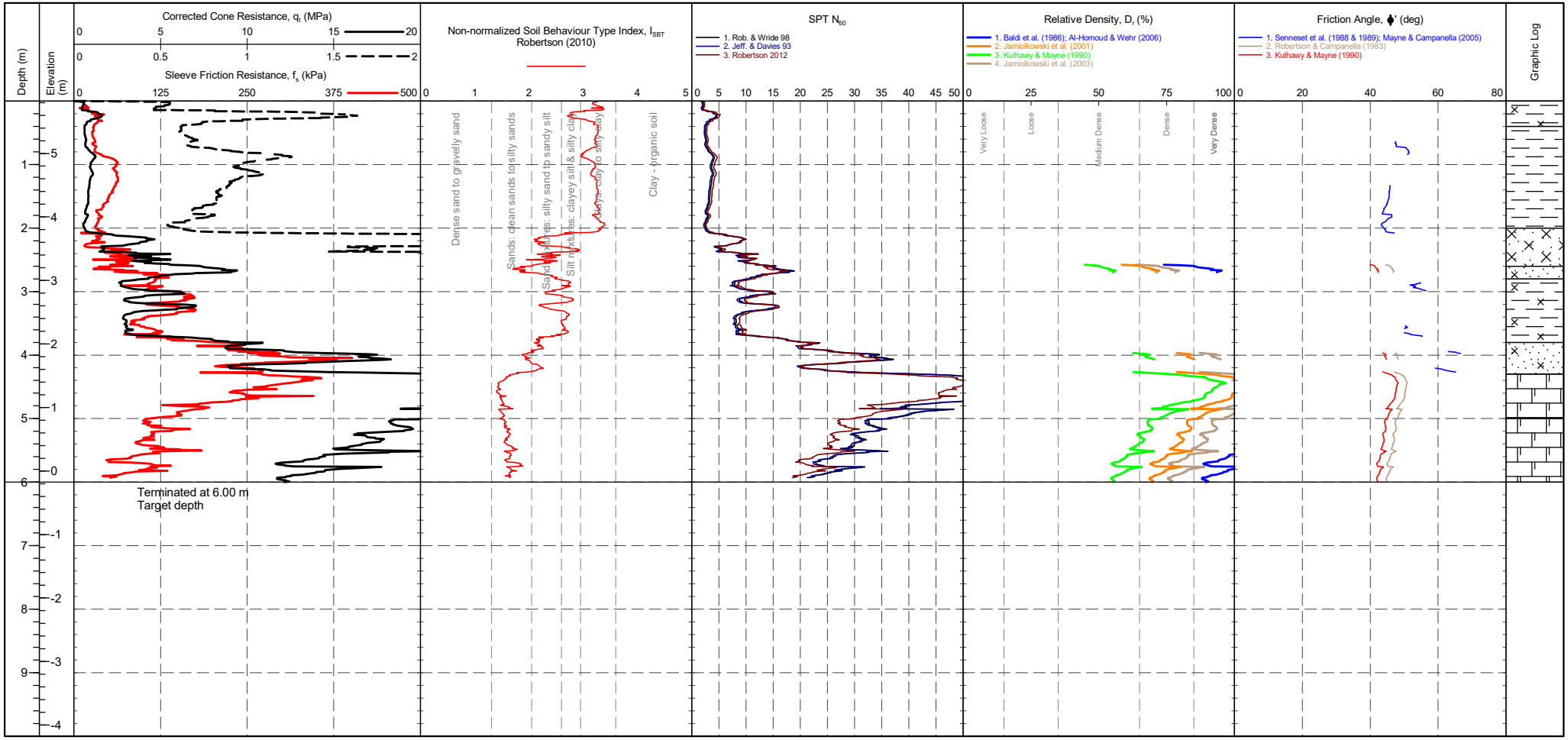
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP107**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500058.948 m NORTHING : 102112.874 m ELEVATION : 5.825 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	220 mV	219 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	211 mV	212 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	266 mV	315 mV	0.015 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2381 mV	2365 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

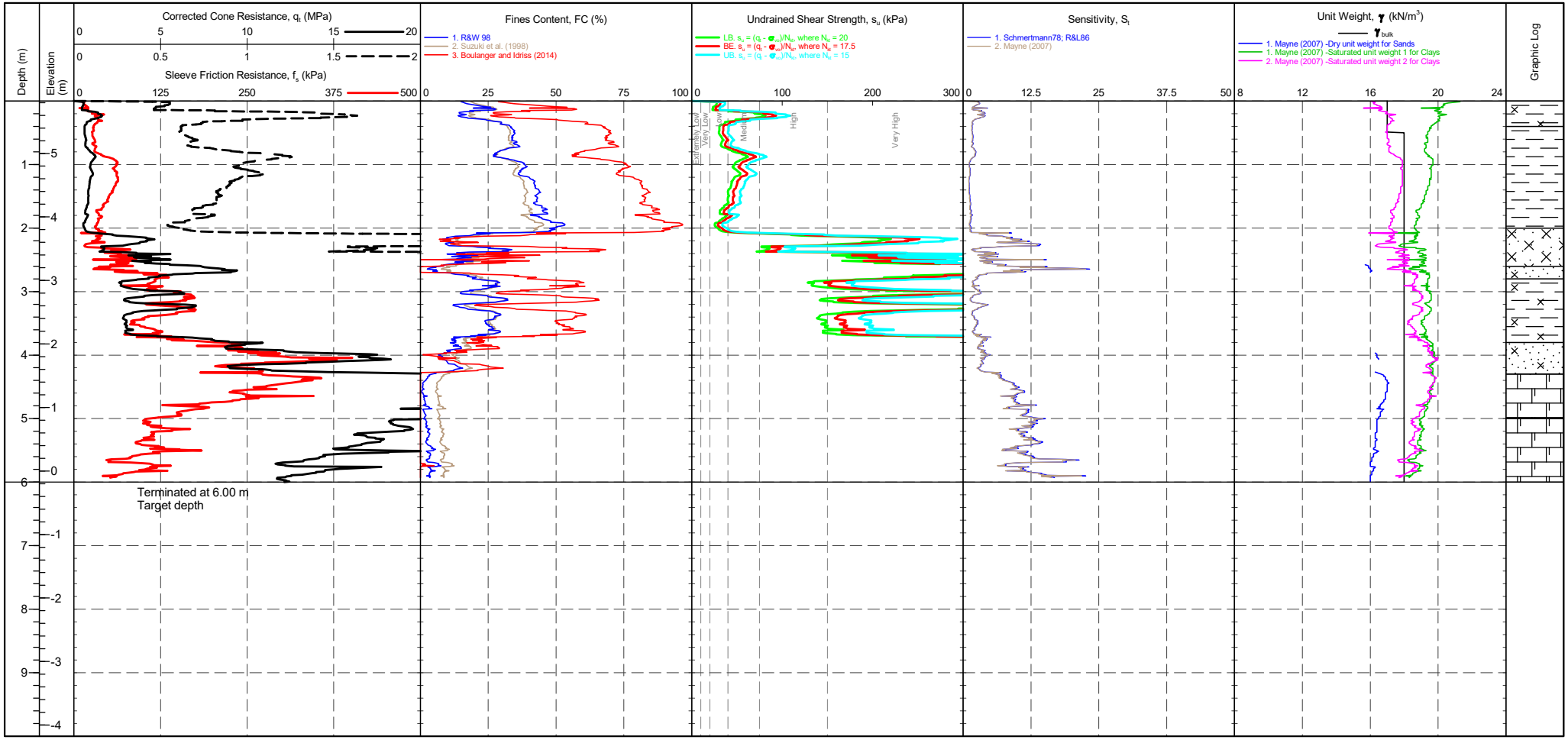
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP107**

CLIENT : Ground and Water	EASTING : 500058.948 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102112.874 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.825 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



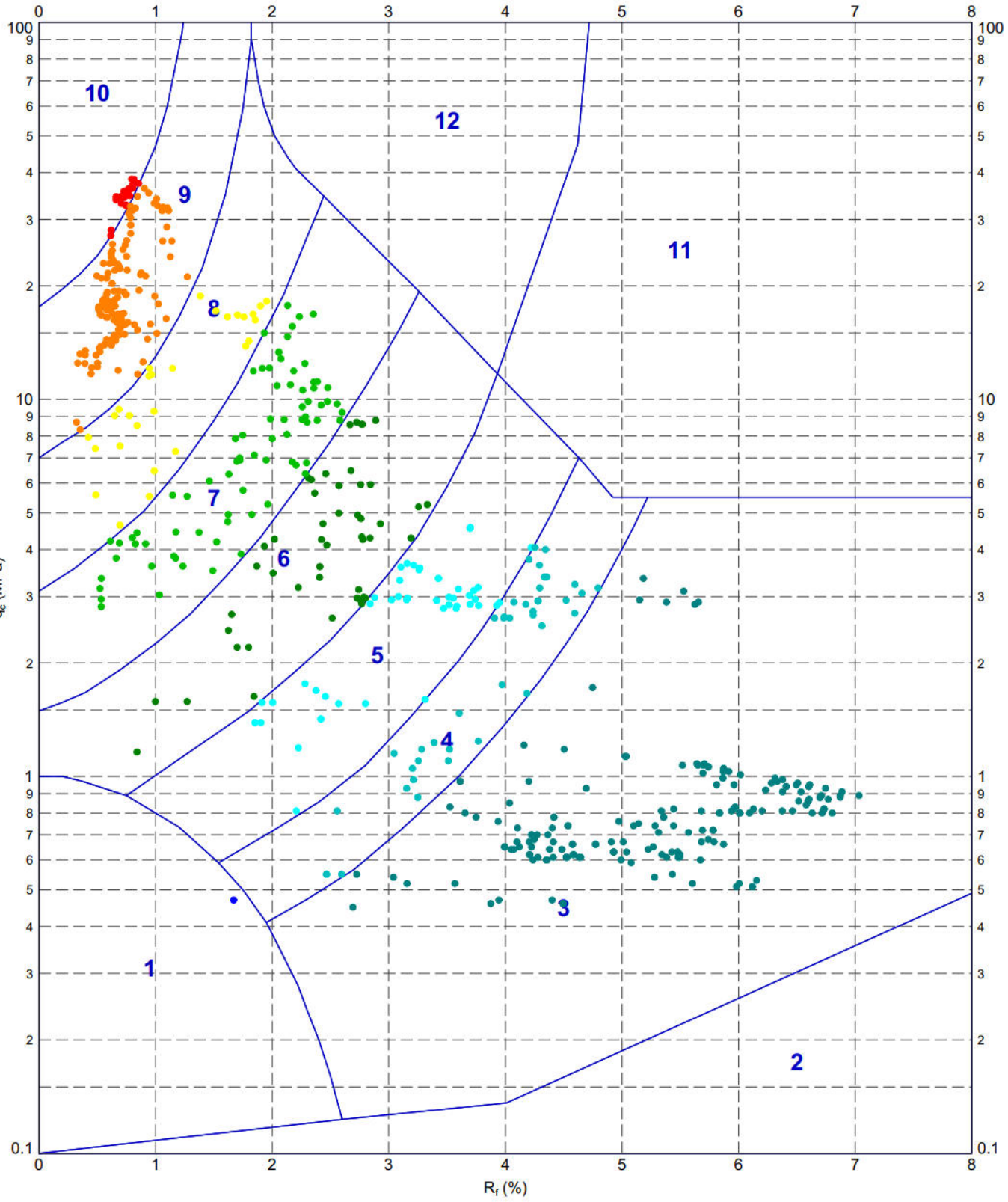
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	220 mV	219 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	211 mV	212 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	266 mV	315 mV	0.015 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2381 mV	2365 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	Ground and Water Climping, West Sussex Church Lane Robertson et al. 1986 q_c vs. R_f - DP107
DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE	Not To Scale — A4
PROJECT No	1240182
FIGURE No	

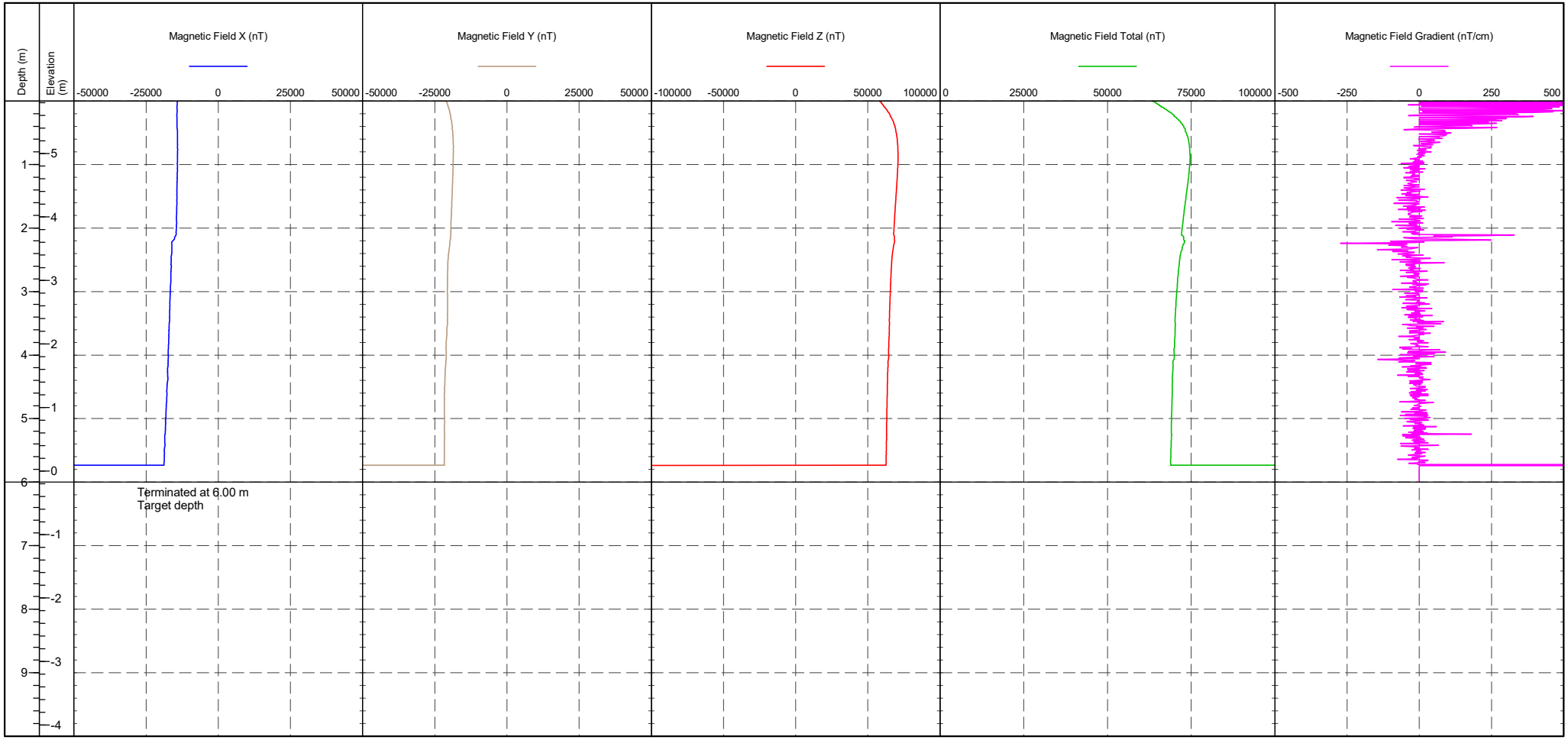
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:30 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP107**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500058.948 m NORTHING : 102112.874 m ELEVATION : 5.825 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



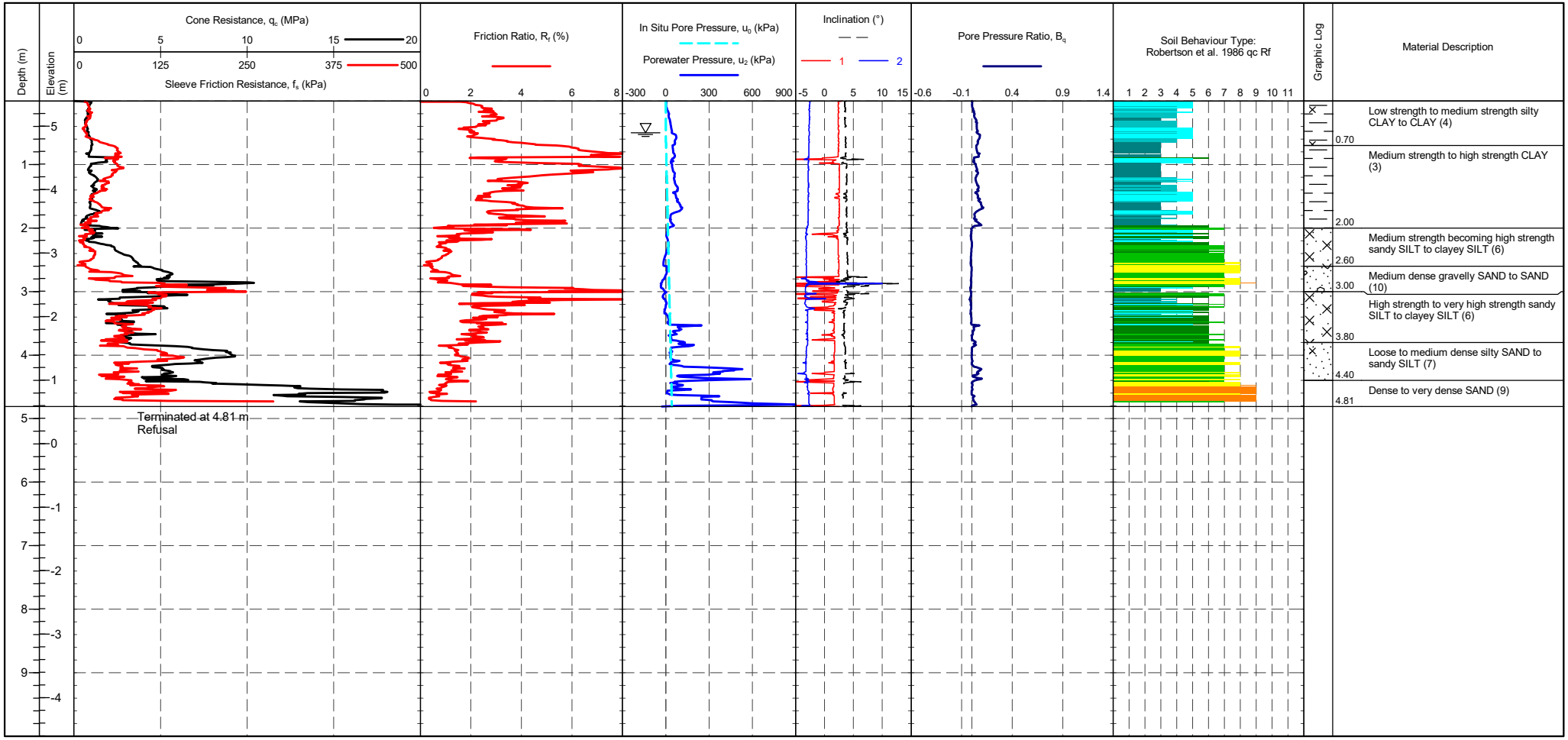
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	220 mV	219 mV	-0.011 MPa
				Sleeve	211 mV	212 mV	0.001 kPa
				Pore Pressure 2	266 mV	315 mV	0.015 kPa
				X-Y Inclinometer	2381 mV	2365 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP108**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500161.582 m NORTHING : 102170.687 m ELEVATION : 5.394 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



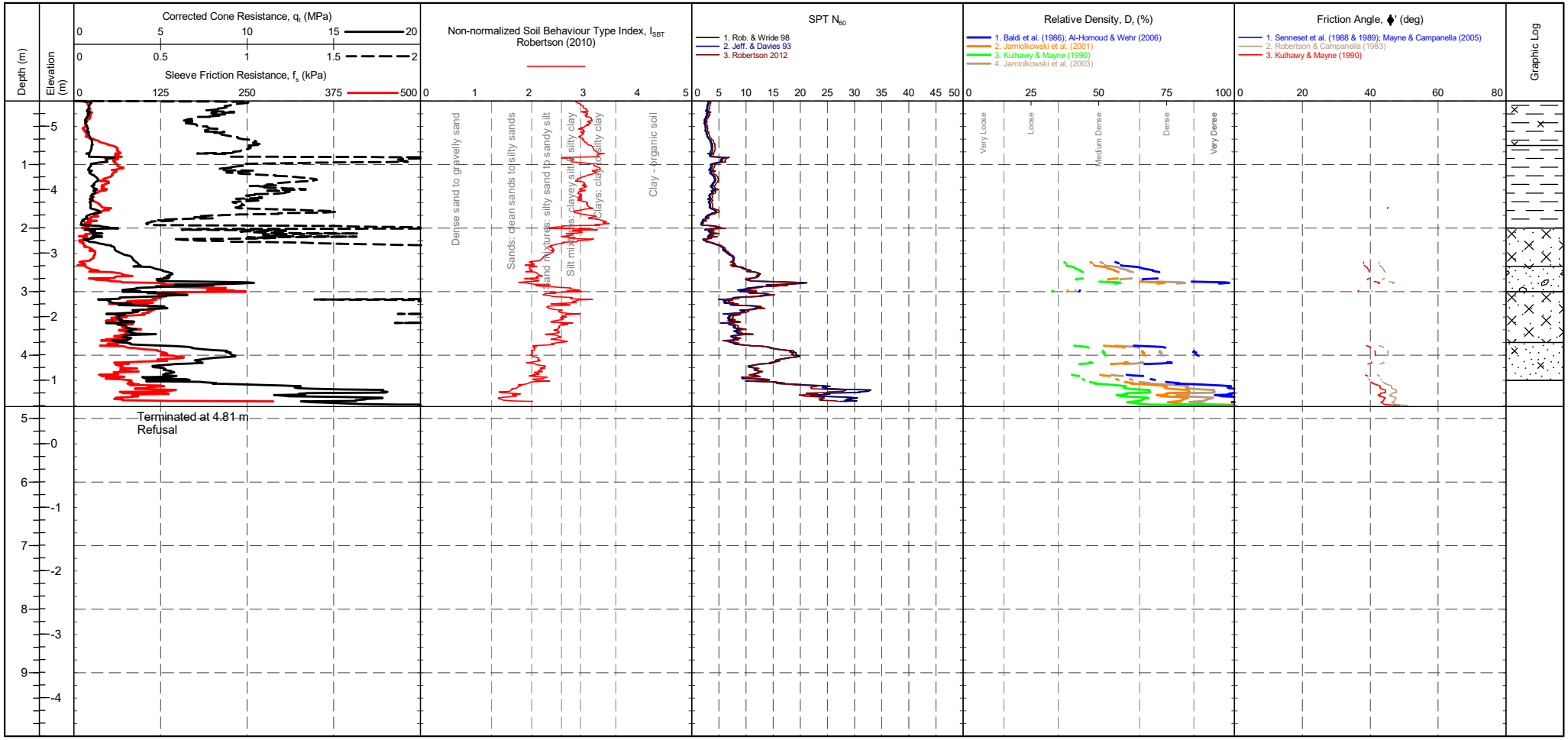
CONE ID : S15-CFIP.1983 CALIBRATION DATE : 16/09/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES Transducer: Pre / Post / Difference Tip: 288 mV / 285 mV / -0.034 MPa Sleeve: 256 mV / 220 mV / -0.026 kPa Pore Pressure 2: 238 mV / 251 mV / 0.003 kPa X-Y Inclinometer: 2697 mV / 2673 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND Groundwater Level Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID **DP108**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500161.582 m NORTHING : 102170.687 m ELEVATION : 5.394 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	288 mV	285 mV	-0.034 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	256 mV	220 mV	-0.026 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	238 mV	251 mV	0.003 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2697 mV	2673 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

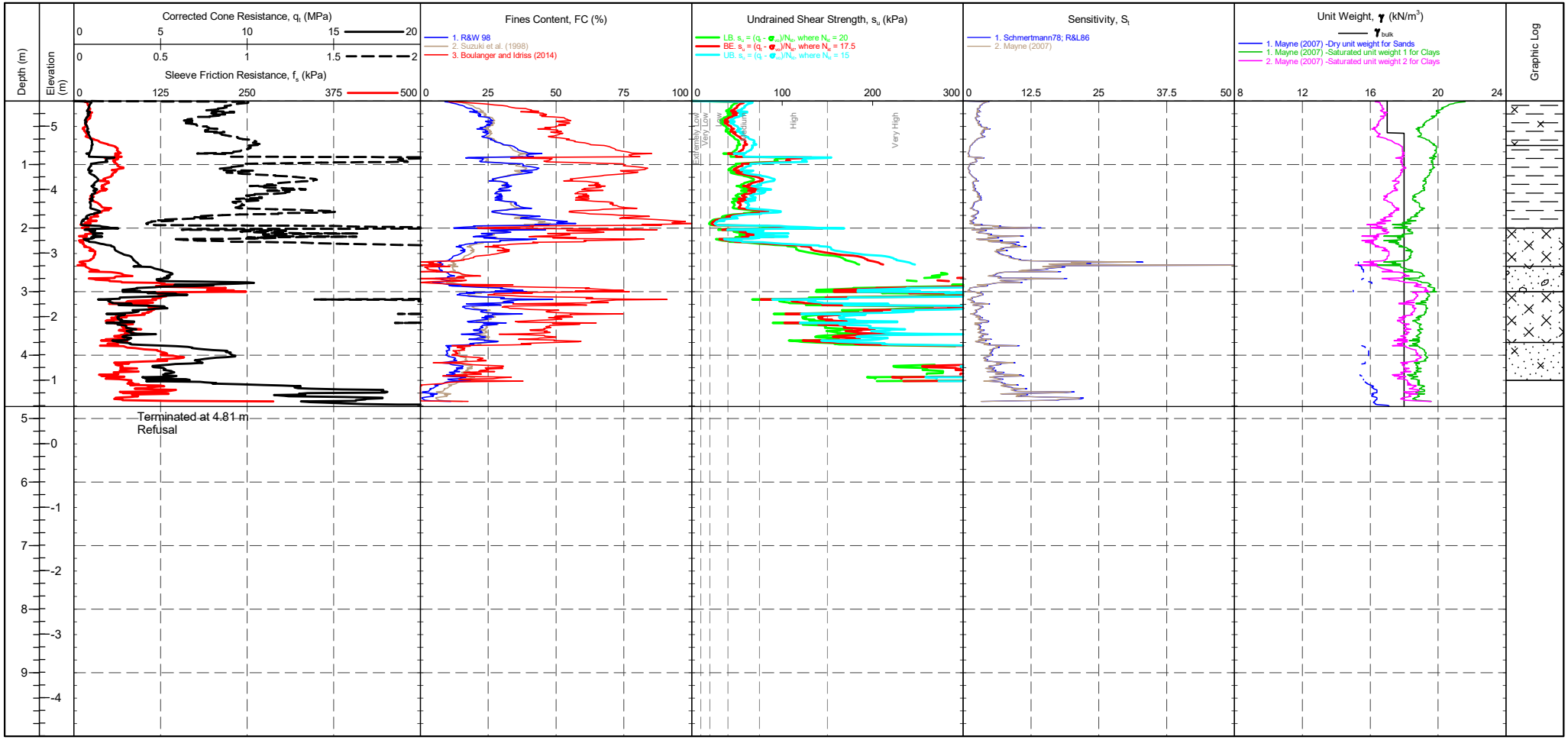
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP108**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500161.582 m NORTHING : 102170.687 m ELEVATION : 5.394 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



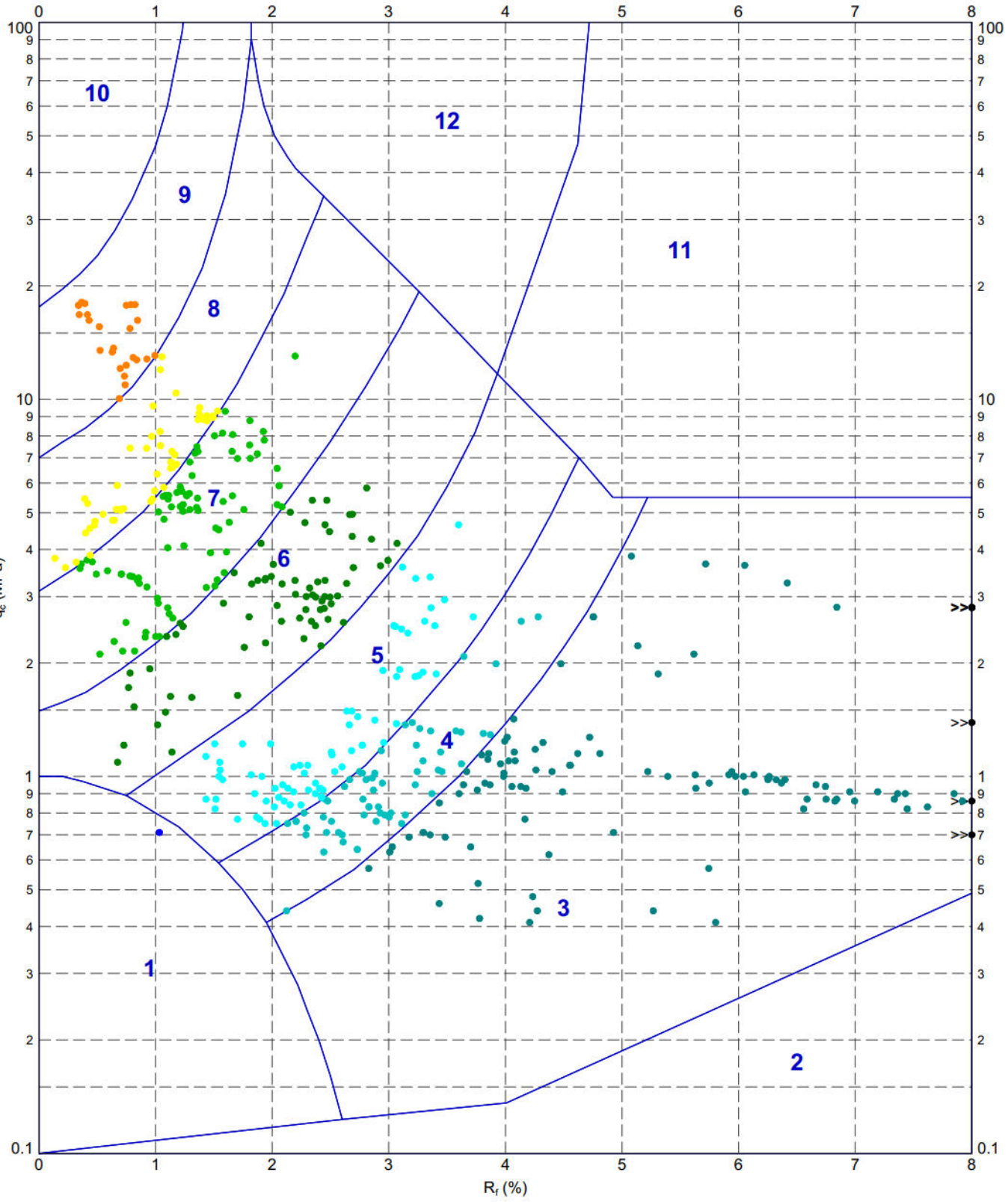
CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	288 mV	285 mV	-0.034 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	256 mV	220 mV	-0.026 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	238 mV	251 mV	0.003 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2697 mV	2673 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP108

DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE Not To Scale	A4
PROJECT No 1240182	FIGURE No

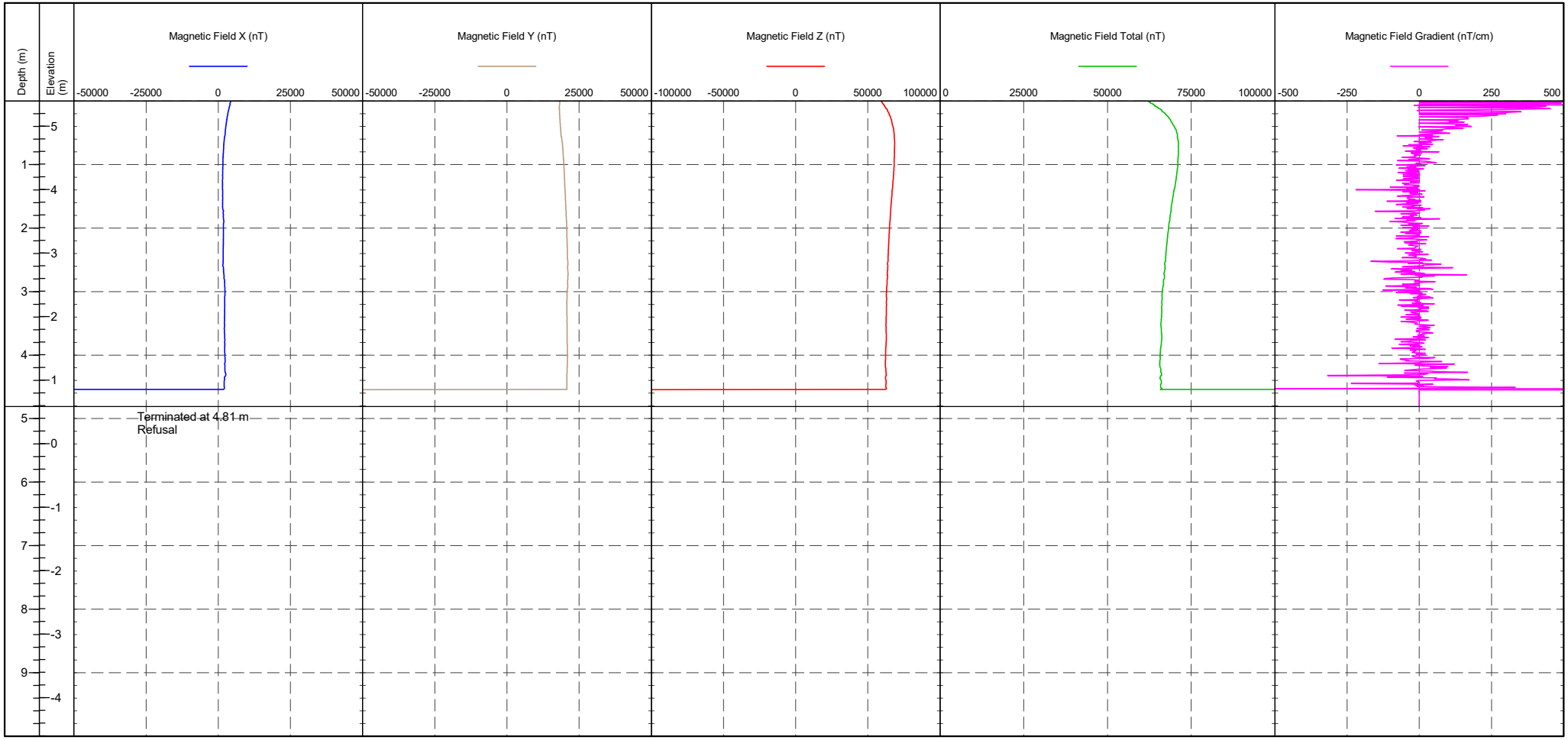
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:31 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP108**

CLIENT : Ground and Water	EASTING : 500161.582 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102170.687 m	Test refused on total pressure.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.394 m OD		TEST DATE : 13/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



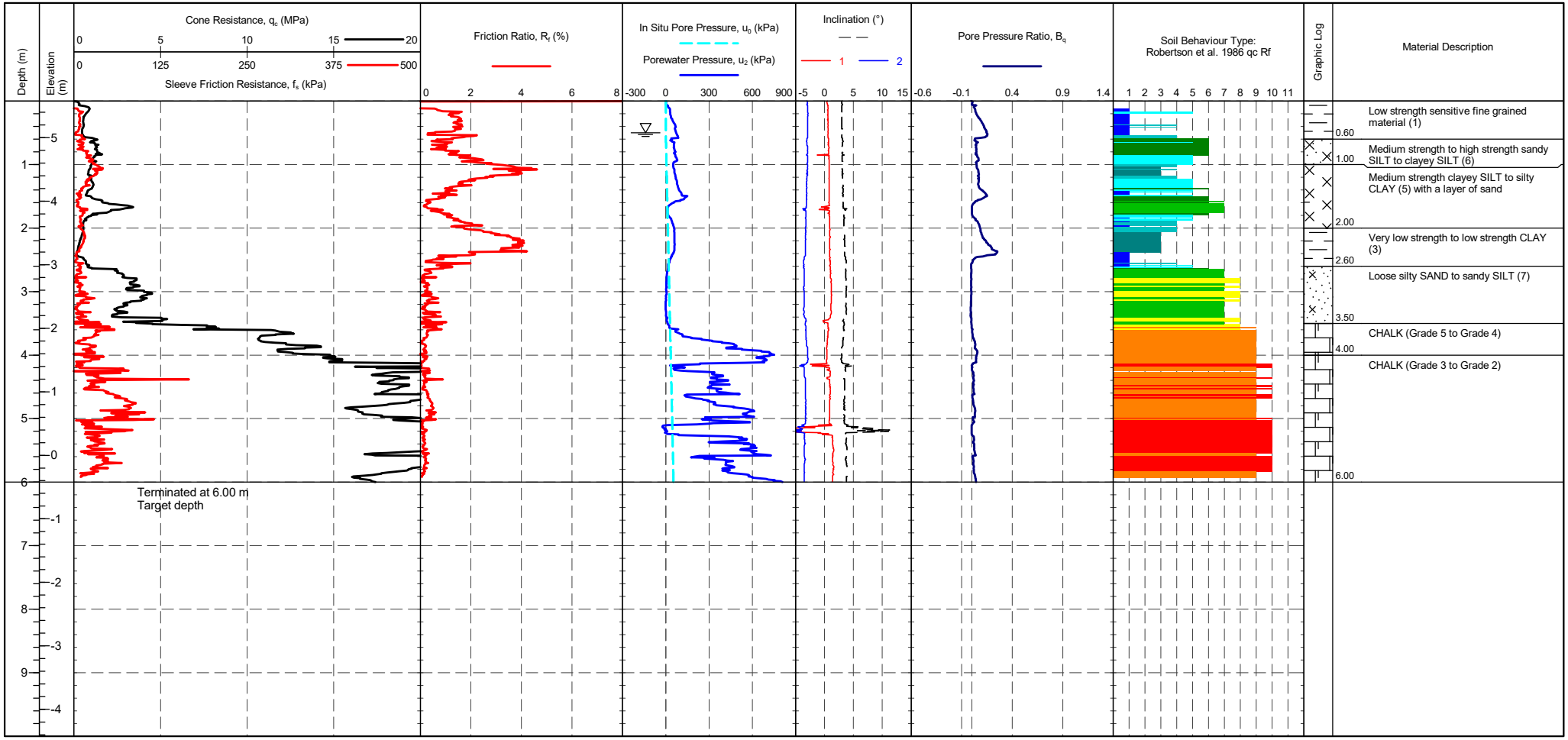
				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1983	RIG	: CPT 017 - Griffen	Transducer	Pre	Post	Difference
CONE MODEL	: Subtraction	OPERATOR	: DHo	Tip	288 mV	285 mV	-0.034 MPa
				Sleeve	256 mV	220 mV	-0.026 kPa
				Pore Pressure 2	238 mV	251 mV	0.003 kPa
				X-Y Inclinometer	2697 mV	2673 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP109**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500203.431 m NORTHING : 102180.638 m ELEVATION : 5.578 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1983 CALIBRATION DATE : 16/09/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES	

Transducer	Pre	Post	Difference
Tip	290 mV	287 mV	-0.034 MPa
Sleeve	210 mV	211 mV	0.001 kPa
Pore Pressure 2	242 mV	237 mV	-0.001 kPa
X-Y Inclinometer	2447 mV	2463 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

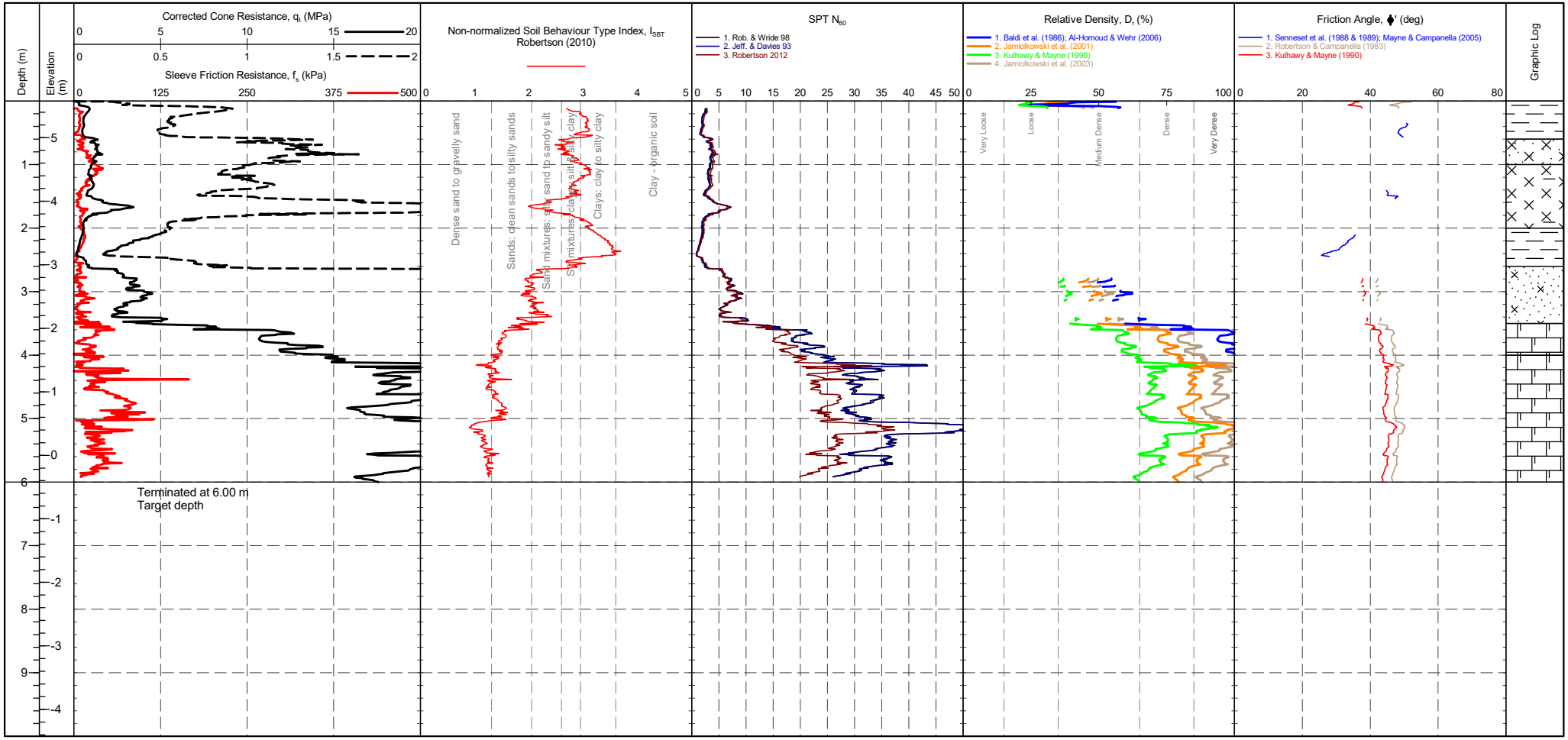
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP109**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500203.431 m NORTHING : 102180.638 m ELEVATION : 5.578 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2			
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen			
CONE AREA RATIO	: 0.79	OPERATOR	: DHo			
FILTER POSITION	: u2	FRICTION REDUCER	: None			
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold			

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	290 mV	287 mV	-0.034 MPa
Sleeve	210 mV	211 mV	0.001 kPa
Pore Pressure 2	242 mV	237 mV	-0.001 kPa
X-Y Inclinometer	2447 mV	2463 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

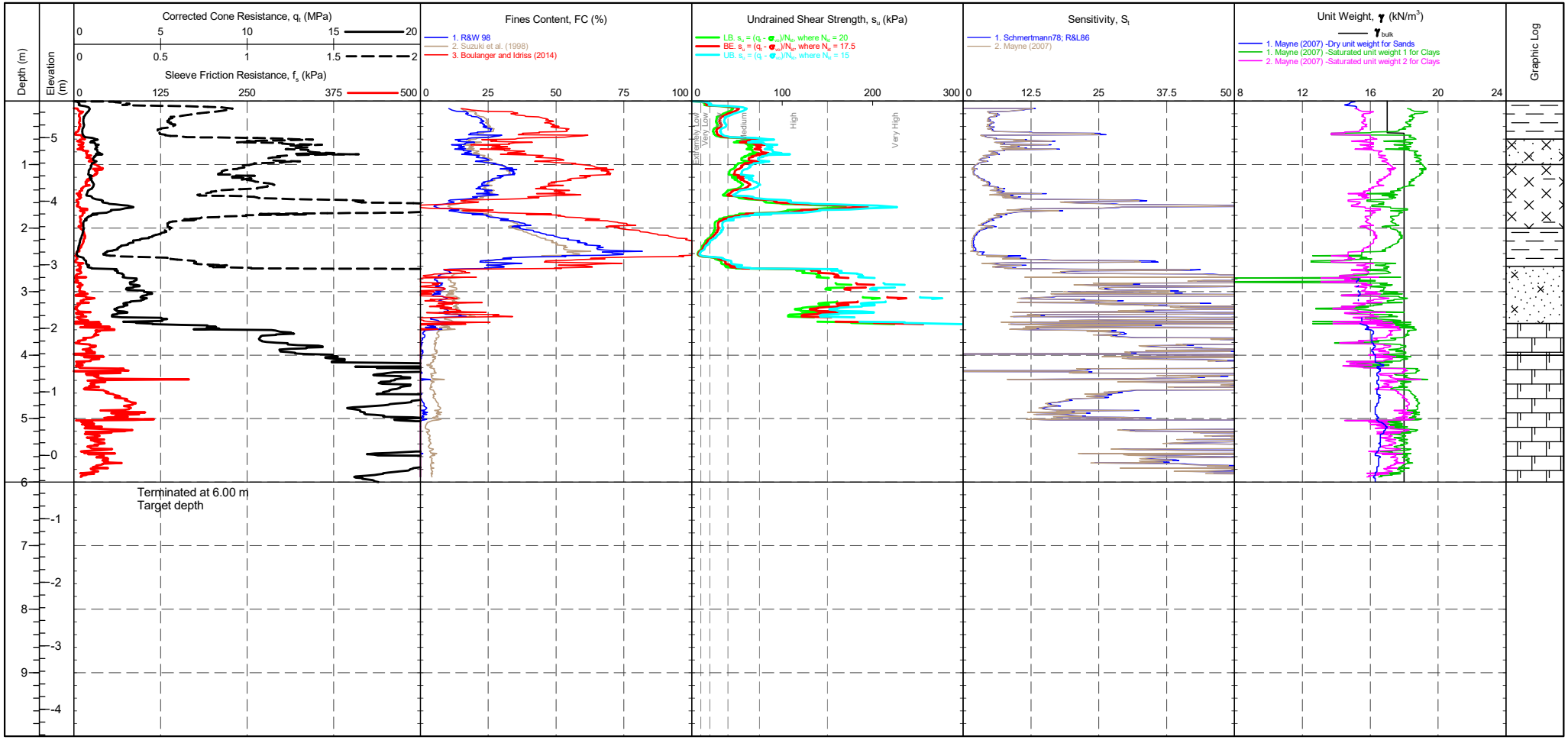
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP109**

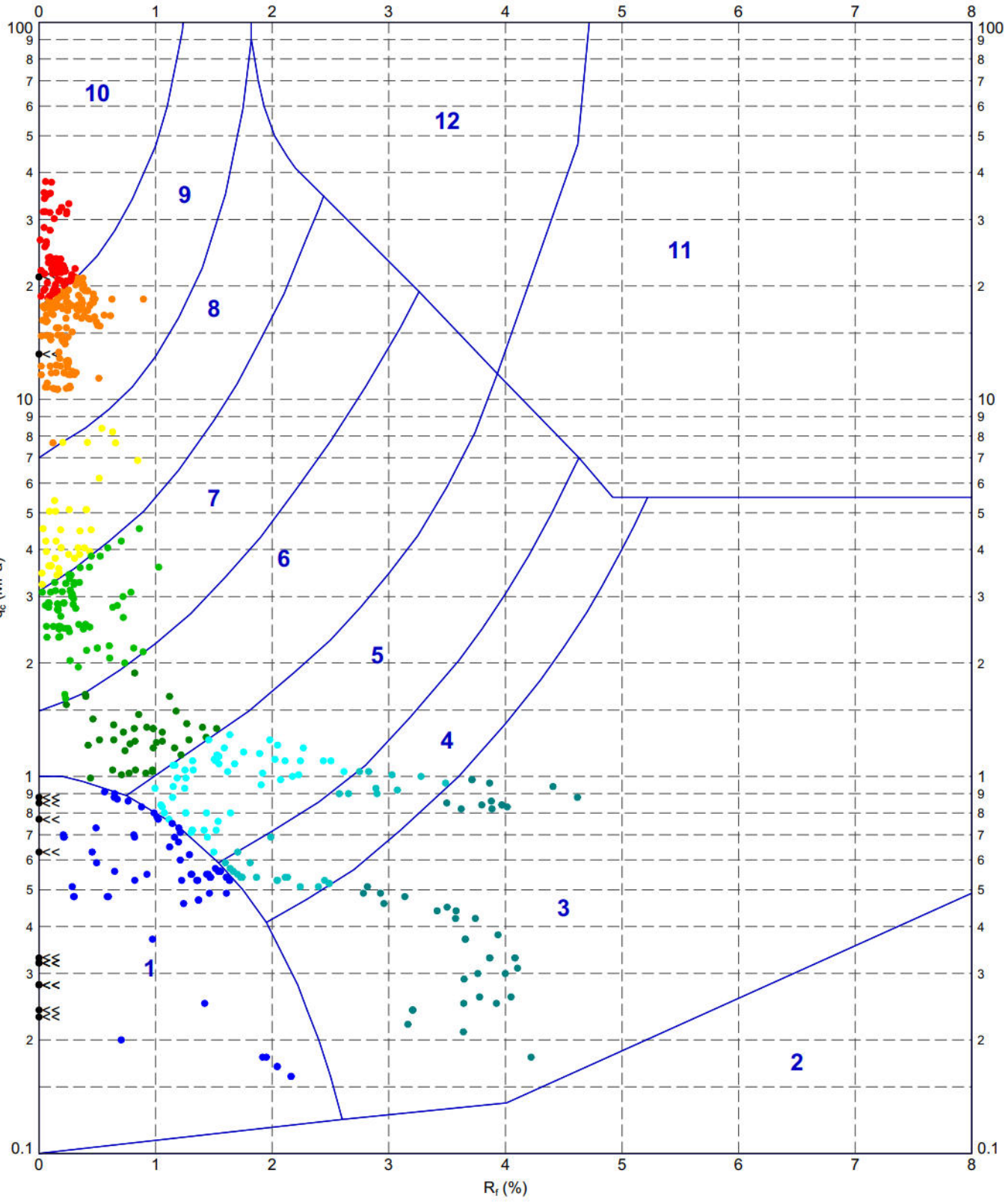
CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500203.431 m NORTHING : 102180.638 m ELEVATION : 5.578 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2	CPTU ZERO VALUES				COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference	Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	290 mV	287 mV	-0.034 MPa	Extremely low strength	<10	Medium strength	40-75
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	210 mV	211 mV	0.001 kPa	Very low strength	10-20	High strength	75-150
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	242 mV	237 mV	-0.001 kPa	Low strength	20-40	Very high strength	150-300
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2447 mV	2463 mV				Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE: Ground and Water Climping, West Sussex Church Lane Robertson et al. 1986 q_c vs. R_f - DP109	DRAWN	DATE 12/04/2024	
	CHECKED	DATE 12/04/2024	
	SCALE Not To Scale		A4
	PROJECT No 1240182	FIGURE No	

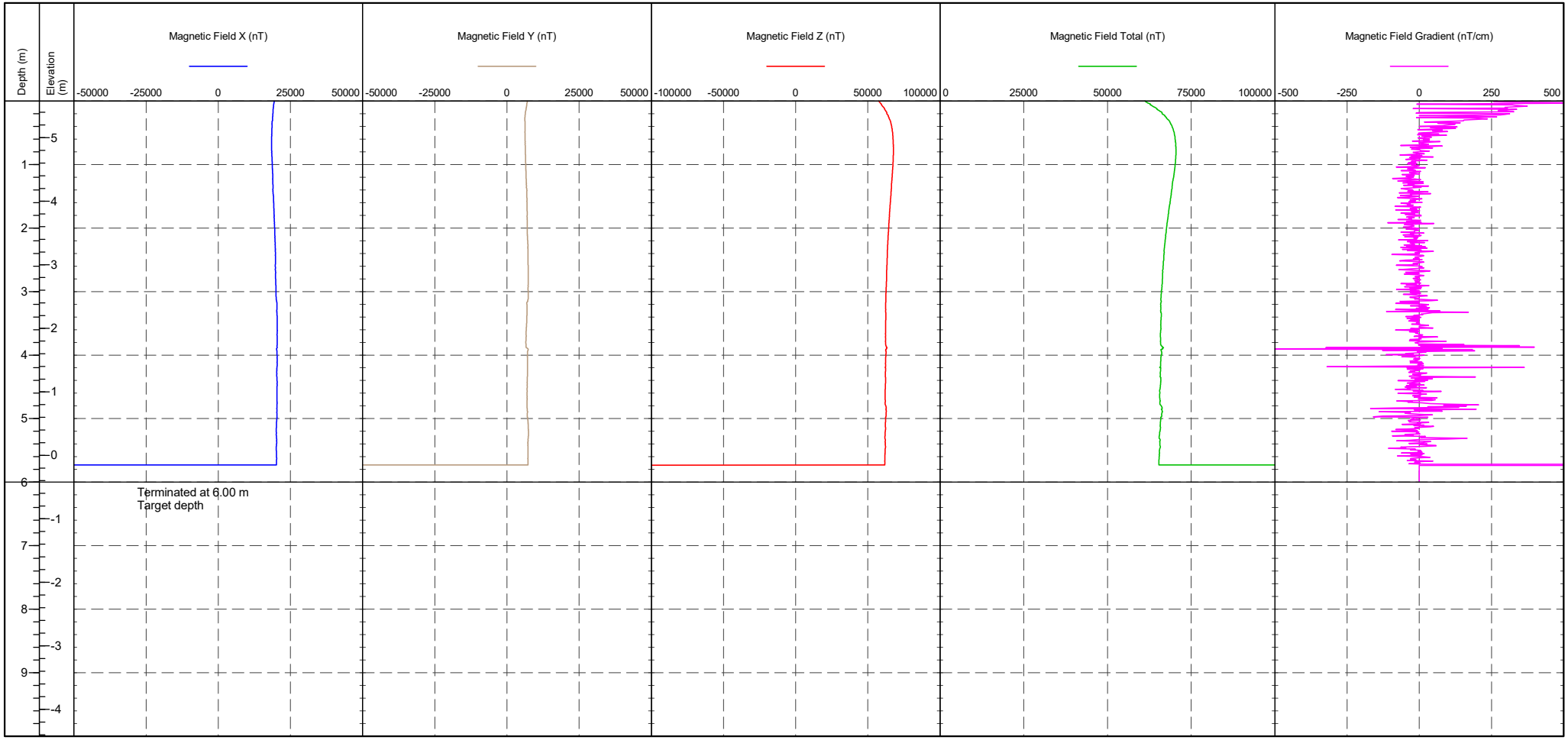
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:32 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP109**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500203.431 m NORTHING : 102180.638 m ELEVATION : 5.578 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



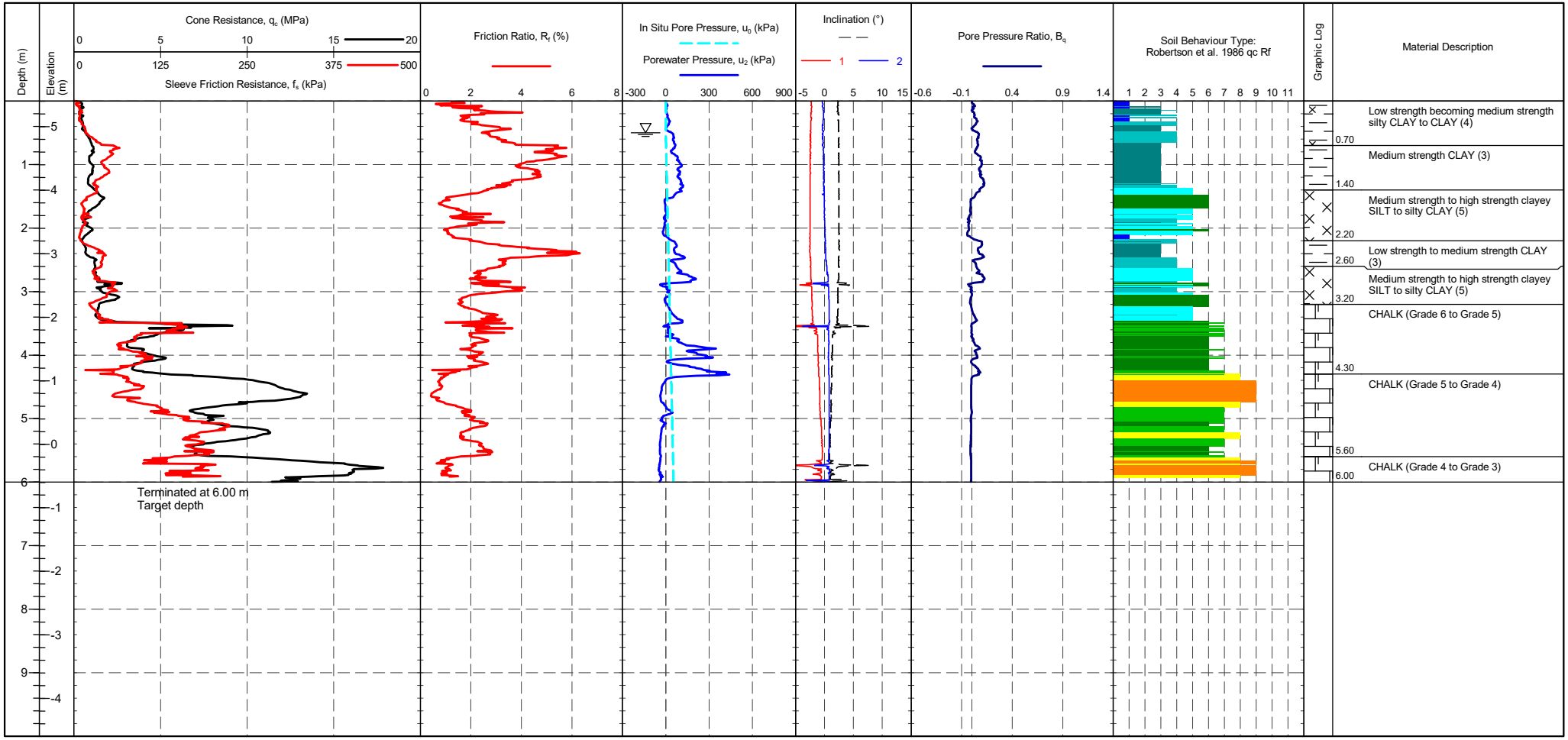
CONE ID	: S15-CFIP.1983	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	290 mV	287 mV	-0.034 MPa
				Sleeve	210 mV	211 mV	0.001 kPa
				Pore Pressure 2	242 mV	237 mV	-0.001 kPa
				X-Y Inclinometer	2447 mV	2463 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID **DP110**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500265.933 m NORTHING : 102197.833 m ELEVATION : 5.405 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	218 mV	-0.033 MPa
Sleeve	220 mV	215 mV	-0.004 kPa
Pore Pressure 2	264 mV	253 mV	-0.003 kPa
X-Y Inclinometer	2266 mV	2268 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

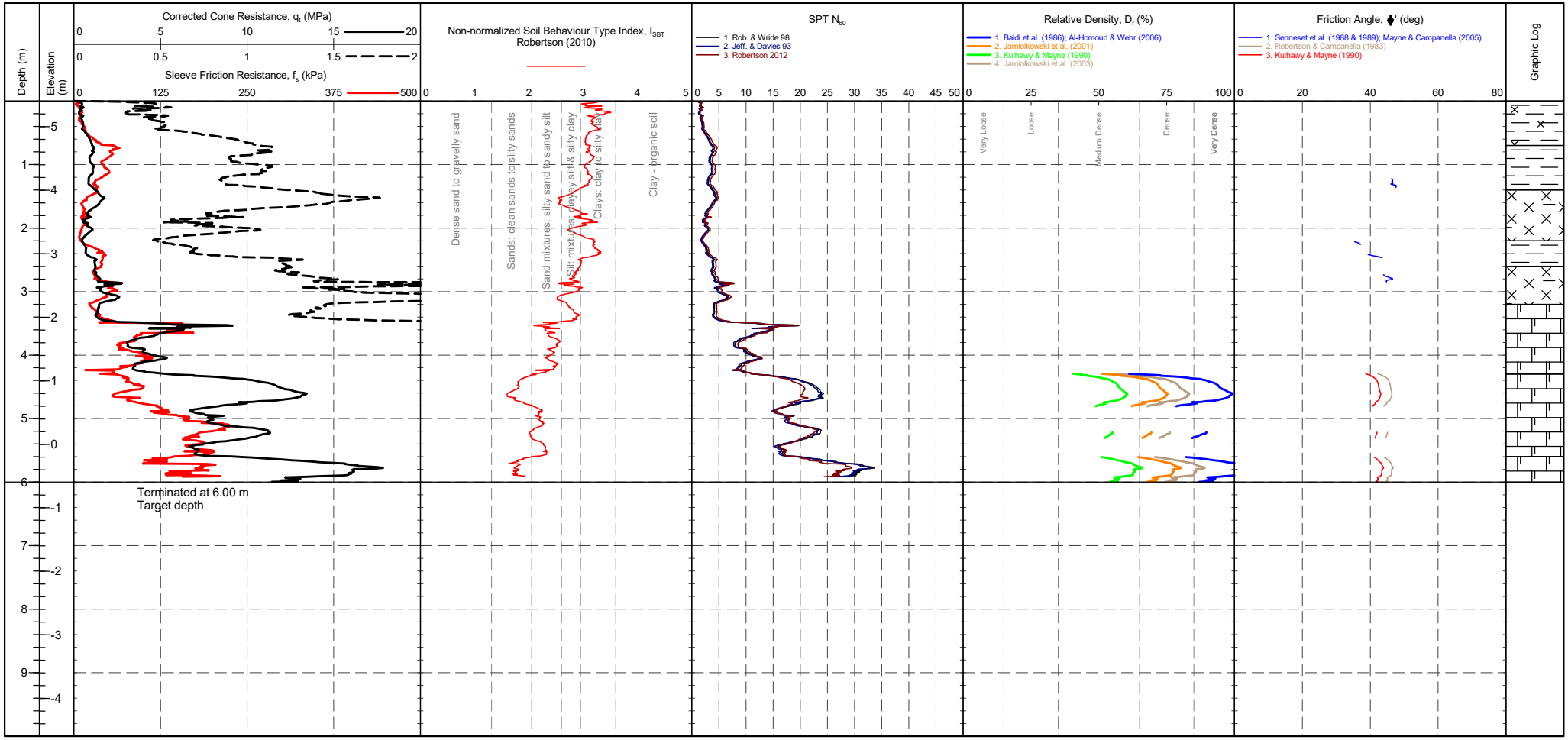
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID **DP110**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500265.933 m NORTHING : 102197.833 m ELEVATION : 5.405 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	221 mV	218 mV	-0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	220 mV	215 mV	-0.004 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	264 mV	253 mV	-0.003 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2266 mV	2268 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

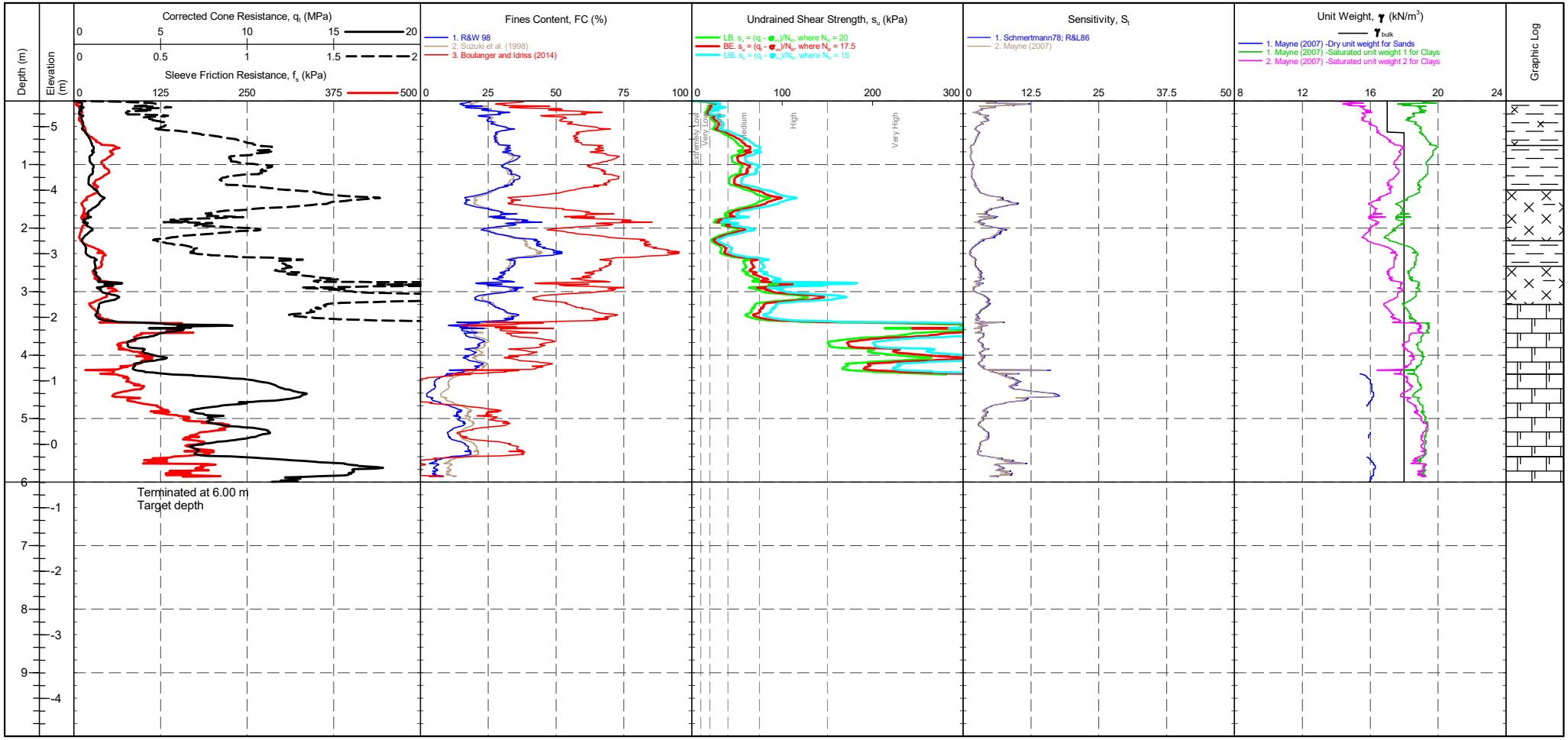
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP110**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500265.933 m NORTHING : 102197.833 m ELEVATION : 5.405 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2				
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2				
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen				
CONE AREA RATIO	: 0.79	OPERATOR	: DHo				
FILTER POSITION	: u2	FRICTION REDUCER	: None				
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold				

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	218 mV	-0.033 MPa
Sleeve	220 mV	215 mV	-0.004 kPa
Pore Pressure 2	264 mV	253 mV	-0.003 kPa
X-Y Inclinometer	2266 mV	2268 mV	

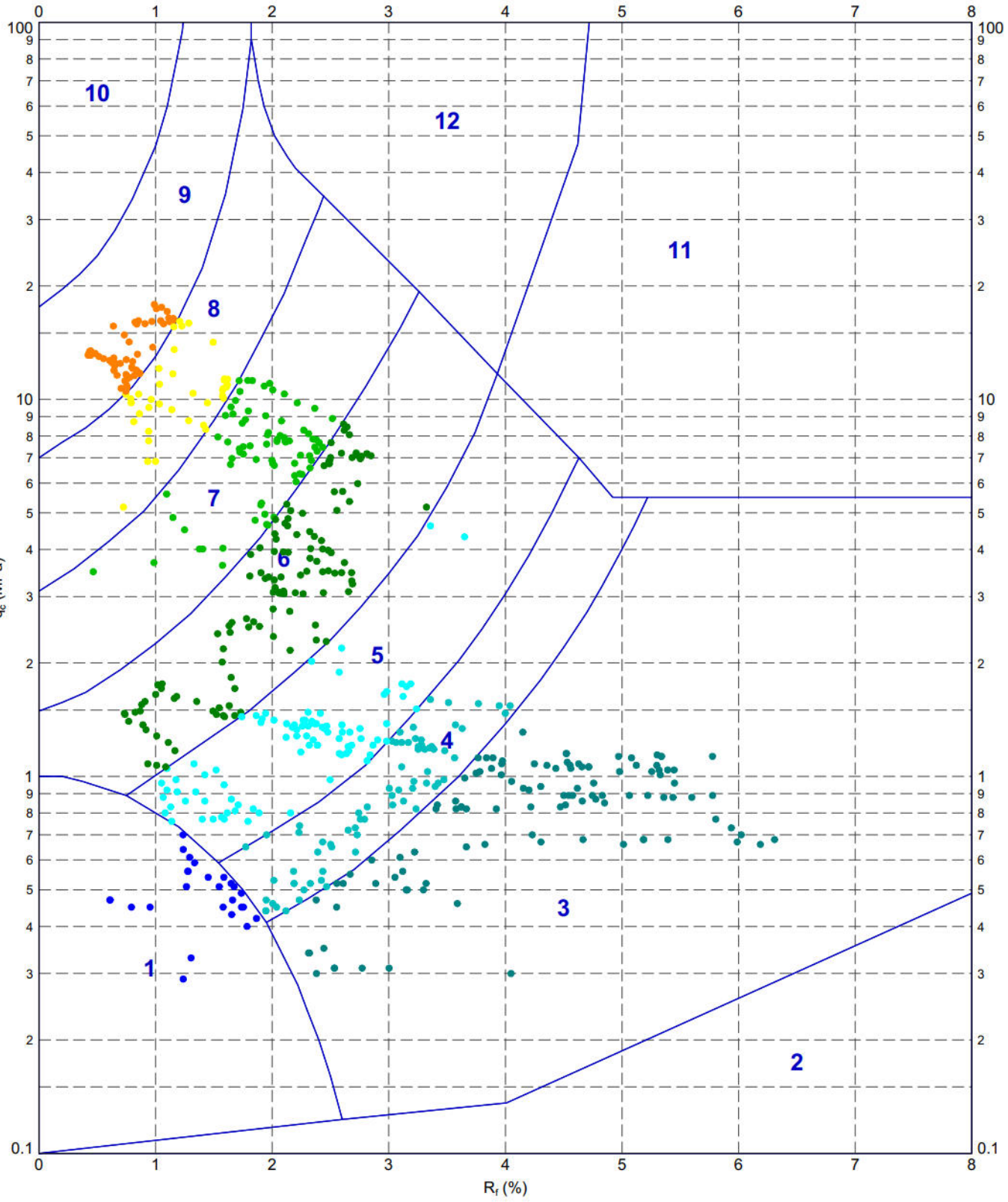
COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)
Extremely low strength	<10
Very low strength	10-20
Low strength	20-40

Term based on measurement	su (kPa)
Medium strength	40-75
High strength	75-150
Very high strength	150-300
Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	Ground and Water Climping, West Sussex Church Lane Robertson et al. 1986 q_c vs. R_f - DP110
DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE	Not To Scale — A4
PROJECT No	1240182
FIGURE No	

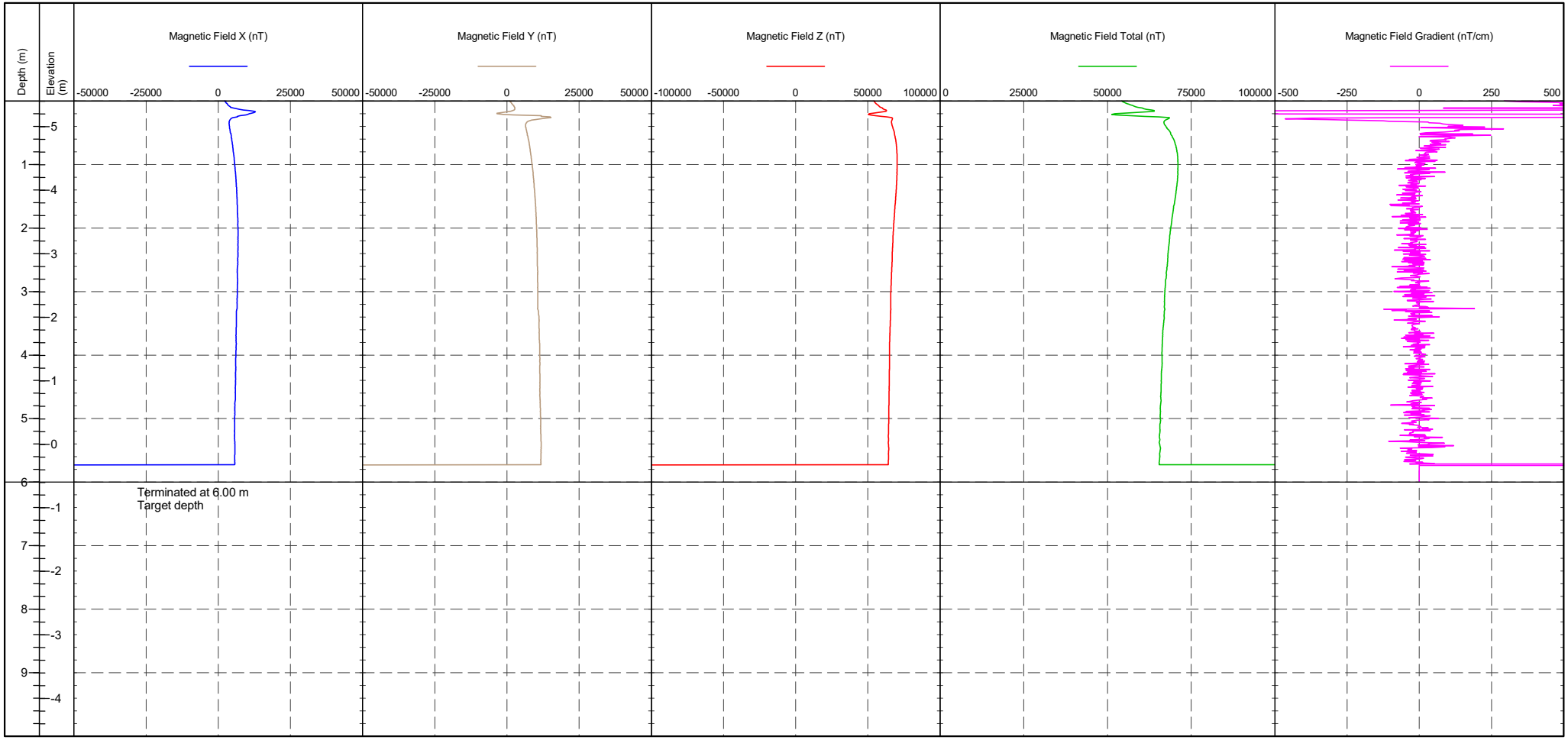
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:33 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID **DP110**

CLIENT : Ground and Water	EASTING : 500265.933 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102197.833 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.405 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



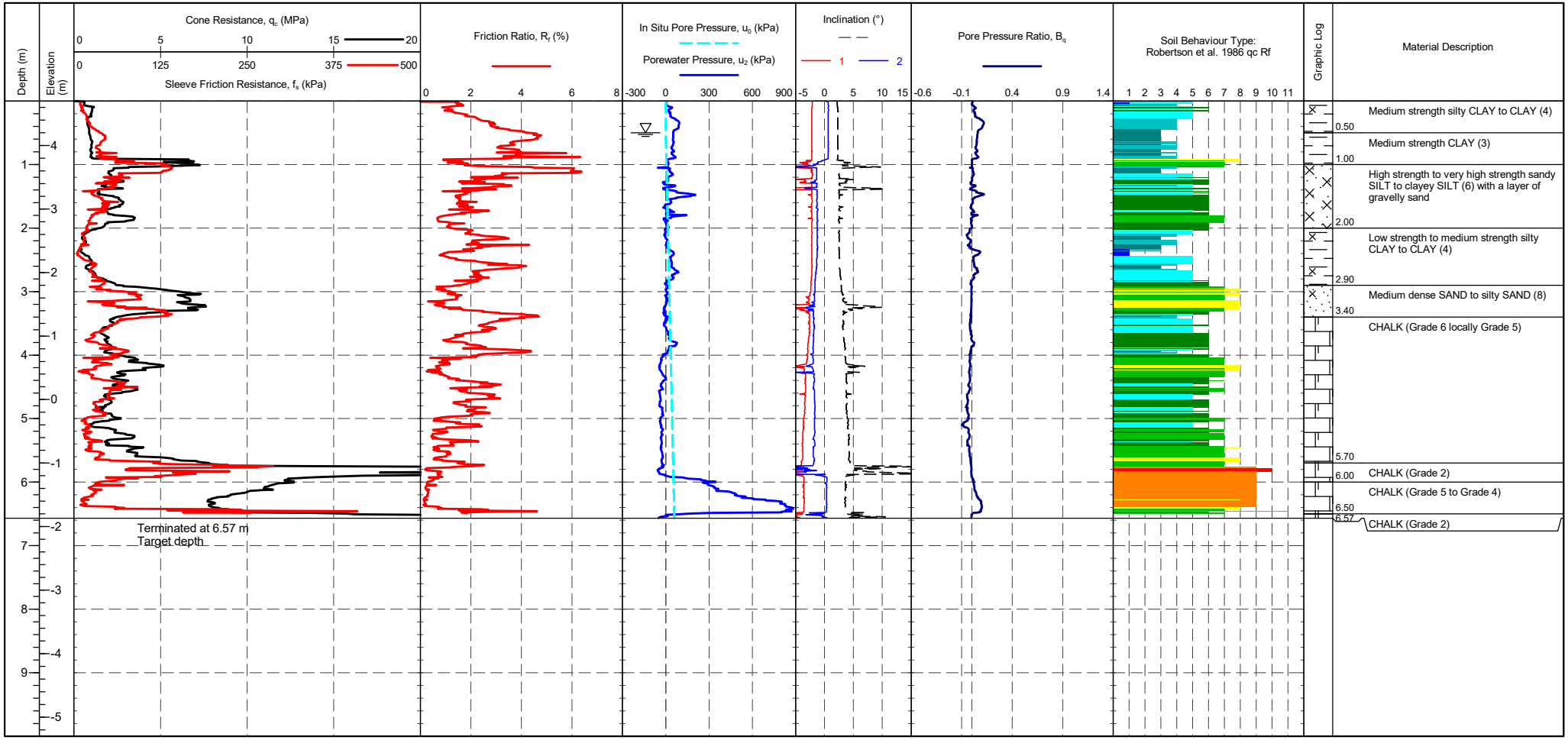
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	221 mV	218 mV	-0.033 MPa
				Sleeve	220 mV	215 mV	-0.004 kPa
				Pore Pressure 2	264 mV	253 mV	-0.003 kPa
				X-Y Inclinometer	2266 mV	2268 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP111**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500326.624 m NORTHING : 102218.872 m ELEVATION : 4.700 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	219 mV	-0.033 MPa
Sleeve	222 mV	219 mV	-0.002 kPa
Pore Pressure 2	271 mV	257 mV	-0.004 kPa
X-Y Inclinometer	2275 mV	2286 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

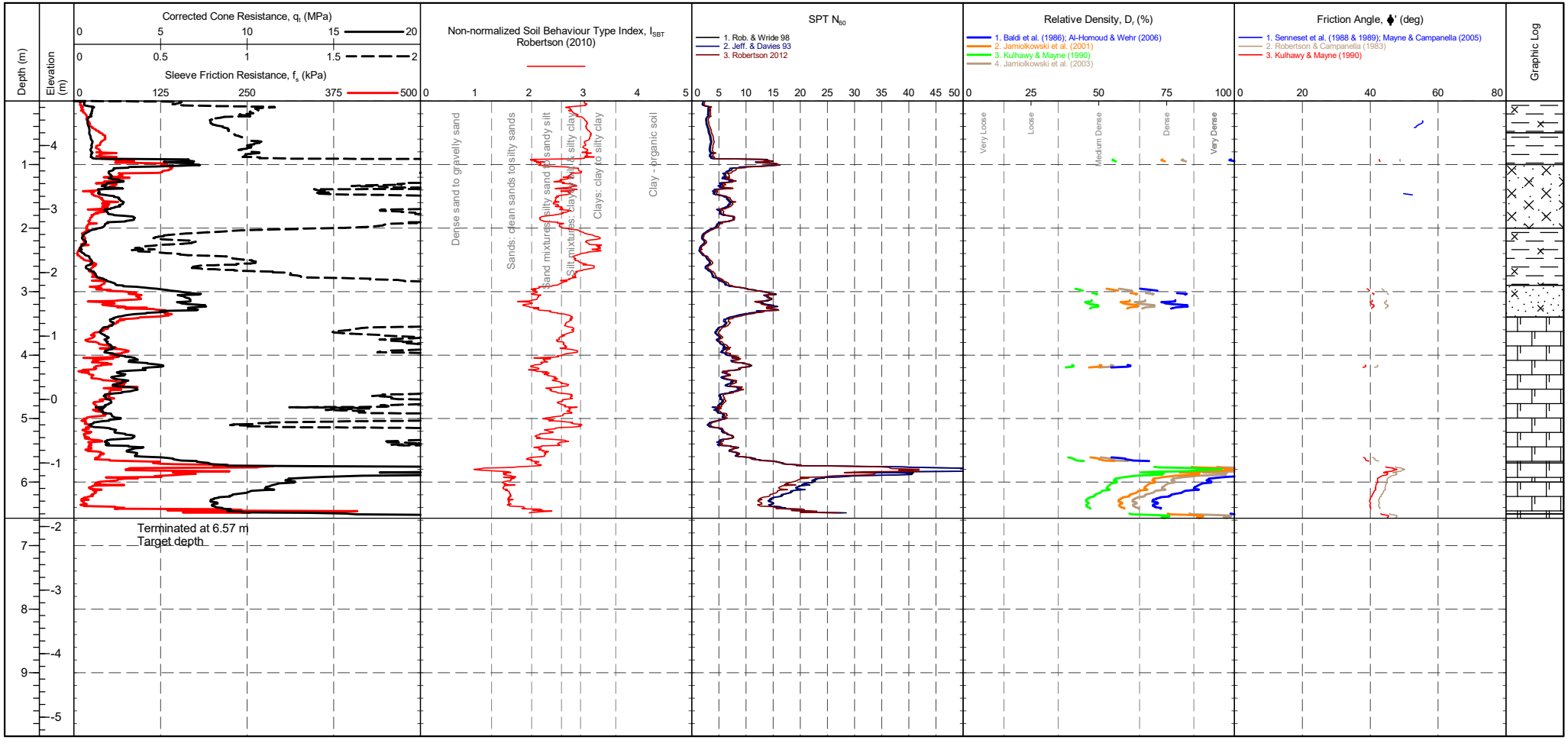
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP111**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500326.624 m NORTHING : 102218.872 m ELEVATION : 4.700 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	222 mV	219 mV	-0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	222 mV	219 mV	-0.002 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	271 mV	257 mV	-0.004 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2275 mV	2286 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

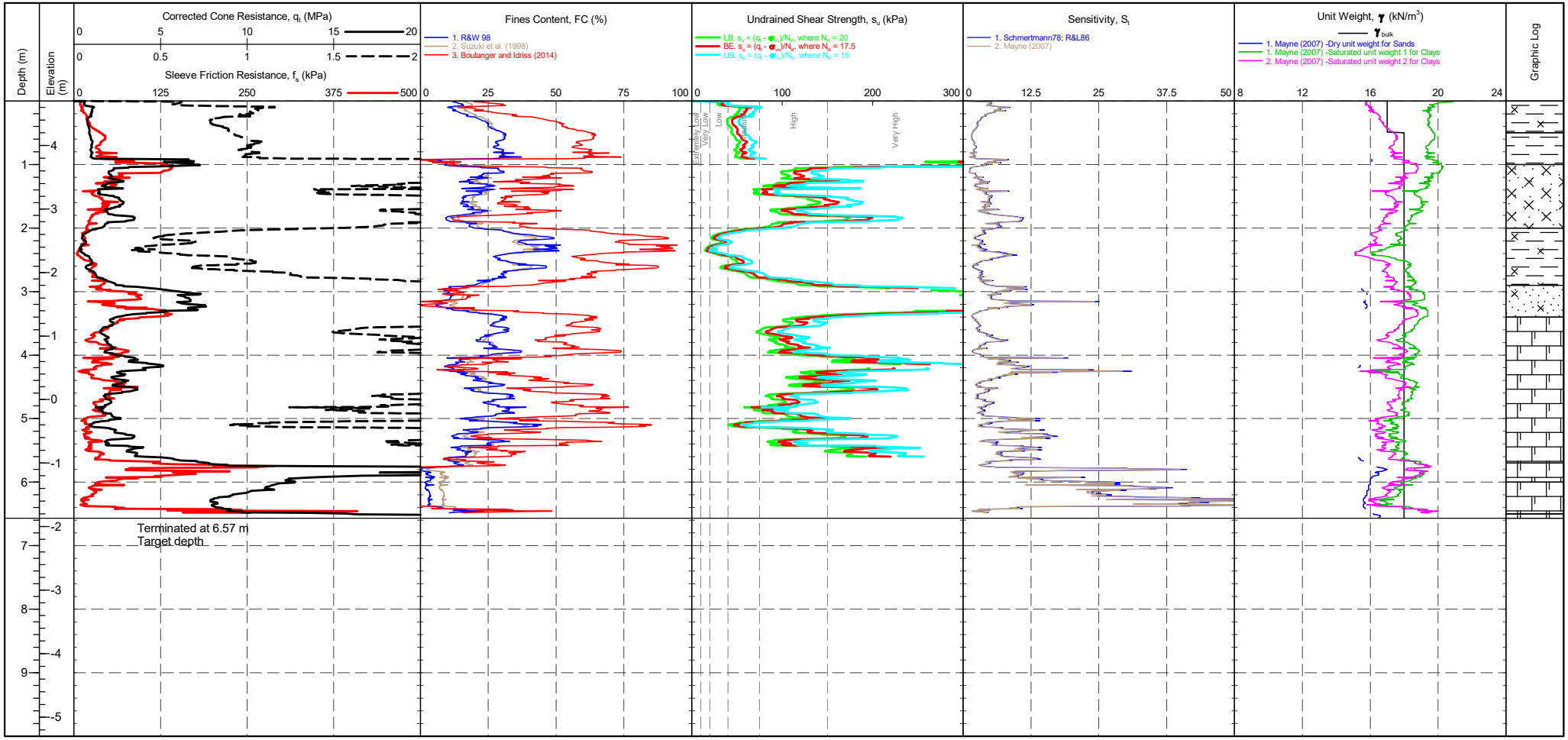
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP111**

CLIENT : Ground and Water	EASTING : 500326.624 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102218.872 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.700 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



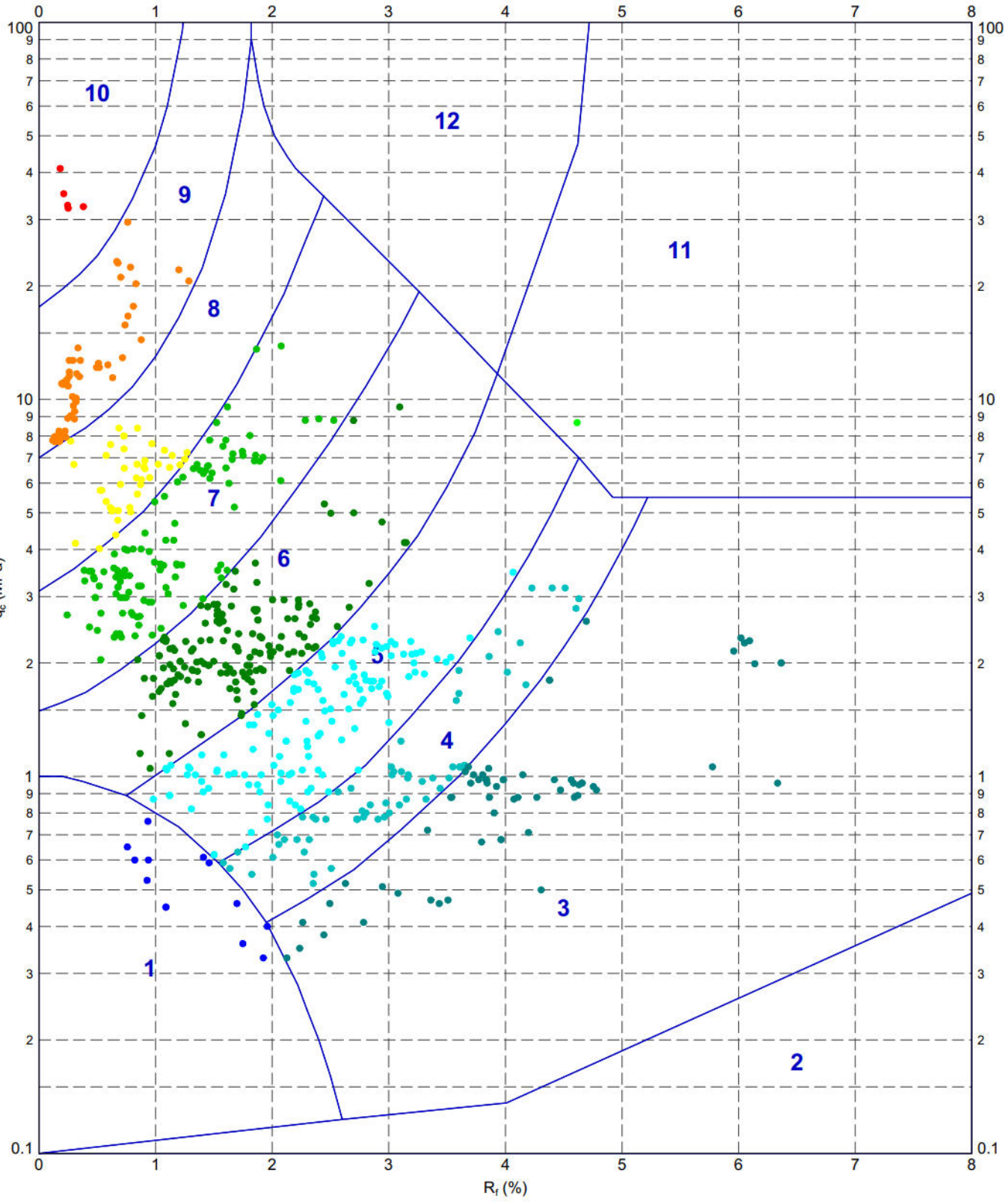
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	222 mV	219 mV	-0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	222 mV	219 mV	-0.002 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	271 mV	257 mV	-0.004 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2275 mV	2286 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	Ground and Water Climping, West Sussex Church Lane Robertson et al. 1986 q_c vs. R_f - DP111
DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE	Not To Scale — A4
PROJECT No	1240182
FIGURE No	

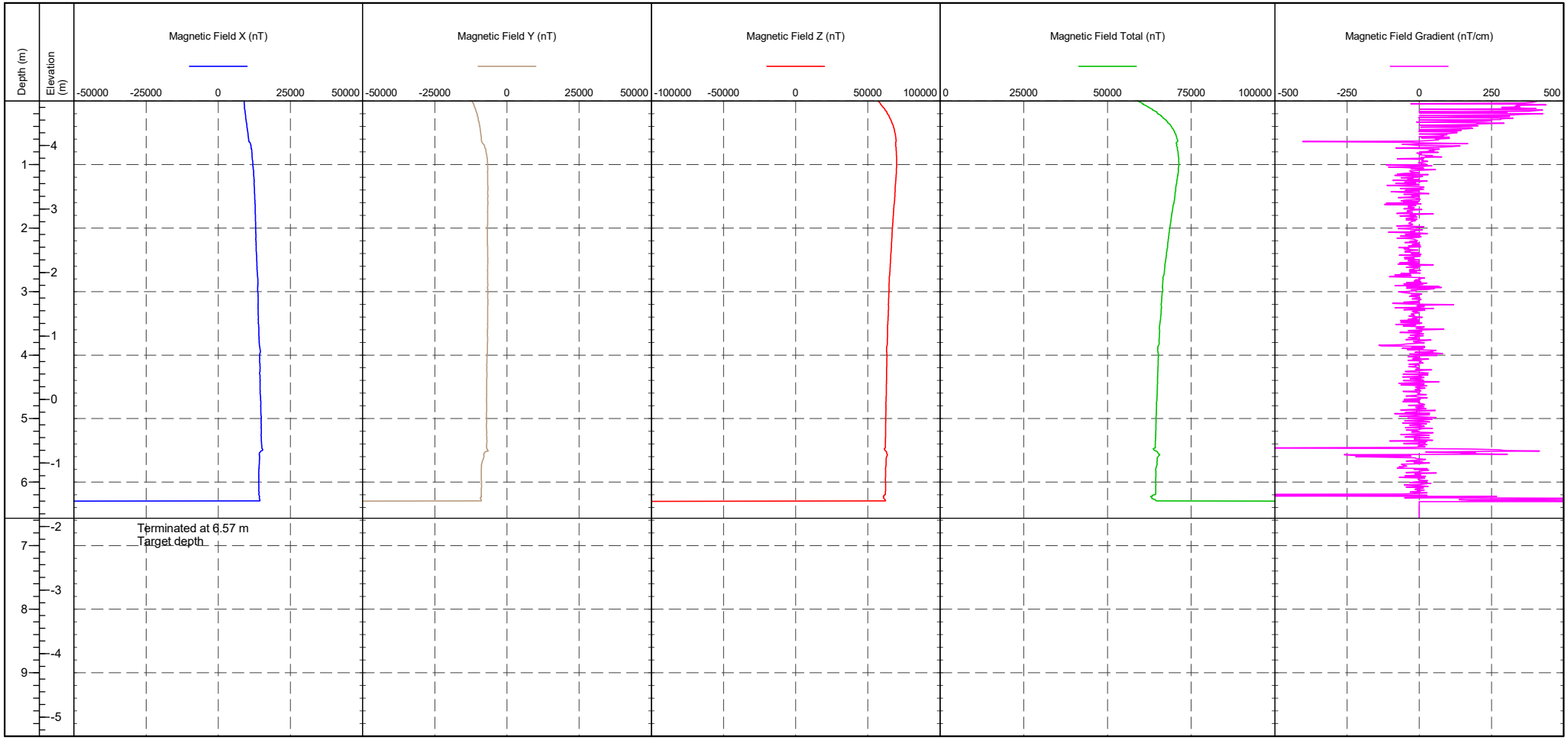
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:34 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP111**

CLIENT : Ground and Water	EASTING : 500326.624 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102218.872 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.700 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



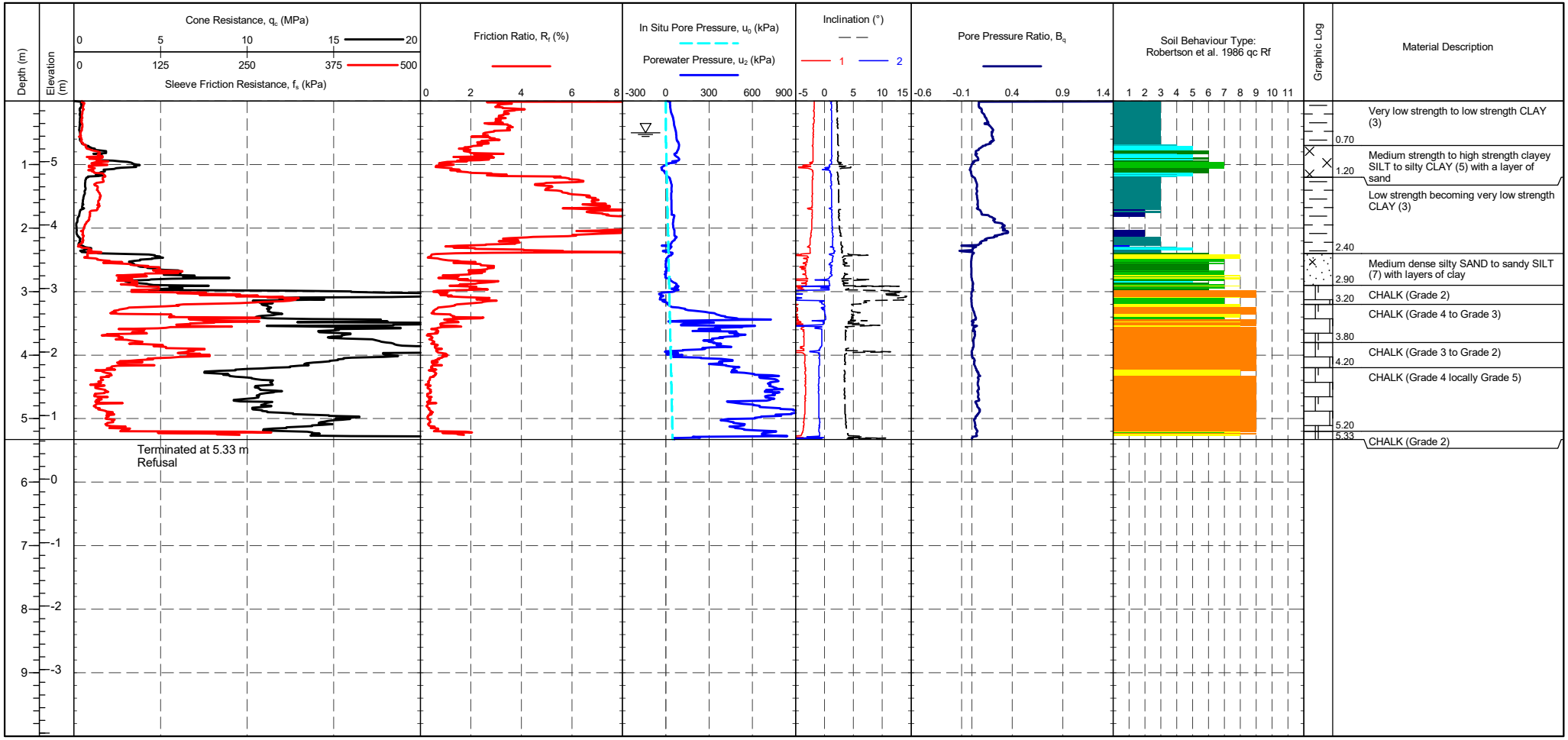
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	222 mV	219 mV	-0.033 MPa
				Sleeve	222 mV	219 mV	-0.002 kPa
				Pore Pressure 2	271 mV	257 mV	-0.004 kPa
				X-Y Inclinometer	2275 mV	2286 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP117**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500018.538 m NORTHING : 102025.956 m ELEVATION : 5.952 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	220 mV	216 mV	-0.044 MPa
Sleeve	215 mV	212 mV	-0.002 kPa
Pore Pressure 2	266 mV	258 mV	-0.002 kPa
X-Y Inclinometer	2306 mV	2308 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

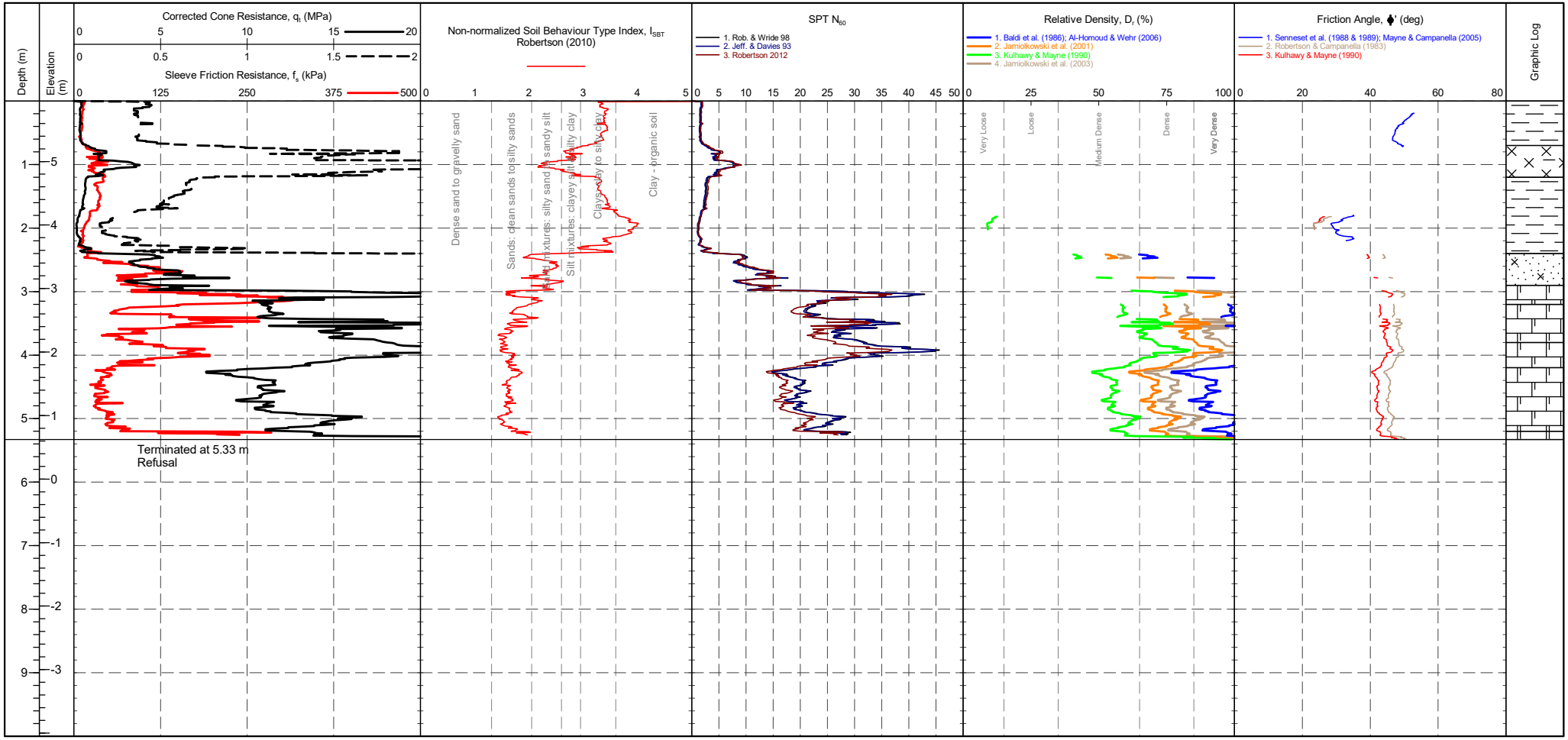
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID **DP117**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500018.538 m NORTHING : 102025.956 m ELEVATION : 5.952 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: DHo		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	220 mV	216 mV	-0.044 MPa
Sleeve	215 mV	212 mV	-0.002 kPa
Pore Pressure 2	266 mV	258 mV	-0.002 kPa
X-Y Inclinometer	2306 mV	2308 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

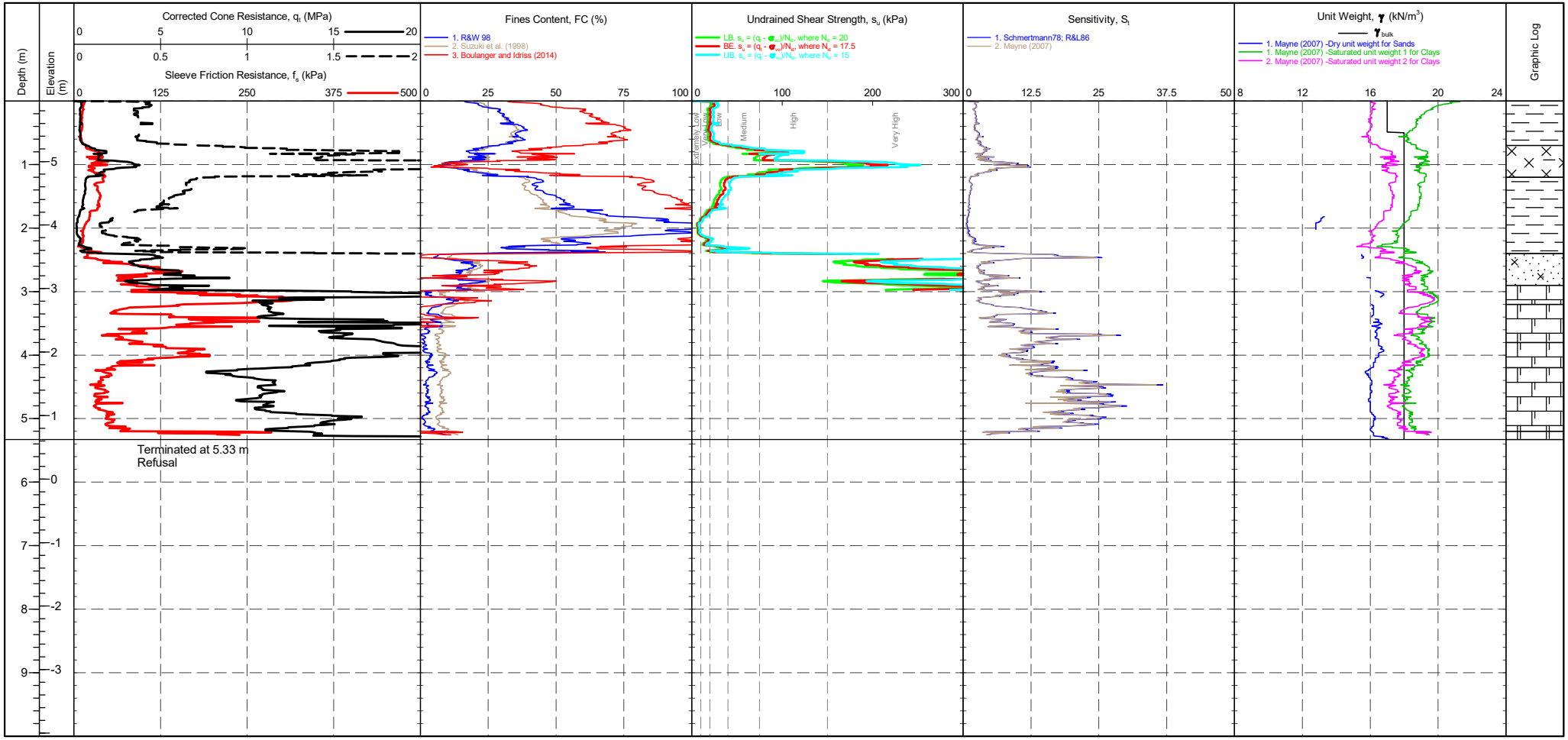
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP117**

CLIENT : Ground and Water	EASTING : 500018.538 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102025.956 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.952 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



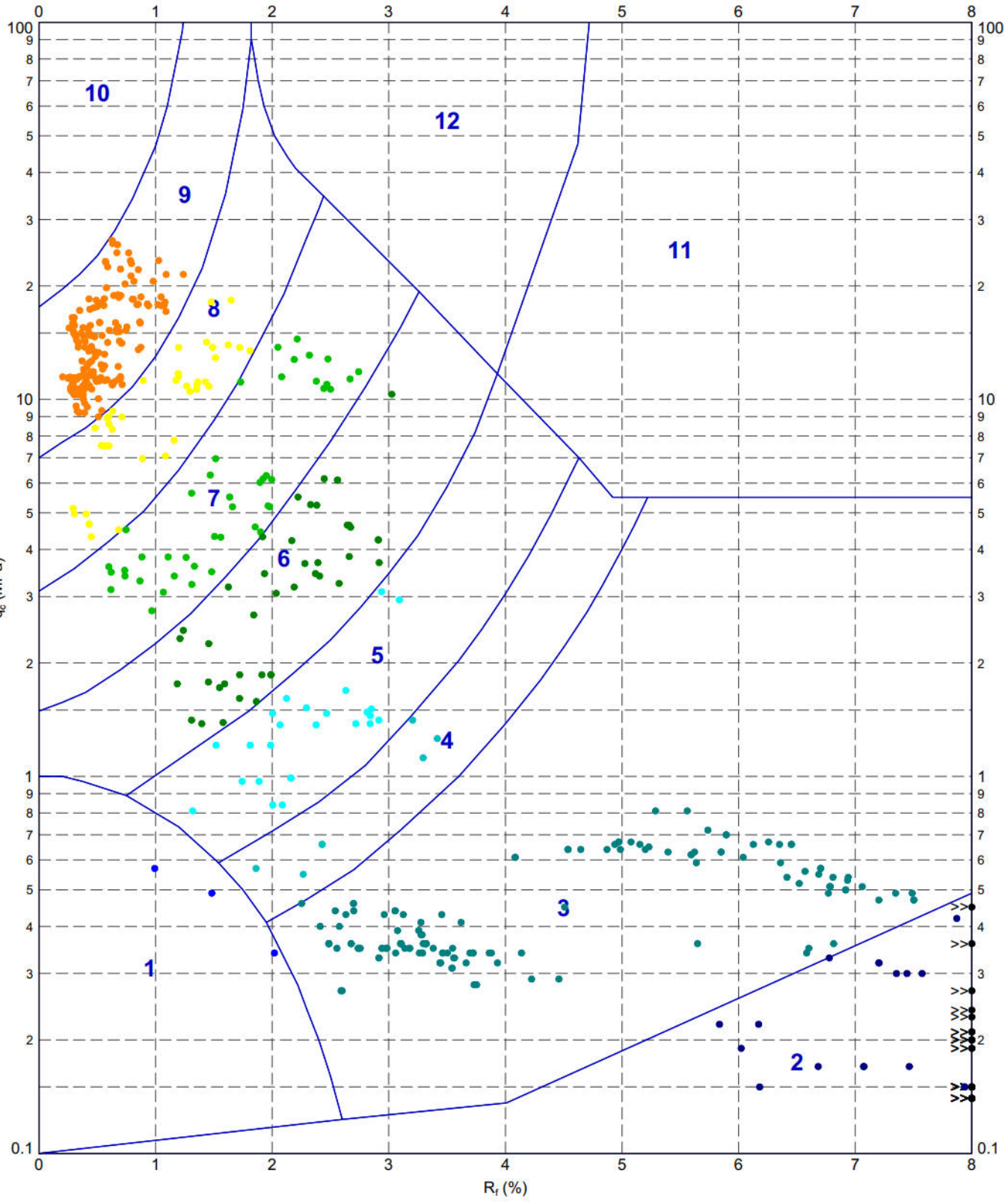
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	220 mV	216 mV	-0.044 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	215 mV	212 mV	-0.002 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	266 mV	258 mV	-0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2306 mV	2308 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP117

DRAWN		DATE	12/04/2024
CHECKED		DATE	12/04/2024
SCALE	Not To Scale		A4
PROJECT No	1240182	FIGURE No	

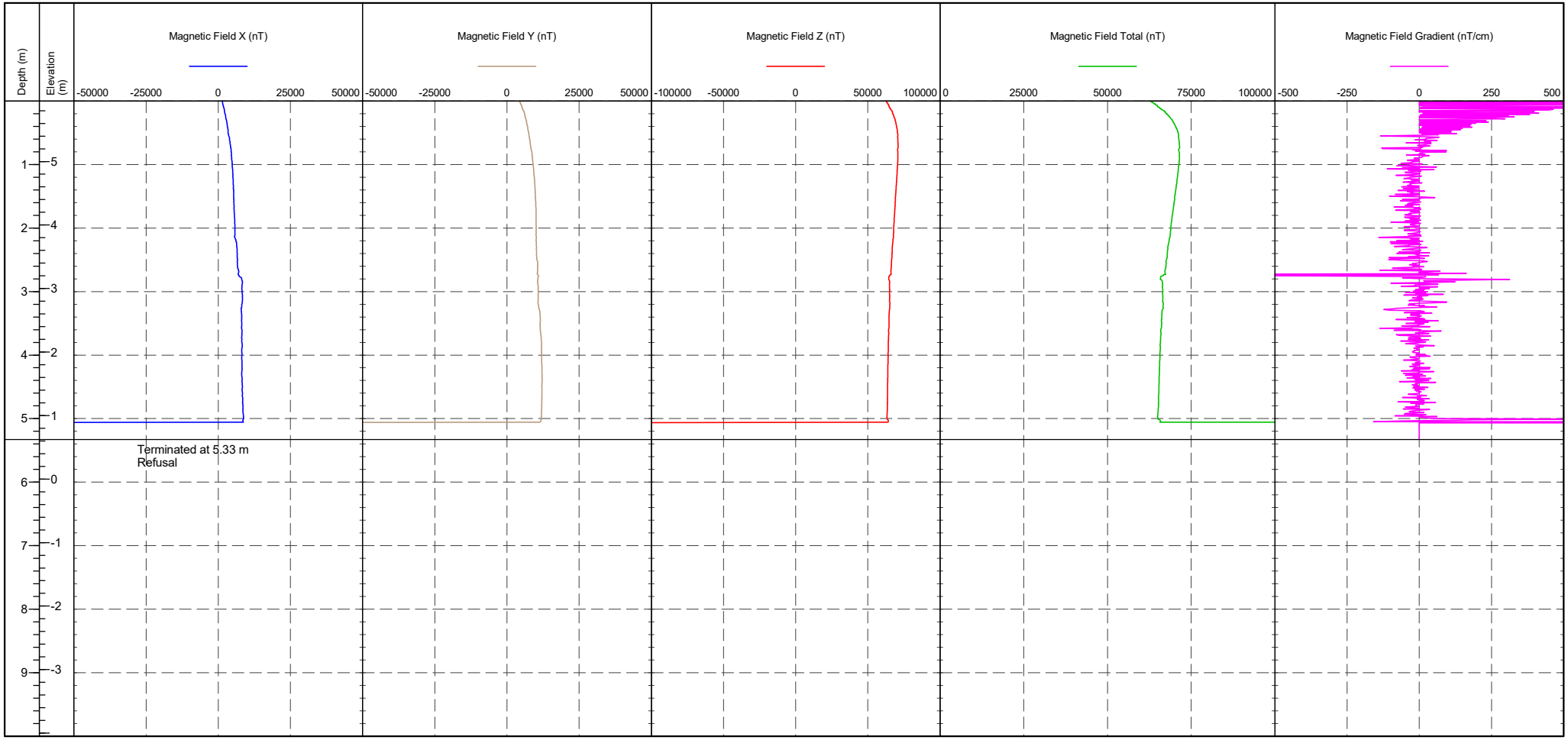
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:35 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP117**

CLIENT : Ground and Water	EASTING : 500018.538 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102025.956 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.952 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



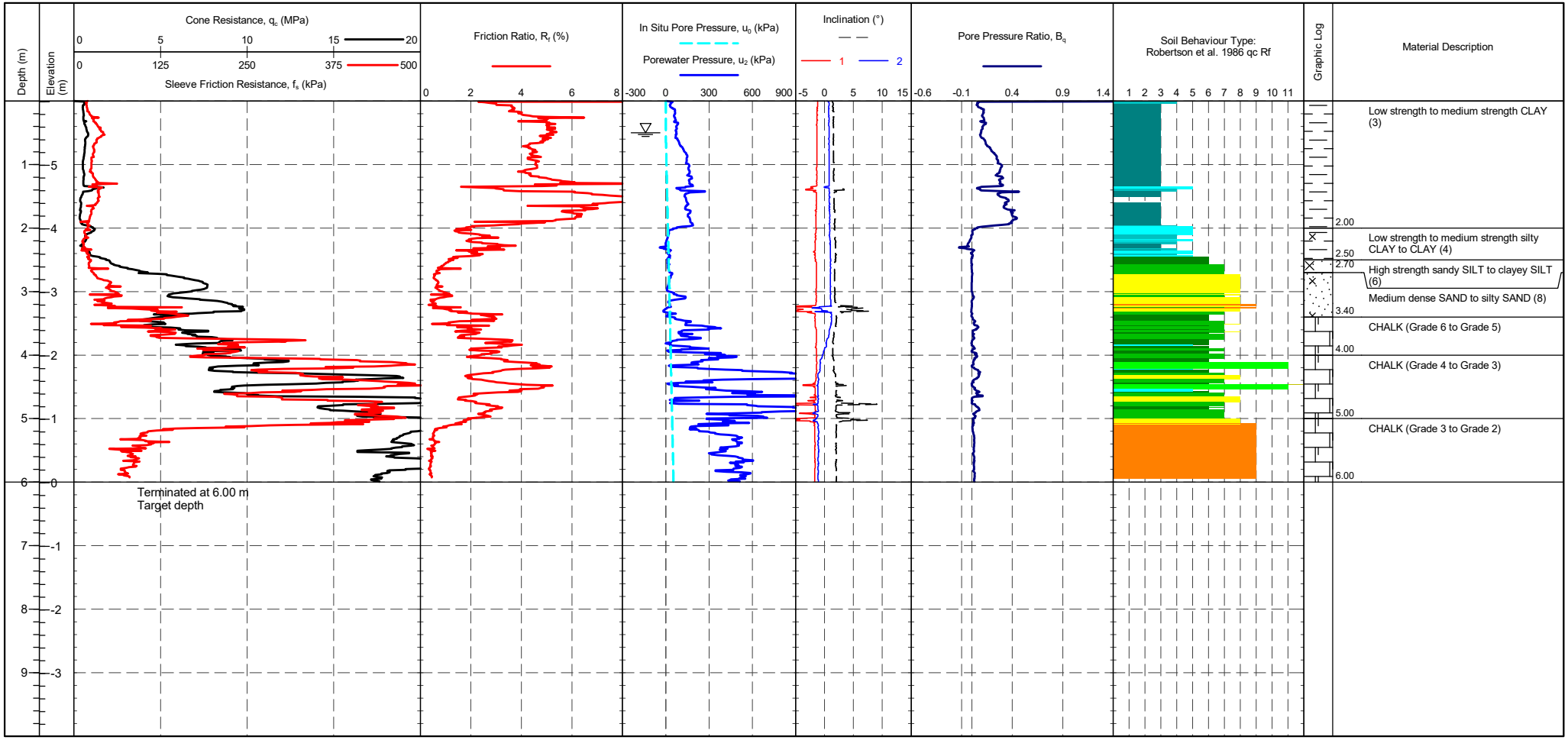
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	220 mV	216 mV	-0.044 MPa
				Sleeve	215 mV	212 mV	-0.002 kPa
				Pore Pressure 2	266 mV	258 mV	-0.002 kPa
				X-Y Inclinometer	2306 mV	2308 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID **DP118**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500085.995 m NORTHING : 102041.642 m ELEVATION : 6.012 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



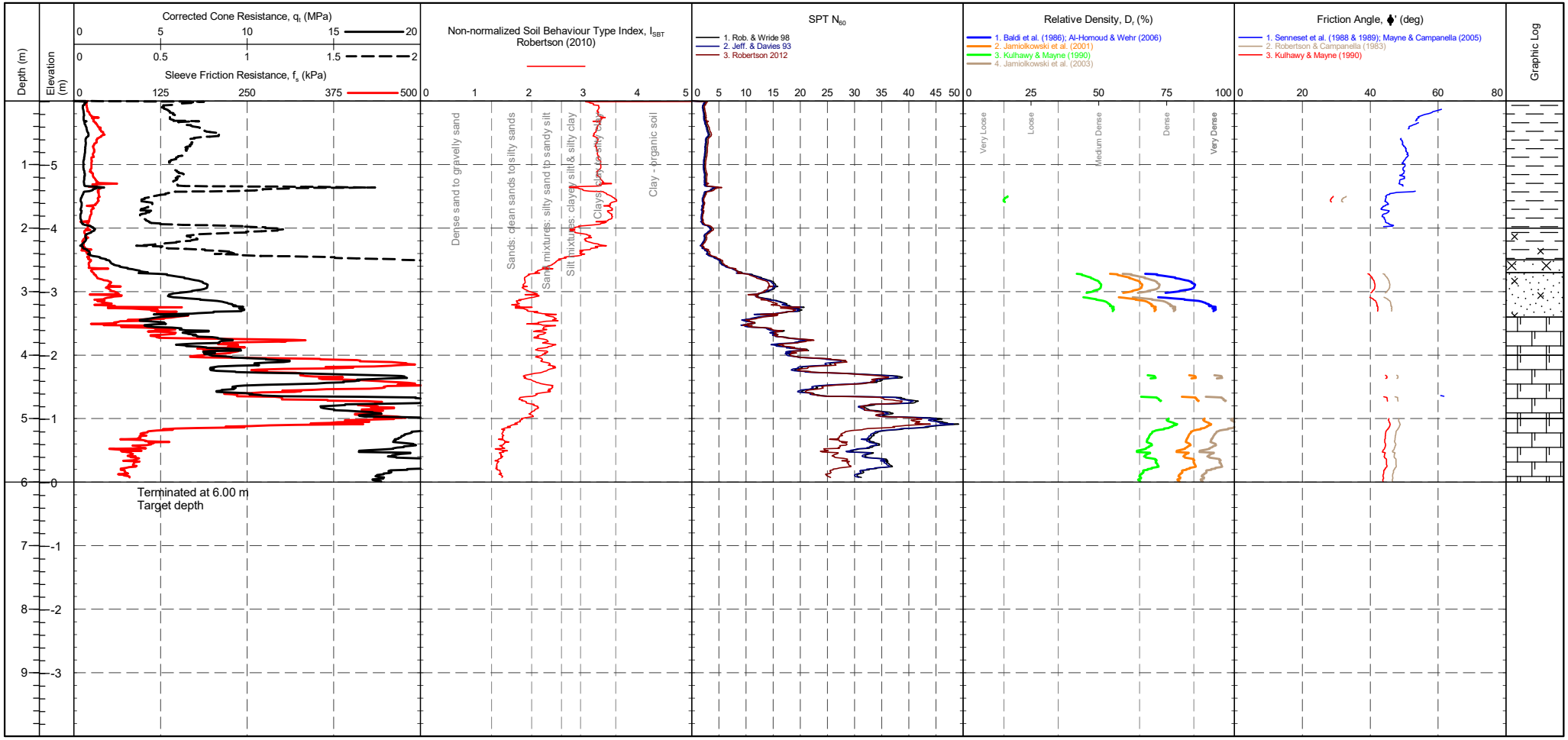
CONE ID : S15-CFIP.1186 CALIBRATION DATE : 09/08/2021 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES Transducer: Pre 220 mV, Post 216 mV, Difference -0.044 MPa Sleeve: Pre 219 mV, Post 210 mV, Difference -0.006 kPa Pore Pressure 2: Pre 264 mV, Post 272 mV, Difference 0.002 kPa X-Y Inclinometer: Pre 2365 mV, Post 2375 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND Groundwater Level Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP118**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500085.995 m NORTHING : 102041.642 m ELEVATION : 6.012 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	220 mV	216 mV	-0.044 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	219 mV	210 mV	-0.006 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	264 mV	272 mV	0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2365 mV	2375 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

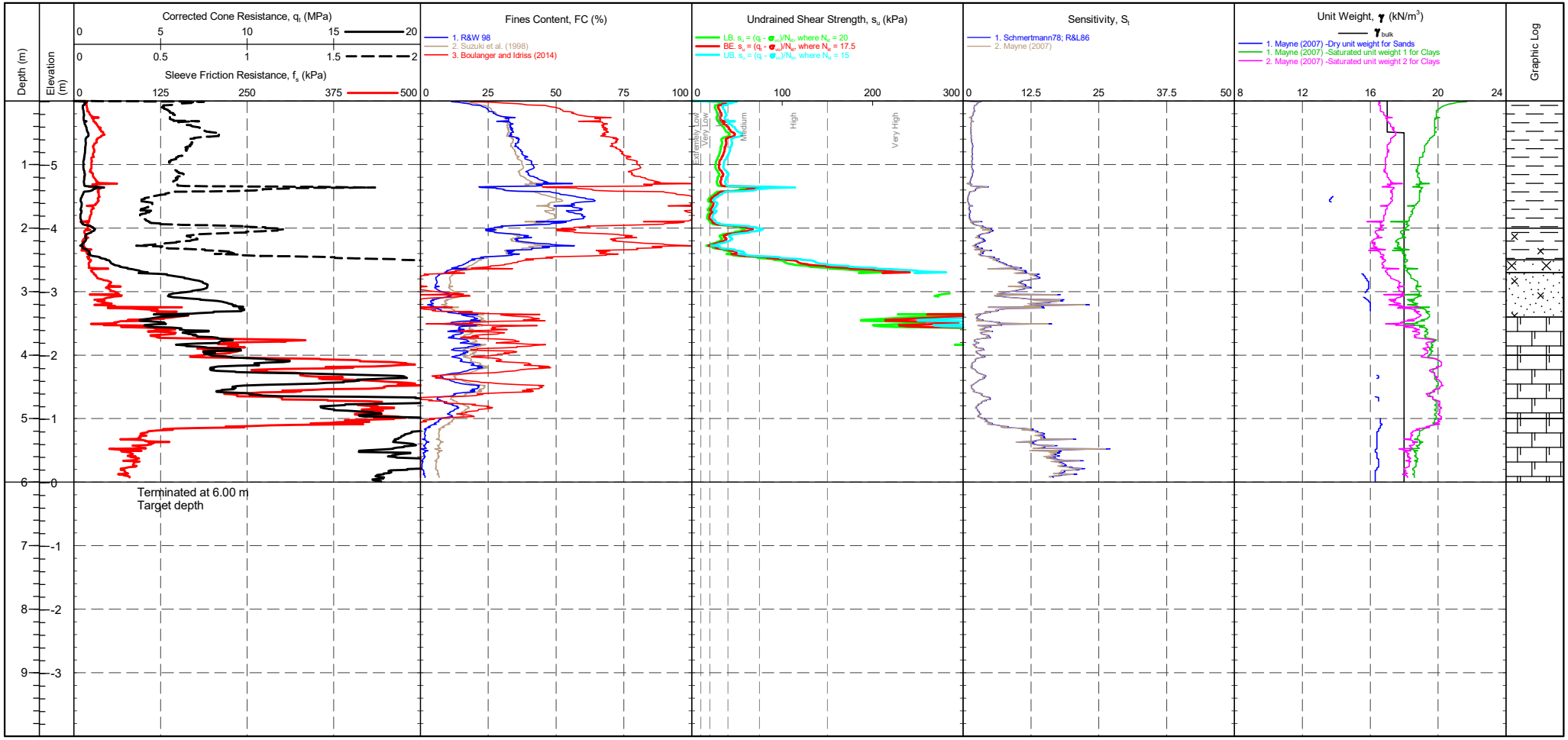
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP118**

CLIENT : Ground and Water	EASTING : 500085.995 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102041.642 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 6.012 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



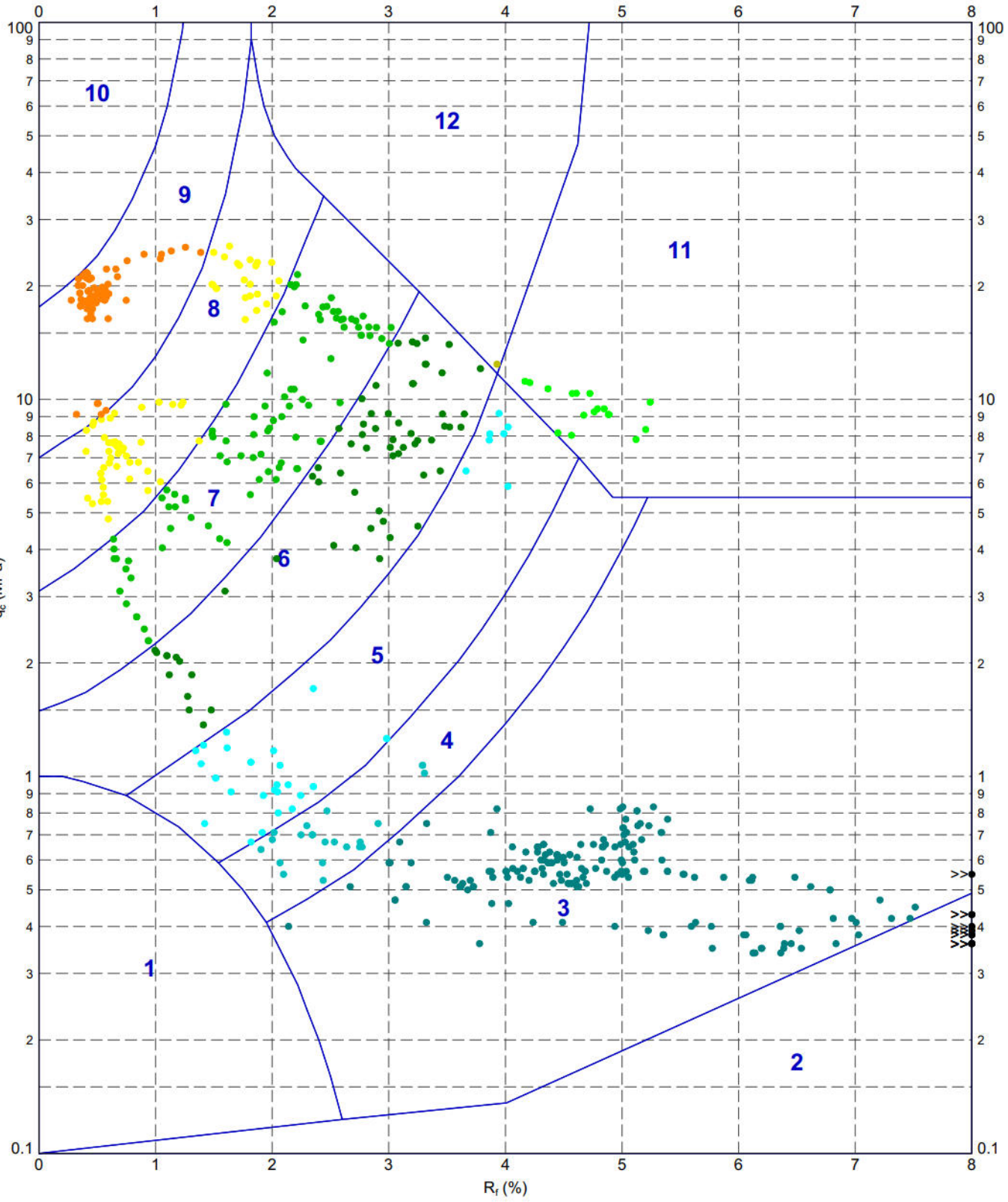
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	220 mV	216 mV	-0.044 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	219 mV	210 mV	-0.006 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	264 mV	272 mV	0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2365 mV	2375 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP118

DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE Not To Scale	A4
PROJECT No 1240182	FIGURE No

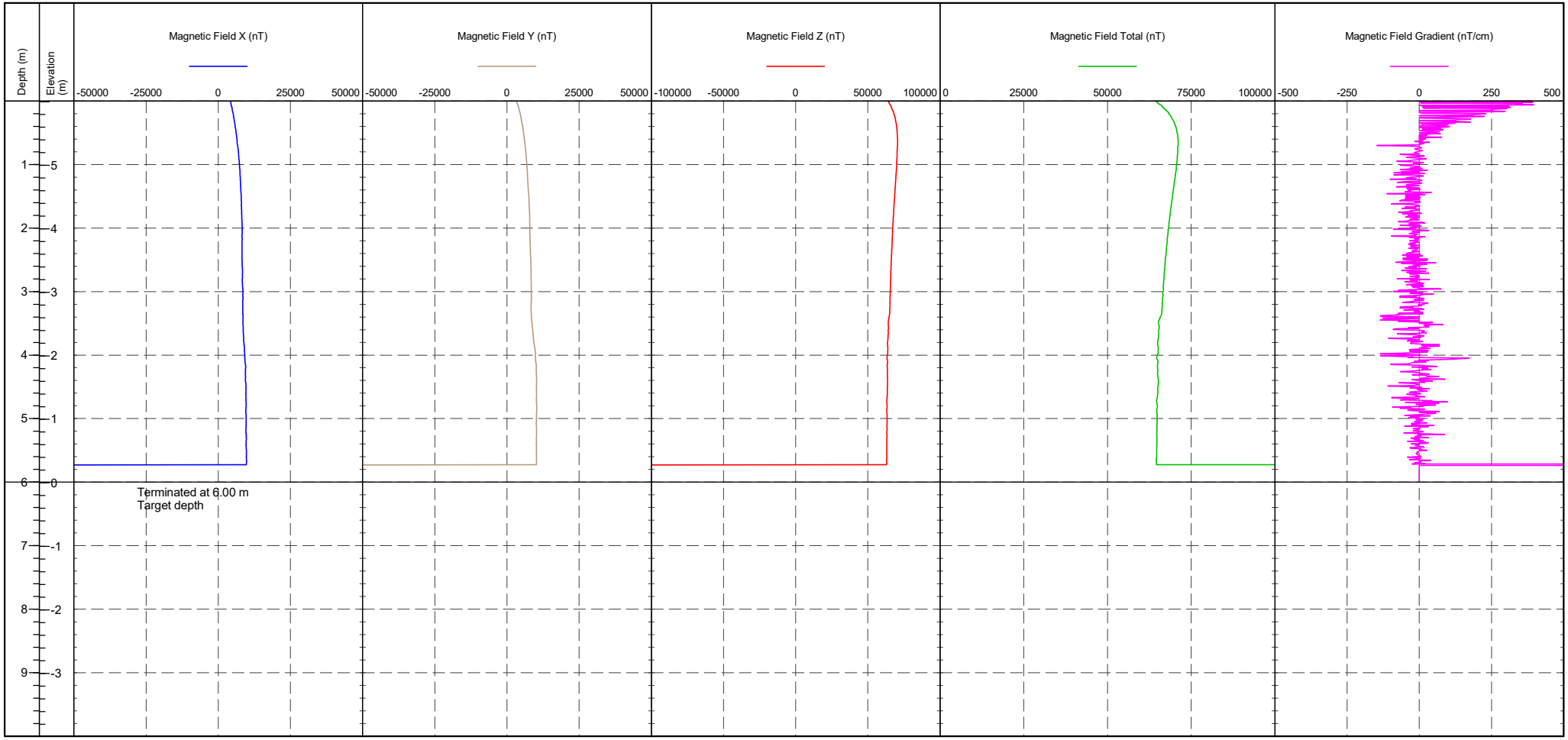
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:35 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP118**

CLIENT : Ground and Water	EASTING : 500085.995 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102041.642 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 6.012 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



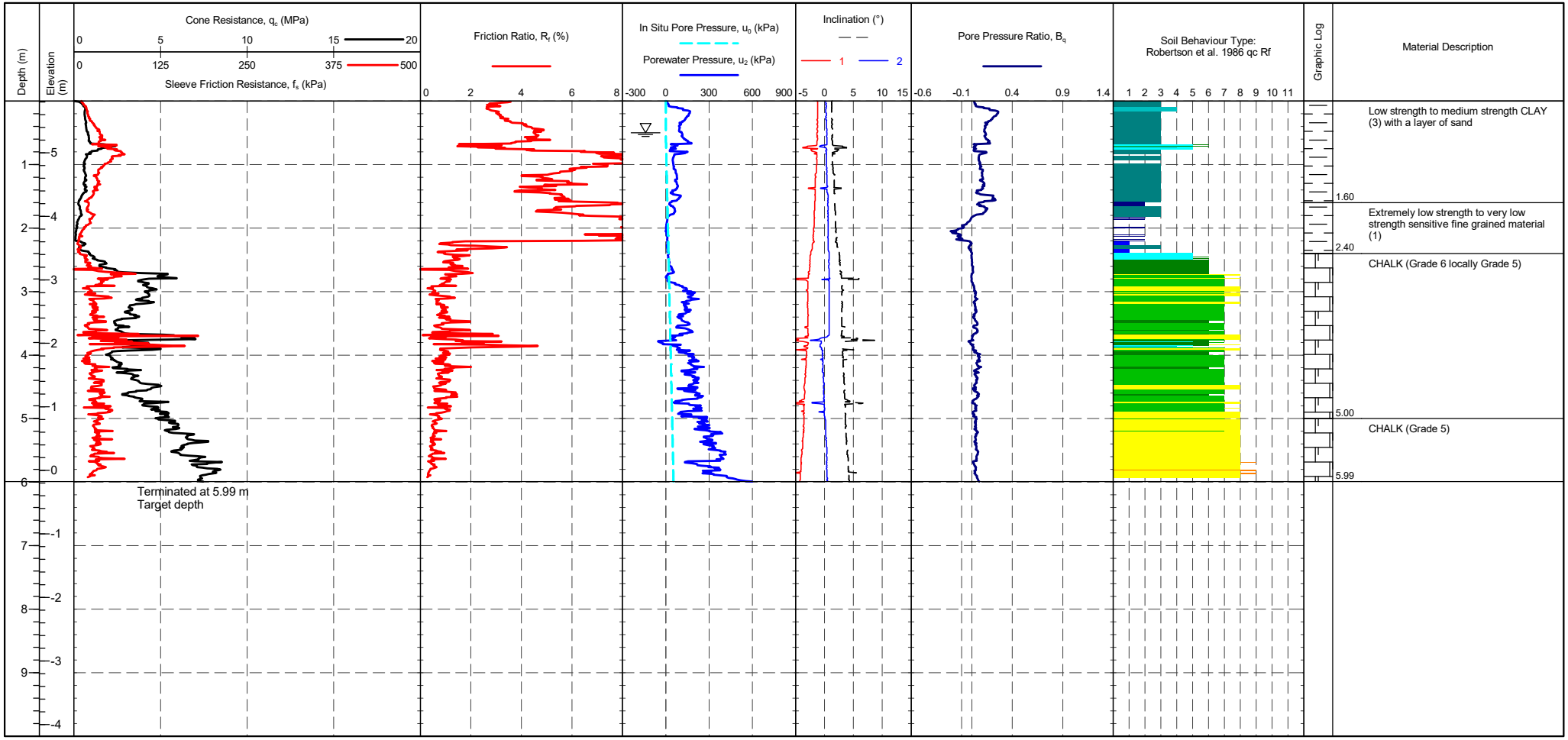
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	220 mV	216 mV	-0.044 MPa
				Sleeve	219 mV	210 mV	-0.006 kPa
				Pore Pressure 2	264 mV	272 mV	0.002 kPa
				X-Y Inclinometer	2365 mV	2375 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP119**

CLIENT : Ground and Water	EASTING : 500155.619 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102060.389 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.815 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2				
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2				
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen				
CONE AREA	: 15cm^2	OPERATOR	: DHo				
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None				
FILTER POSITION	: u2	WEATHER	: Overcast & Cold				
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.				

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	218 mV	-0.044 MPa
Sleeve	220 mV	218 mV	-0.001 kPa
Pore Pressure 2	268 mV	272 mV	0.001 kPa
X-Y Inclinometer	2355 mV	2346 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

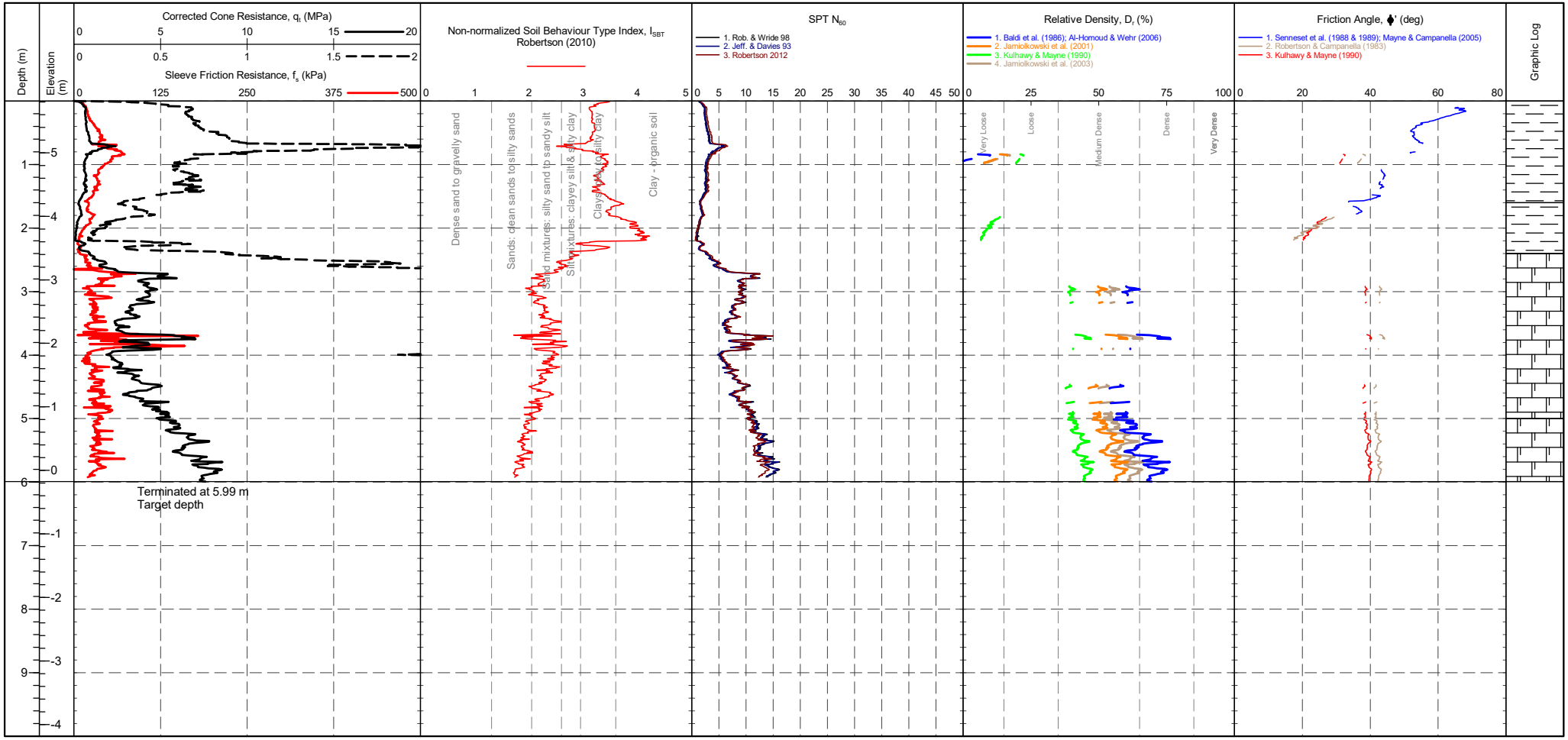
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP119**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500155.619 m NORTHING : 102060.389 m ELEVATION : 5.815 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2			
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen			
CONE AREA RATIO	: 0.79	OPERATOR	: DHo			
FILTER POSITION	: u2	FRICTION REDUCER	: None			
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold			

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	218 mV	-0.044 MPa
Sleeve	220 mV	218 mV	-0.001 kPa
Pore Pressure 2	268 mV	272 mV	0.001 kPa
X-Y Inclinometer	2355 mV	2346 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

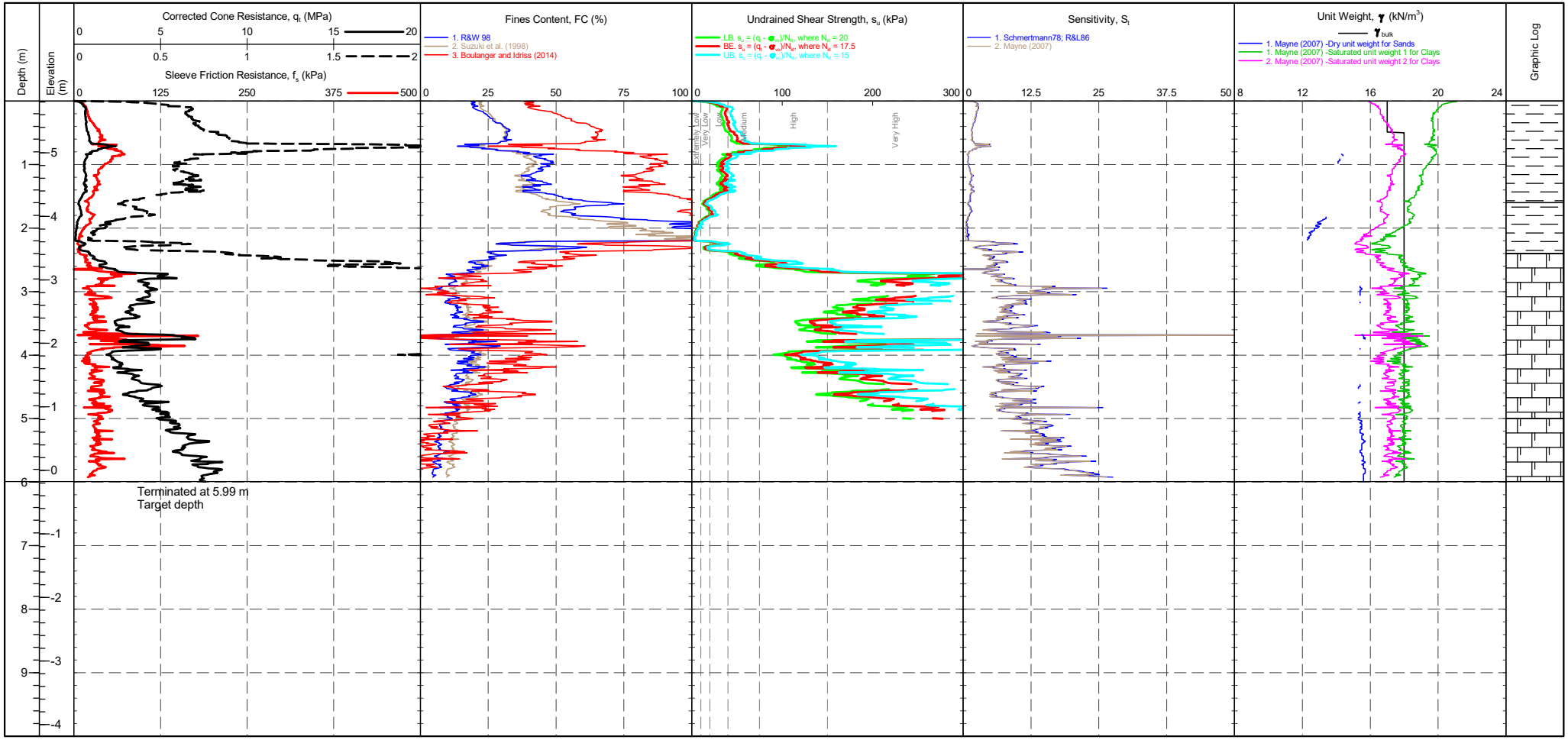
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID **DP119**

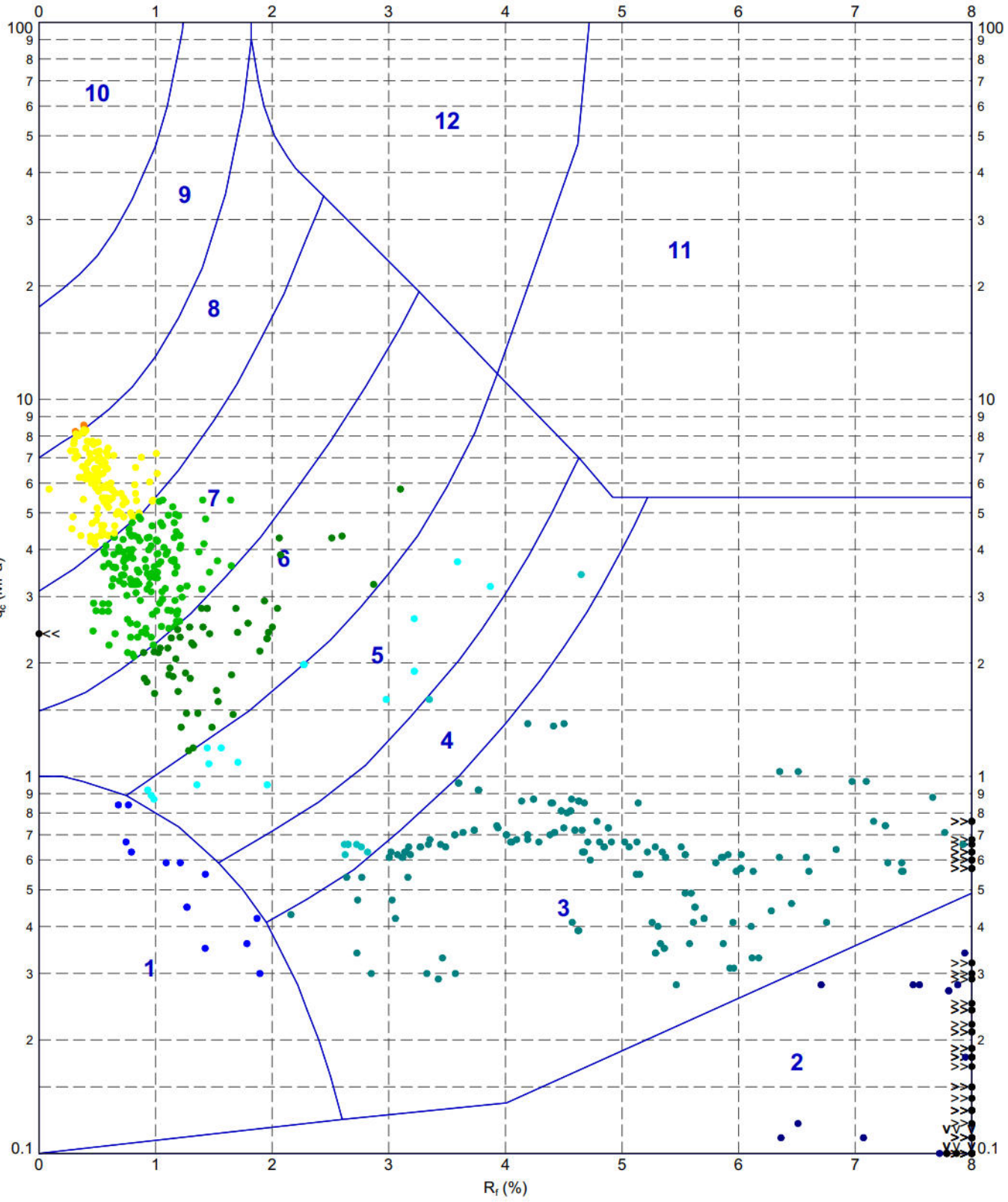
CLIENT : Ground and Water	EASTING : 500155.619 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102060.389 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.815 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES				COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference	Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	222 mV	218 mV	-0.044 MPa	Extremely low strength	<10	Medium strength	40-75
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	220 mV	218 mV	-0.001 kPa	Very low strength	10-20	High strength	75-150
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	268 mV	272 mV	0.001 kPa	Low strength	20-40	Very high strength	150-300
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2355 mV	2346 mV				Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP119

DRAWN	DATE 12/04/2024	
CHECKED	DATE 12/04/2024	
SCALE Not To Scale		A4
PROJECT No 1240182	FIGURE No	

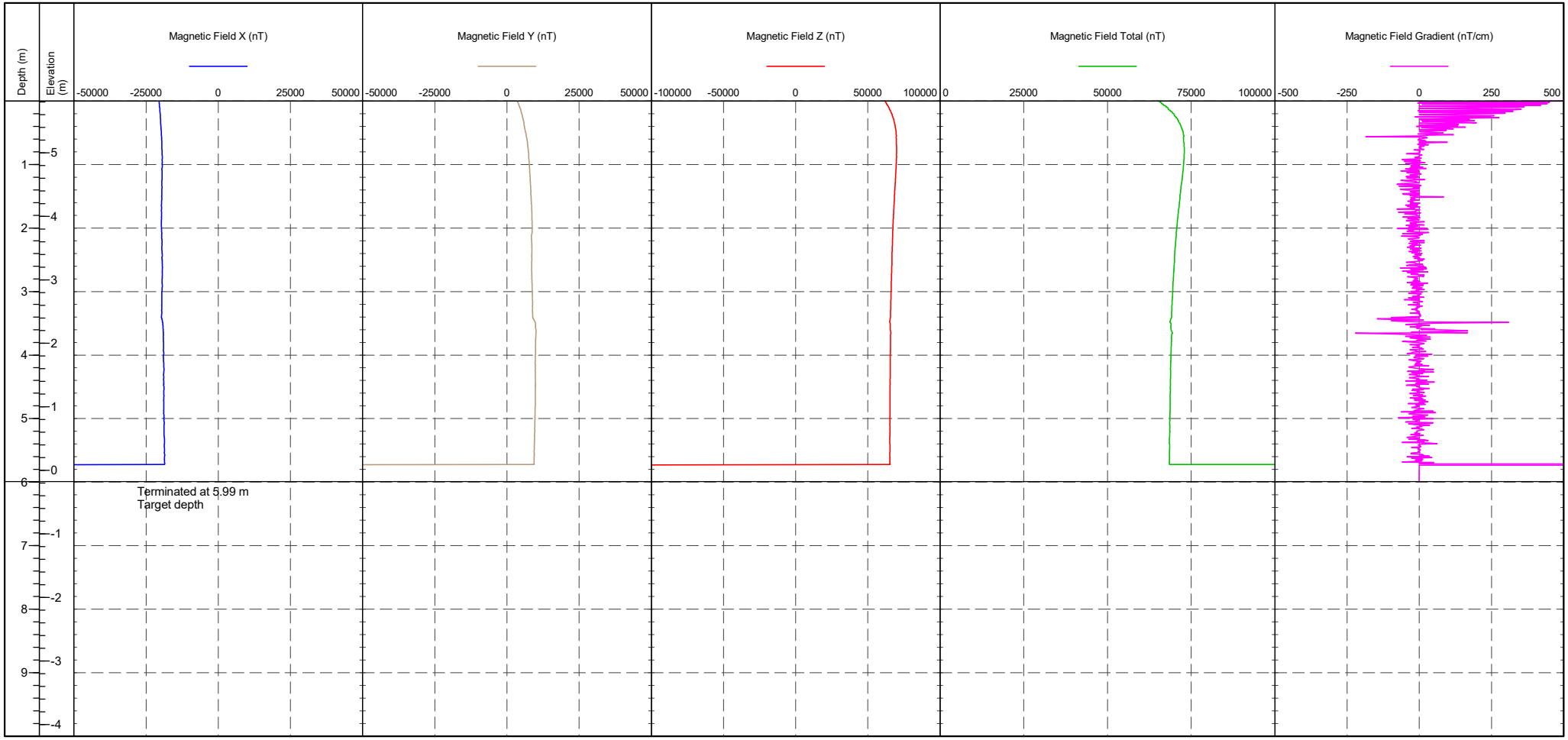
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:36 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP119**

CLIENT : Ground and Water	EASTING : 500155.619 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102060.389 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.815 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



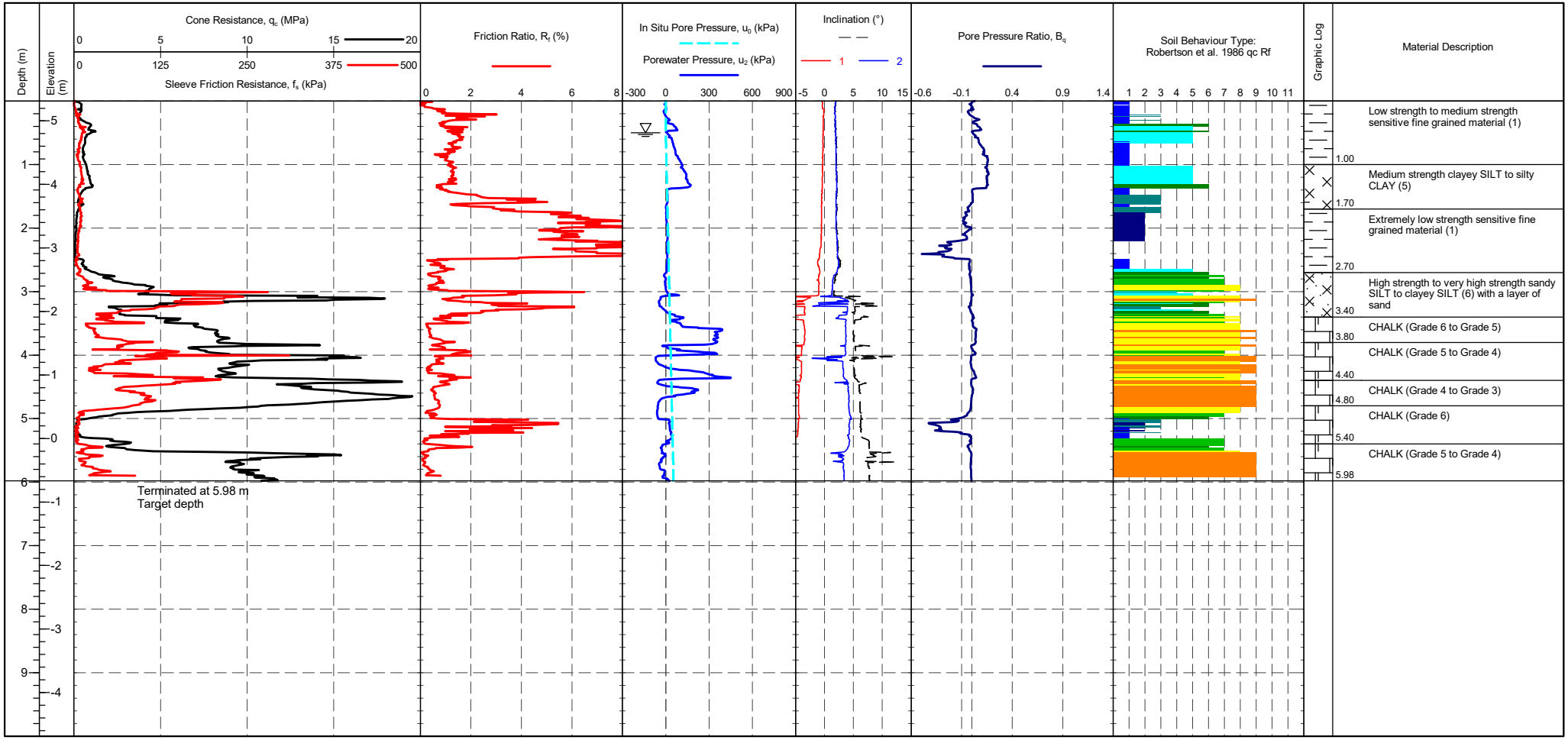
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	222 mV	218 mV	-0.044 MPa
				Sleeve	220 mV	218 mV	-0.001 kPa
				Pore Pressure 2	268 mV	272 mV	0.001 kPa
				X-Y Inclinometer	2355 mV	2346 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP120**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500223.377 m NORTHING : 102079.192 m ELEVATION : 5.313 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1186 CALIBRATION DATE : 09/08/2021 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES	

Transducer	Pre	Post	Difference
Tip	219 mV	216 mV	-0.033 MPa
Sleeve	216 mV	215 mV	-0.001 kPa
Pore Pressure 2	264 mV	261 mV	-0.001 kPa
X-Y Inclinometer	2435 mV	2453 mV	

METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

Groundwater Level

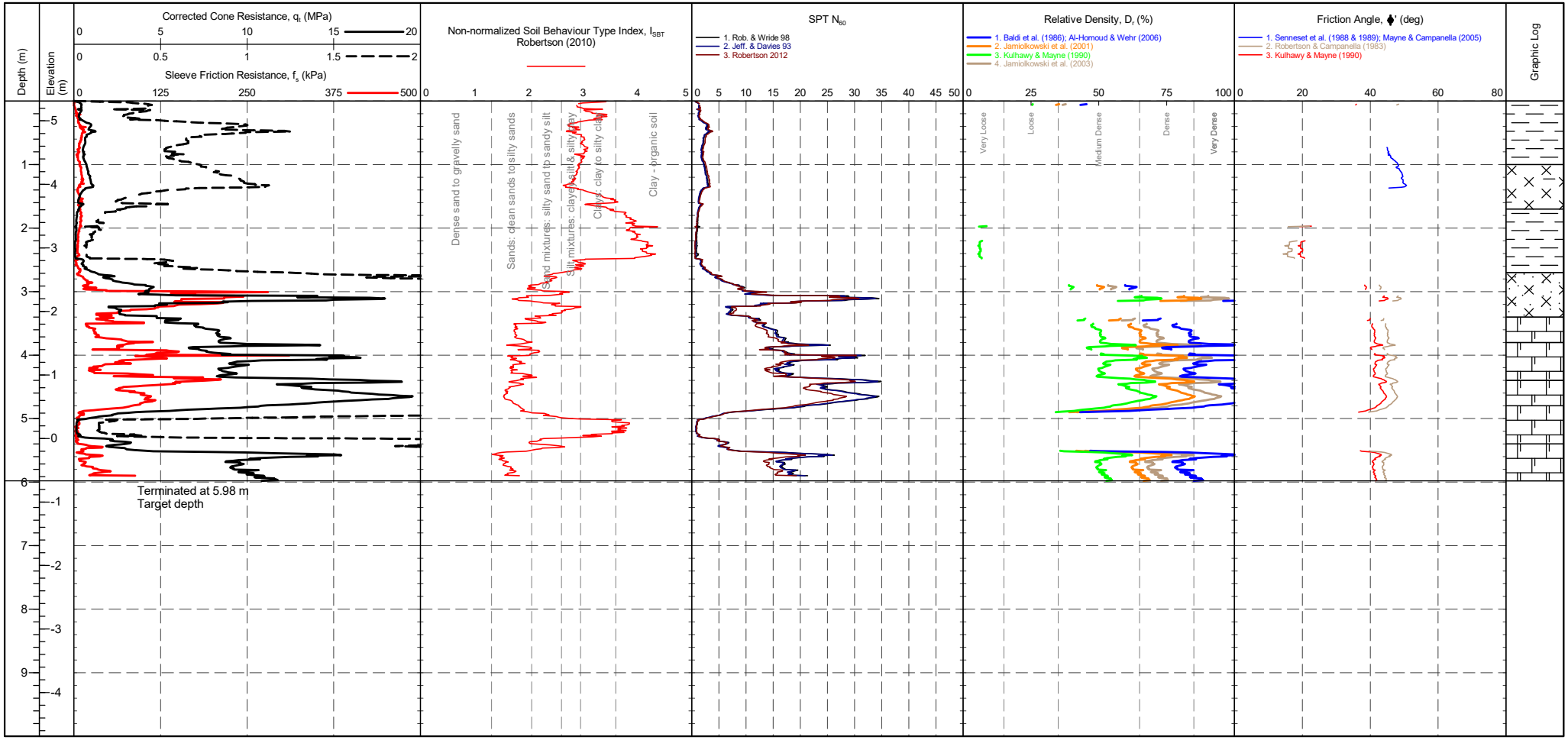
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP120**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500223.377 m NORTHING : 102079.192 m ELEVATION : 5.313 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	219 mV	216 mV
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	216 mV	215 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	264 mV	261 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2435 mV	2453 mV

Difference
-0.033 MPa
-0.001 kPa
-0.001 kPa

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic
Clays	2.95-3.60
Silt mixtures	2.60-2.95
Sand mixtures	2.05-2.60
Sands	1.31-2.05
Gravelly sand	<1.31

Description	SPT N value, NSPT
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	>50

Description	Relative Density Dr (%)
Very Loose	0 - 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	>85

Groundwater Level

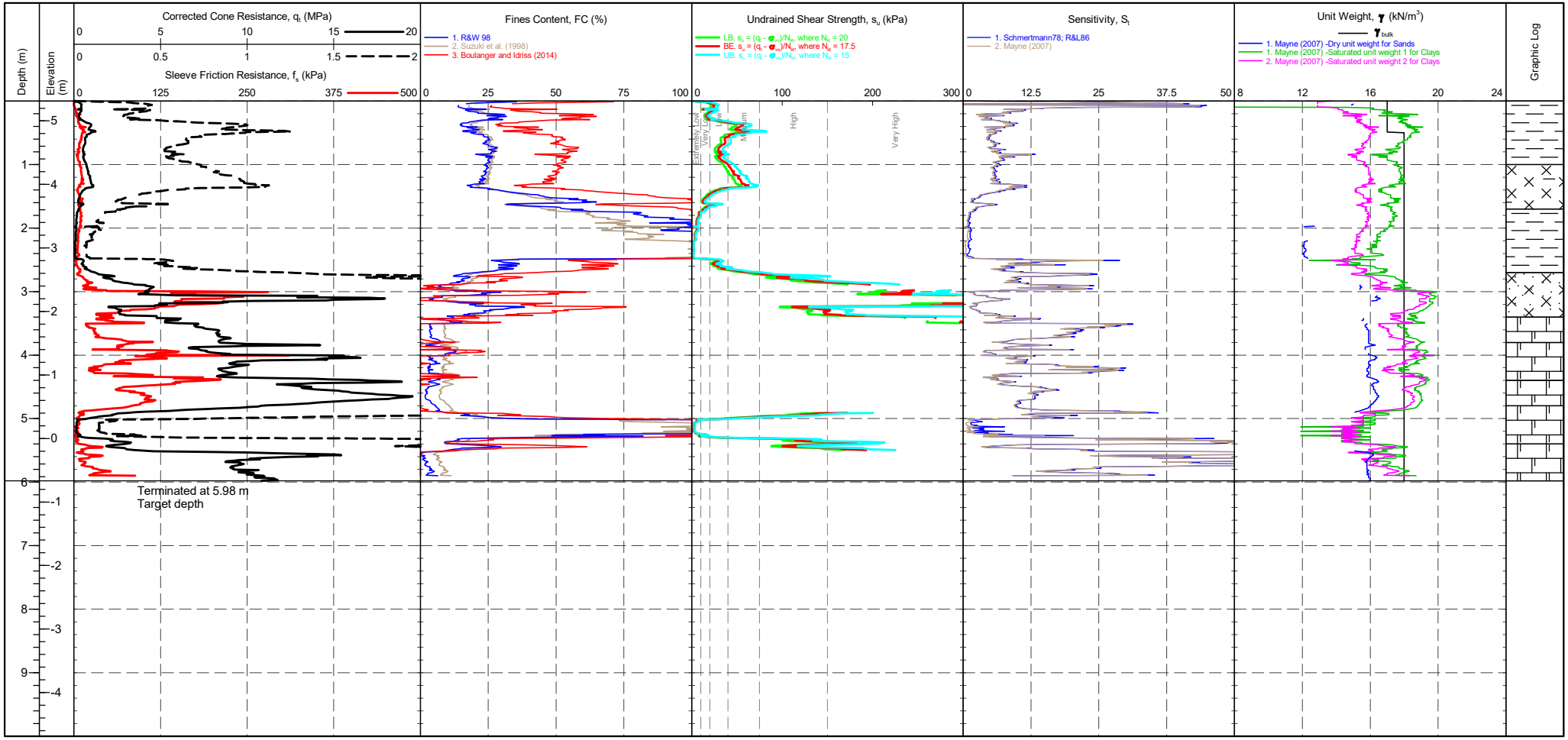
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP120**

CLIENT : Ground and Water	EASTING : 500223.377 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102079.192 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.313 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



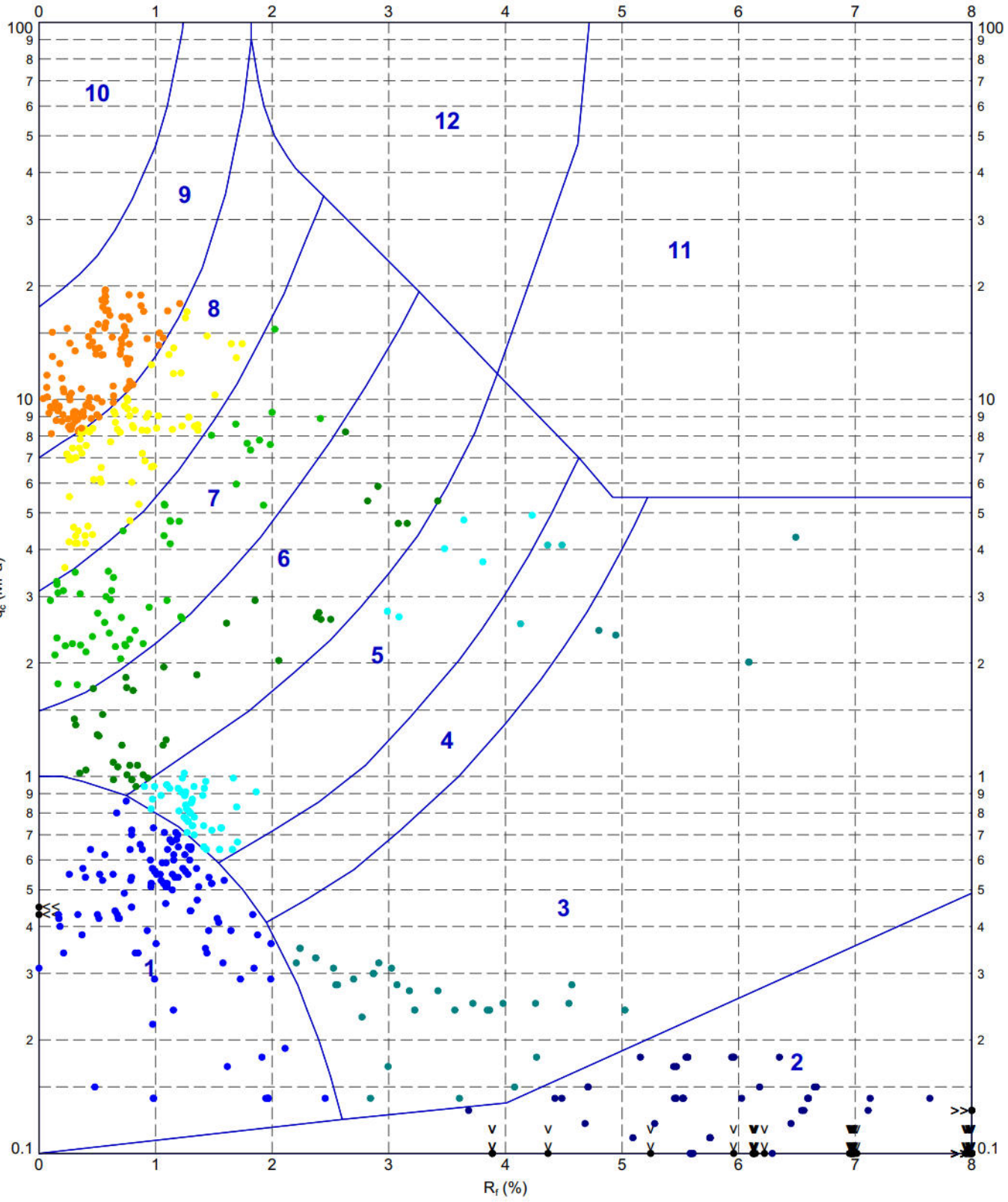
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	219 mV	216 mV	-0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	216 mV	215 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	264 mV	261 mV	-0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2435 mV	2453 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	Ground and Water Climping, West Sussex Church Lane Robertson et al. 1986 q_c vs. R_f - DP120
DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE	Not To Scale — A4
PROJECT No	1240182
FIGURE No	

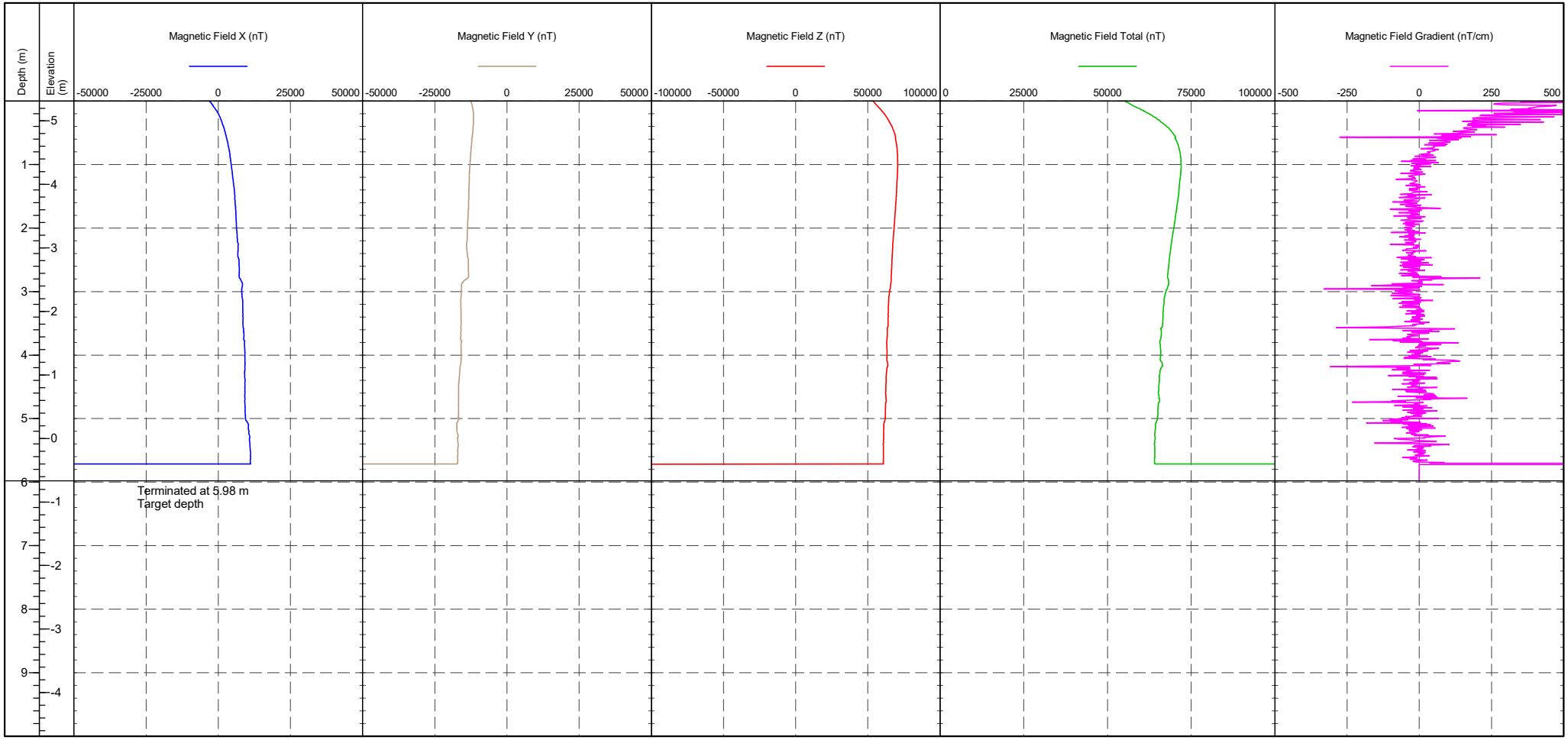
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:37 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prp: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP120**

CLIENT : Ground and Water	EASTING : 500223.377 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102079.192 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.313 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



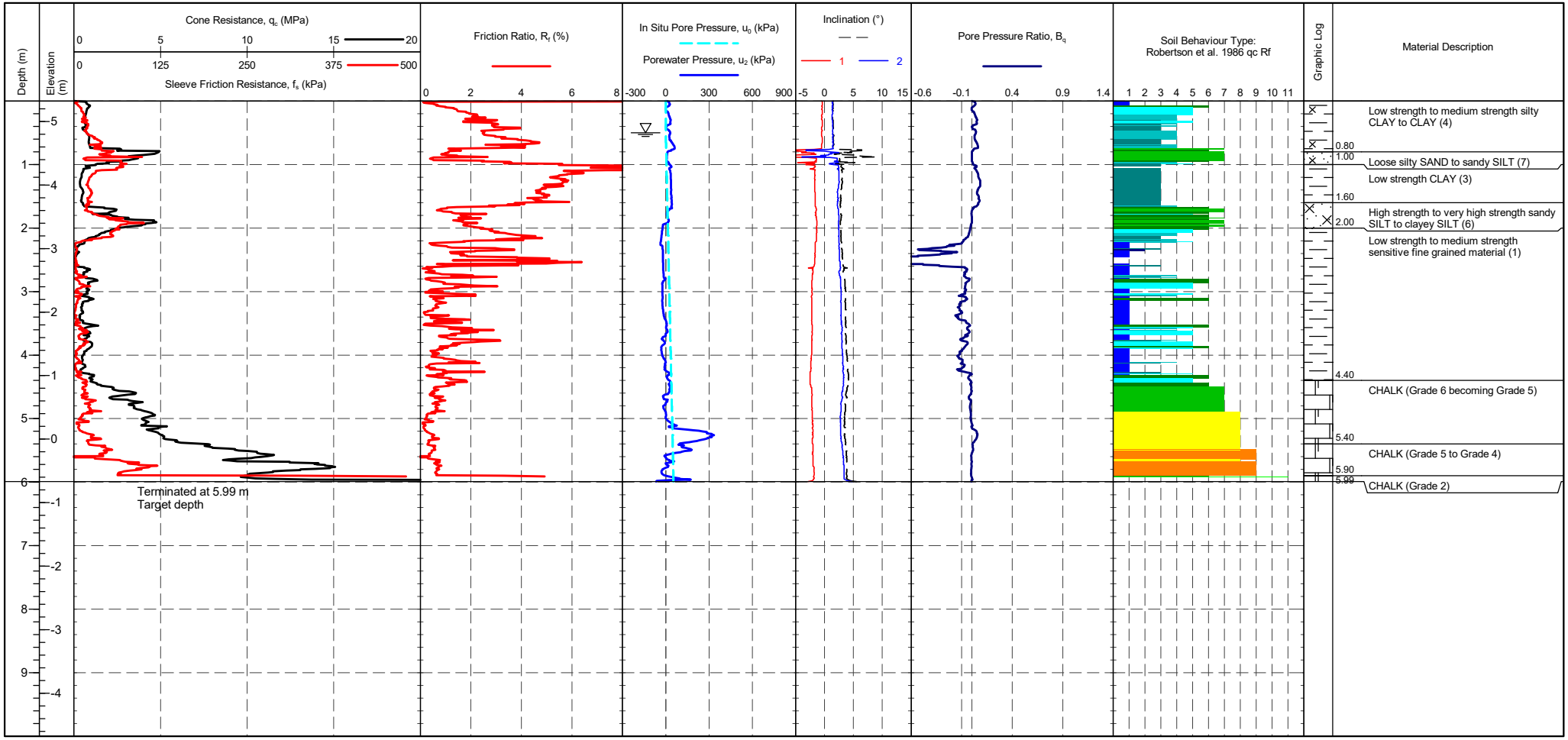
				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	Transducer	Pre	Post	Difference
CONE MODEL	: Subtraction	OPERATOR	: DHo	Tip	219 mV	216 mV	-0.033 MPa
				Sleeve	216 mV	215 mV	-0.001 kPa
				Pore Pressure 2	264 mV	261 mV	-0.001 kPa
				X-Y Inclinometer	2435 mV	2453 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID **DP121**

CLIENT : Ground and Water	EASTING : 500285.868 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102096.212 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.323 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	219 mV	217 mV	-0.022 MPa
Sleeve	219 mV	215 mV	-0.003 kPa
Pore Pressure 2	265 mV	262 mV	-0.001 kPa
X-Y Inclinometer	2314 mV	2445 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

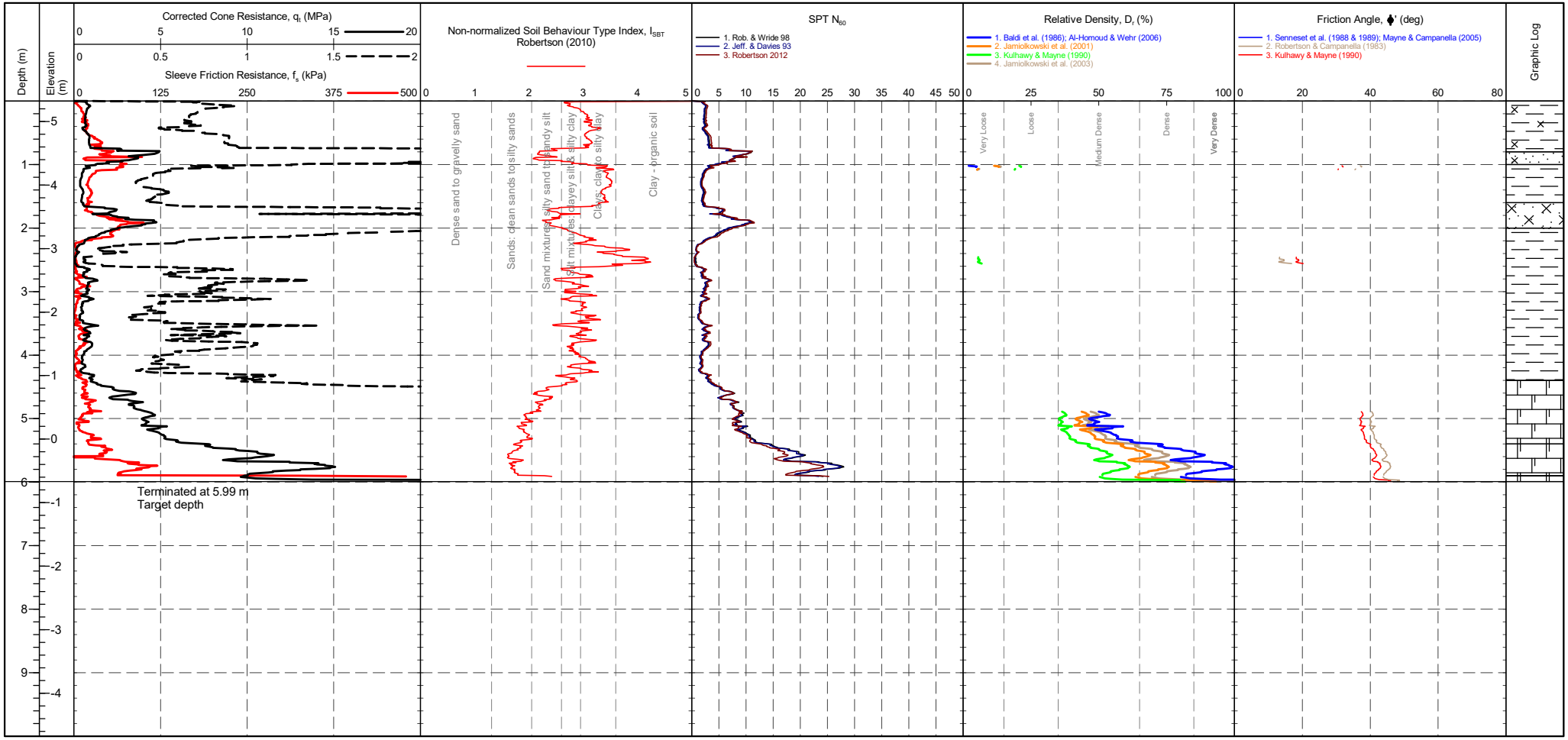
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP121**

CLIENT : Ground and Water	EASTING : 500285.868 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102096.212 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.323 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	219 mV	217 mV
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	219 mV	215 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	265 mV	262 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2314 mV	2445 mV

Transducer	Difference
Tip	-0.022 MPa
Sleeve	-0.003 kPa
Pore Pressure 2	-0.001 kPa

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic
Clays	2.95-3.60
Silt mixtures	2.60-2.95
Sand mixtures	2.05-2.60
Sands	1.31-2.05
Gravelly sand	<1.31

Description	SPT N value, NSPT
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	>50

Description	Relative Density Dr (%)
Very Loose	0 - 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	>85

Groundwater Level

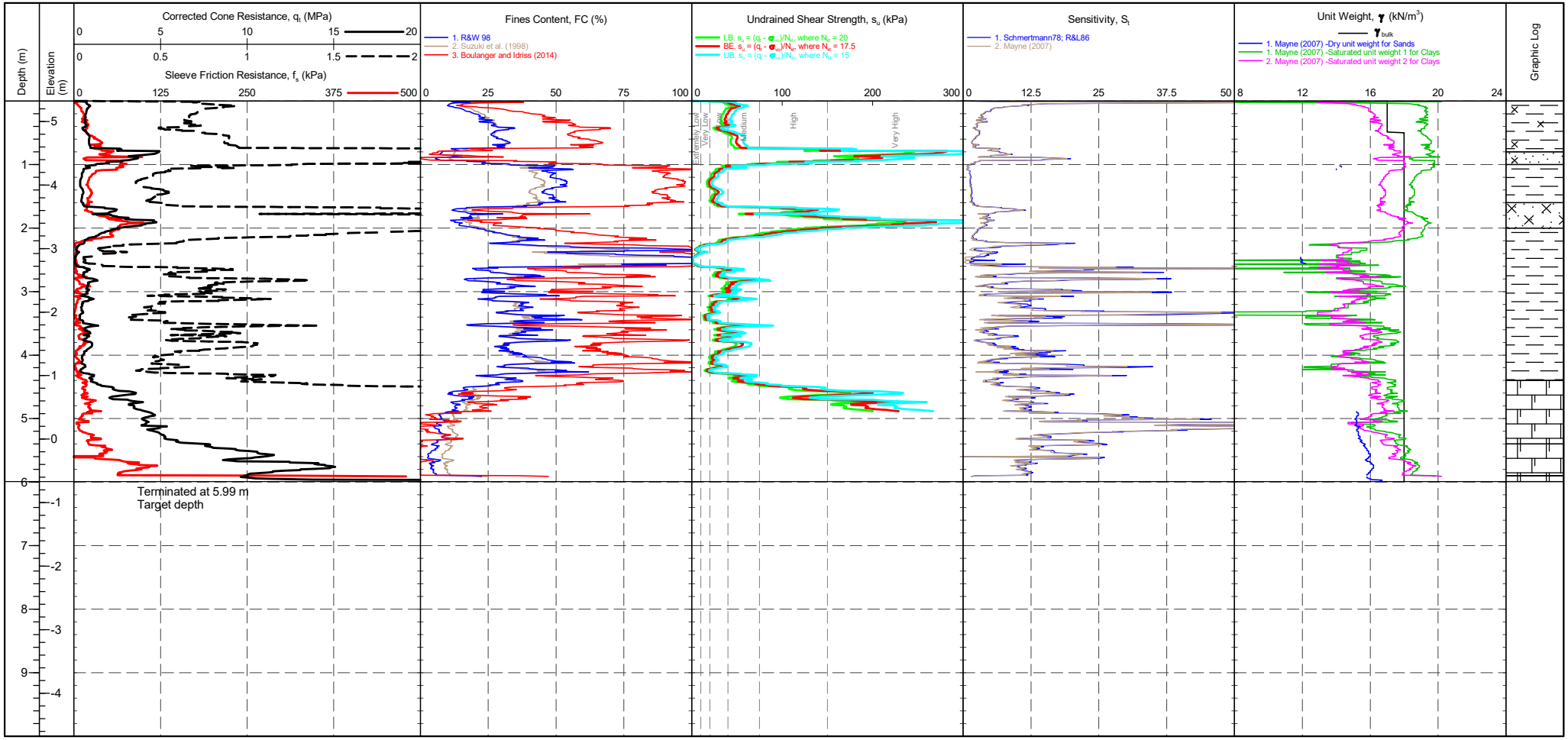
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP121**

CLIENT : Ground and Water	EASTING : 500285.868 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102096.212 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.323 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



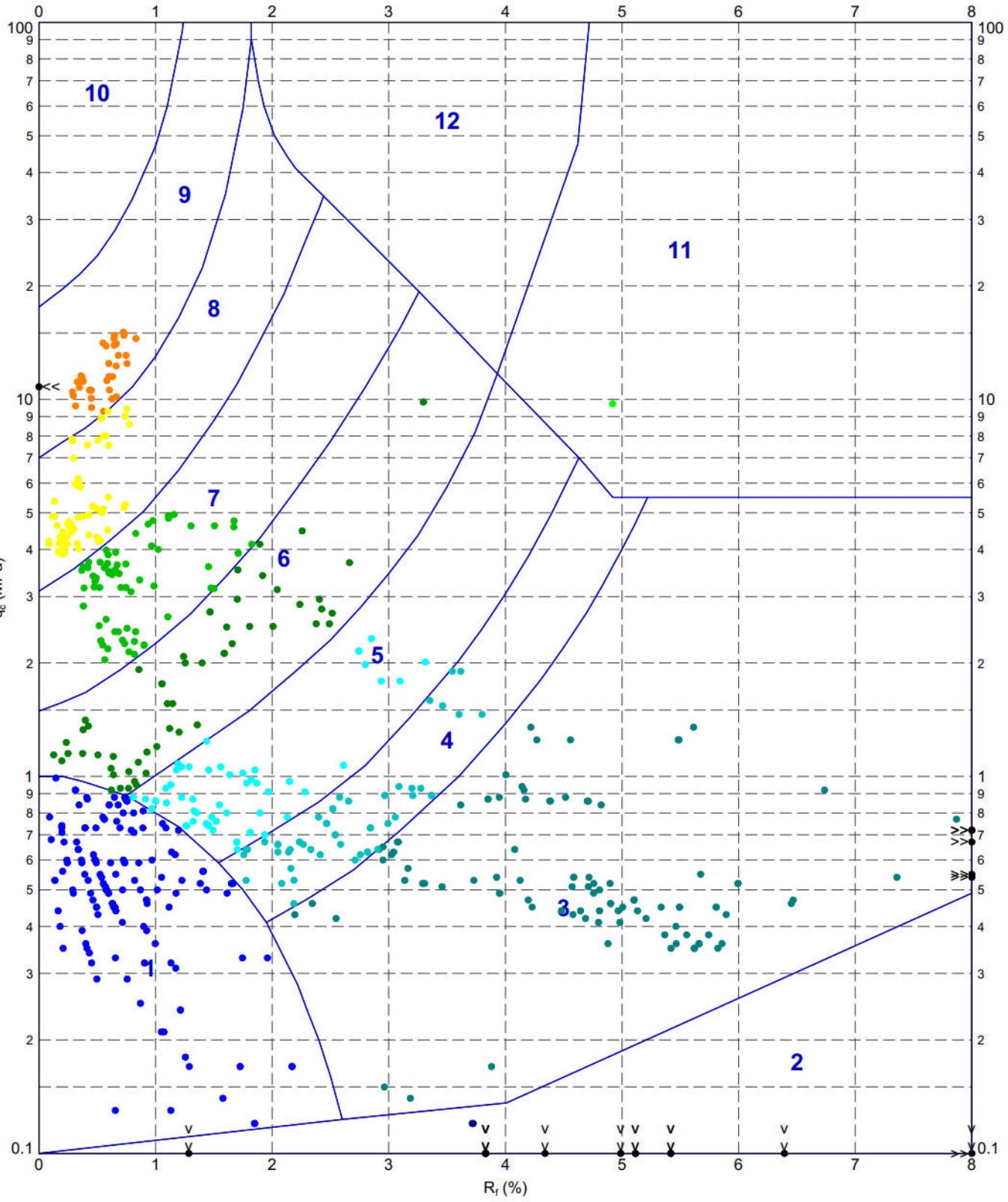
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	219 mV	217 mV	-0.022 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	219 mV	215 mV	-0.003 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	265 mV	262 mV	-0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2314 mV	2445 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP121

DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE Not To Scale	A4
PROJECT No 1240182	FIGURE No

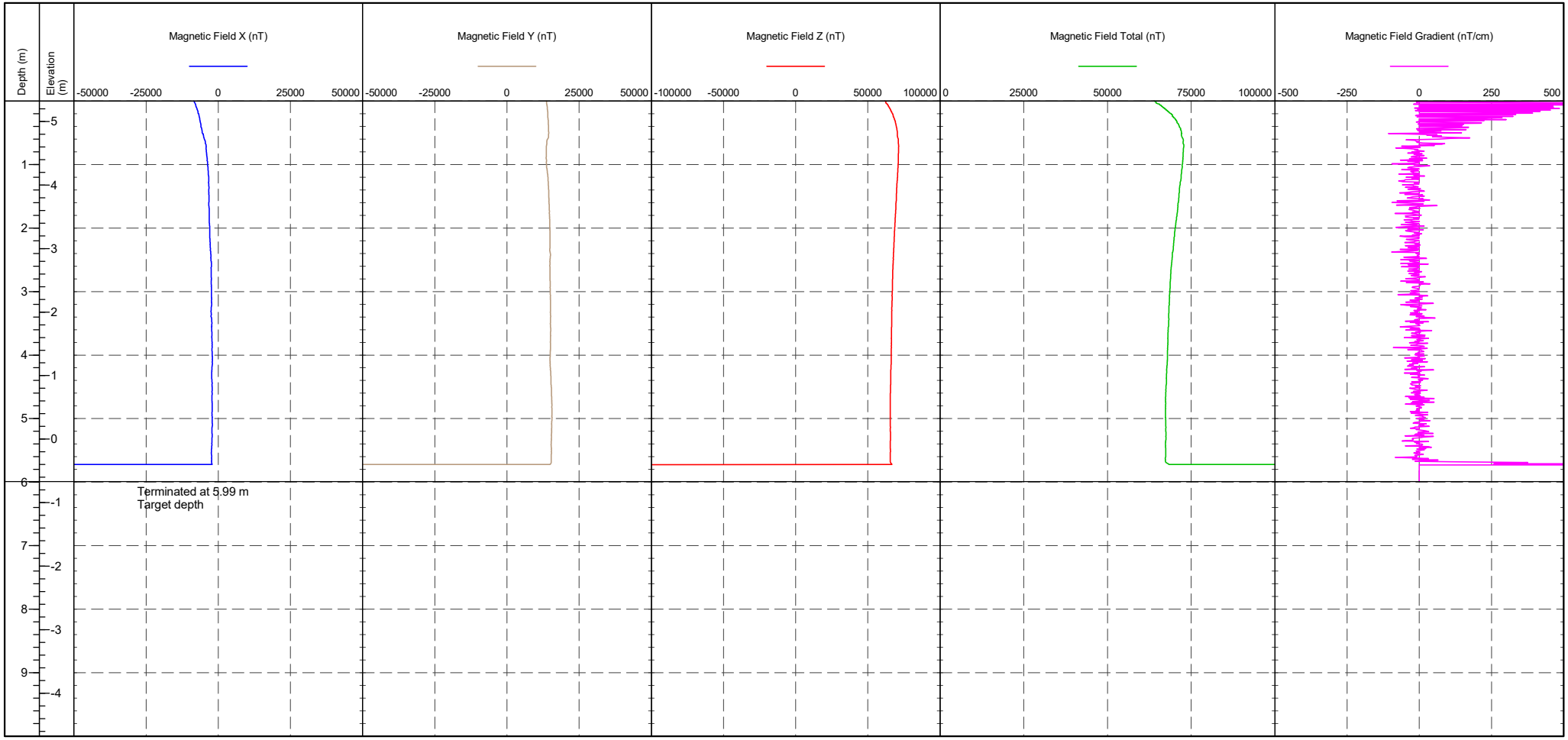
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:38 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP121**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500285.868 m NORTHING : 102096.212 m ELEVATION : 5.323 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



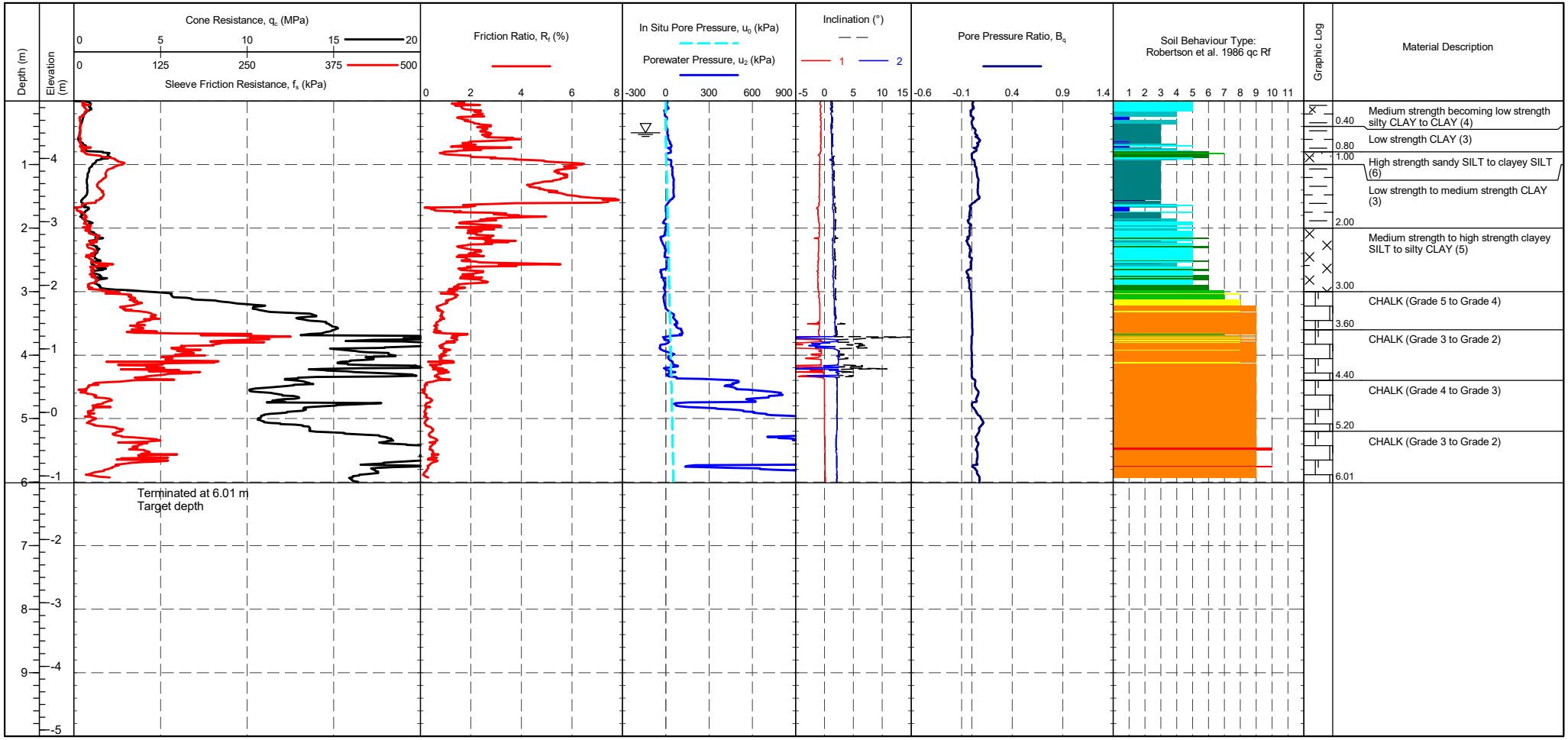
CONE ID : S15-CFIP.1186 CONE MODEL : Subtraction	RIG : CPT 017 - Griffen OPERATOR : DHo	CPTU ZERO VALUES		
		Transducer	Pre	Post / Difference
		Tip	219 mV	217 mV / -0.022 MPa
		Sleeve	219 mV	215 mV / -0.003 kPa
		Pore Pressure 2	265 mV	262 mV / -0.001 kPa
		X-Y Inclinometer	2314 mV	2445 mV

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP122**

CLIENT : Ground and Water	EASTING : 500348.956 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102145.732 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.902 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	215 mV	-0.077 MPa
Sleeve	219 mV	212 mV	-0.005 kPa
Pore Pressure 2	265 mV	249 mV	-0.005 kPa
X-Y Inclinometer	2418 mV	2422 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

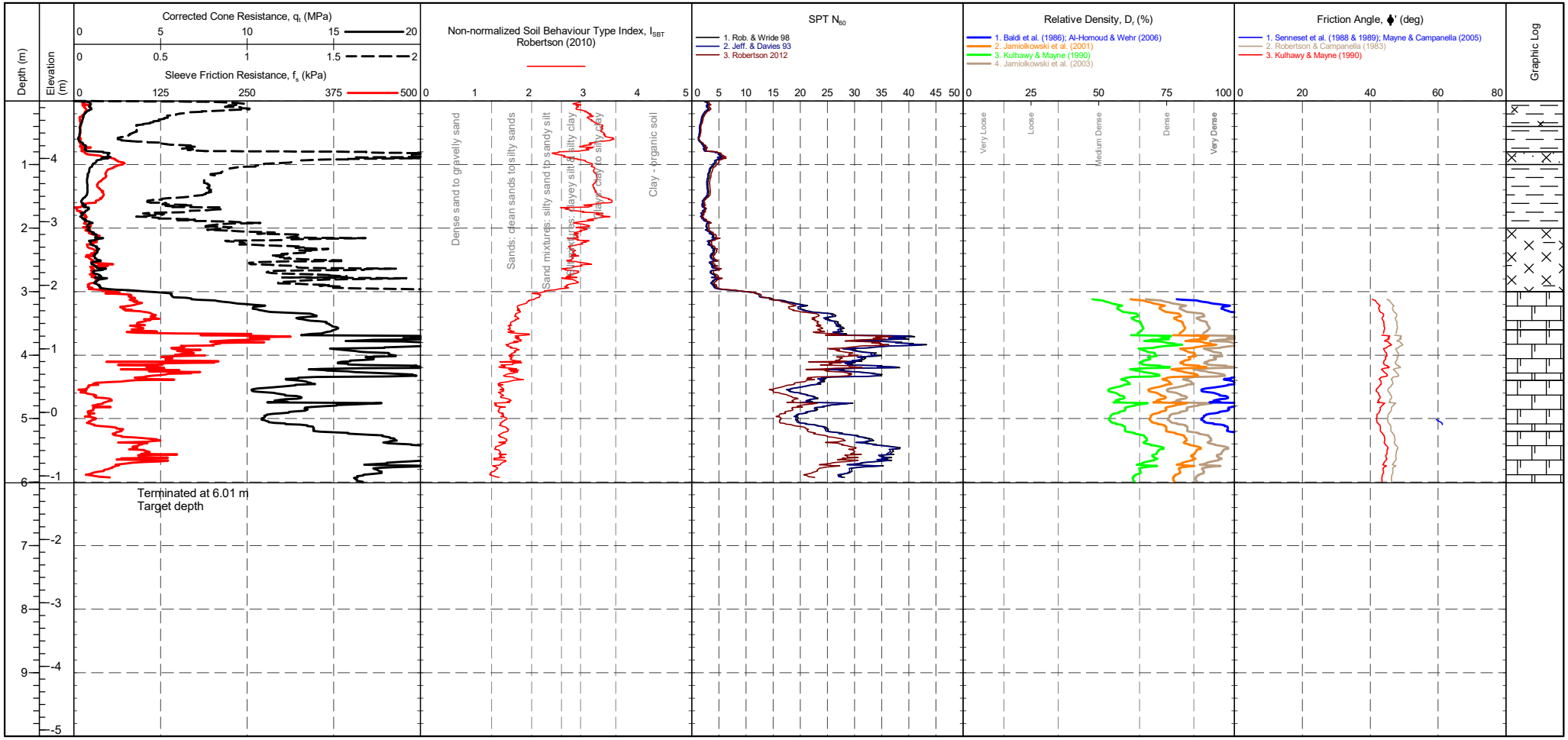
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP122**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500348.956 m NORTHING : 102145.732 m ELEVATION : 4.902 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2			
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen			
CONE AREA RATIO	: 0.79	OPERATOR	: DHo			
FILTER POSITION	: u2	FRICTION REDUCER	: None			
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold			

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	222 mV	215 mV	-0.077 MPa
Sleeve	219 mV	212 mV	-0.005 kPa
Pore Pressure 2	265 mV	249 mV	-0.005 kPa
X-Y Inclinometer	2418 mV	2422 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

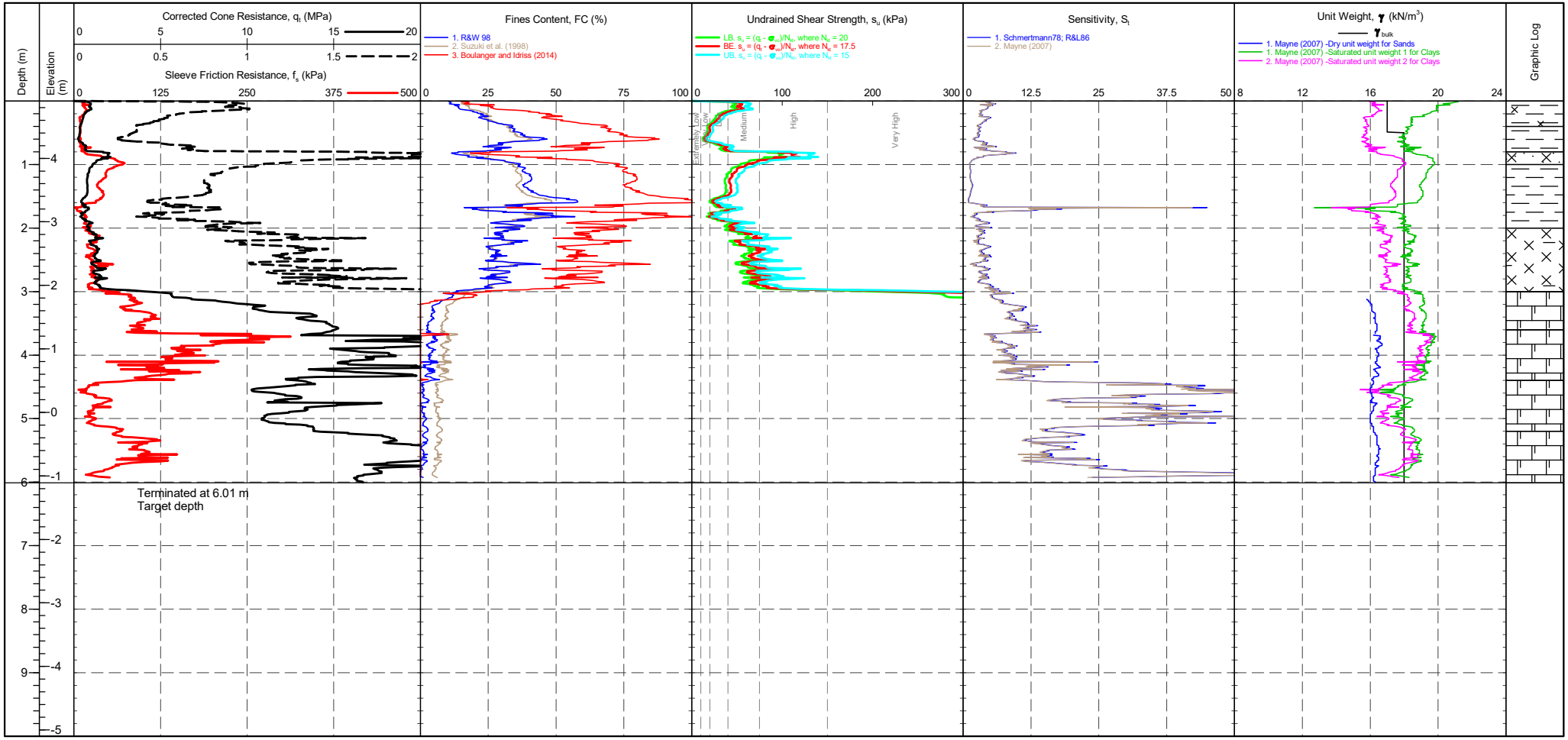
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP122**

CLIENT : Ground and Water	EASTING : 500348.956 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102145.732 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.902 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



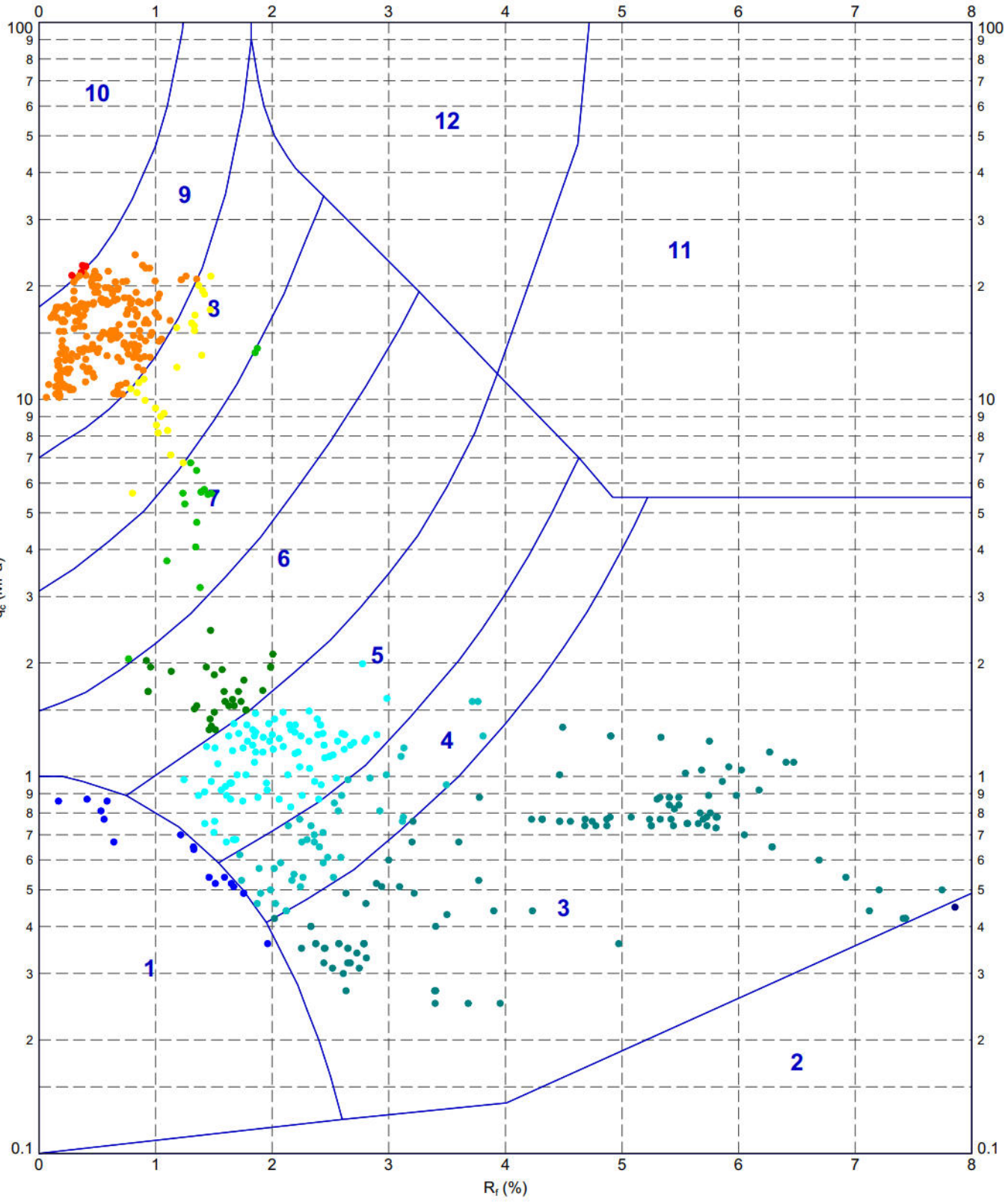
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	222 mV	215 mV	-0.077 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	219 mV	212 mV	-0.005 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	265 mV	249 mV	-0.005 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2418 mV	2422 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP122

DRAWN		DATE	12/04/2024
CHECKED		DATE	12/04/2024
SCALE	Not To Scale		A4
PROJECT No	1240182	FIGURE No	

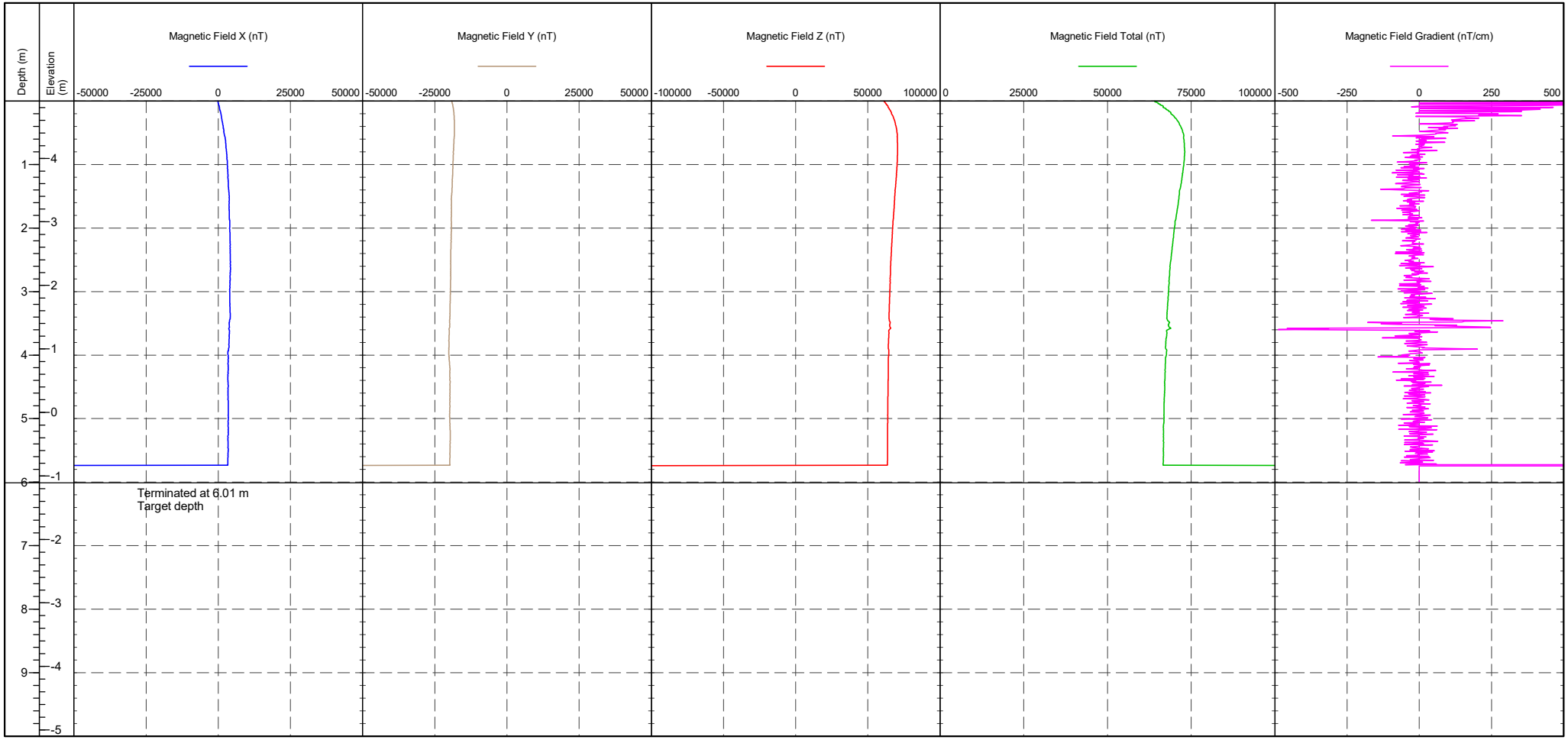
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:39 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP122**

CLIENT : Ground and Water	EASTING : 500348.956 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102145.732 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.902 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



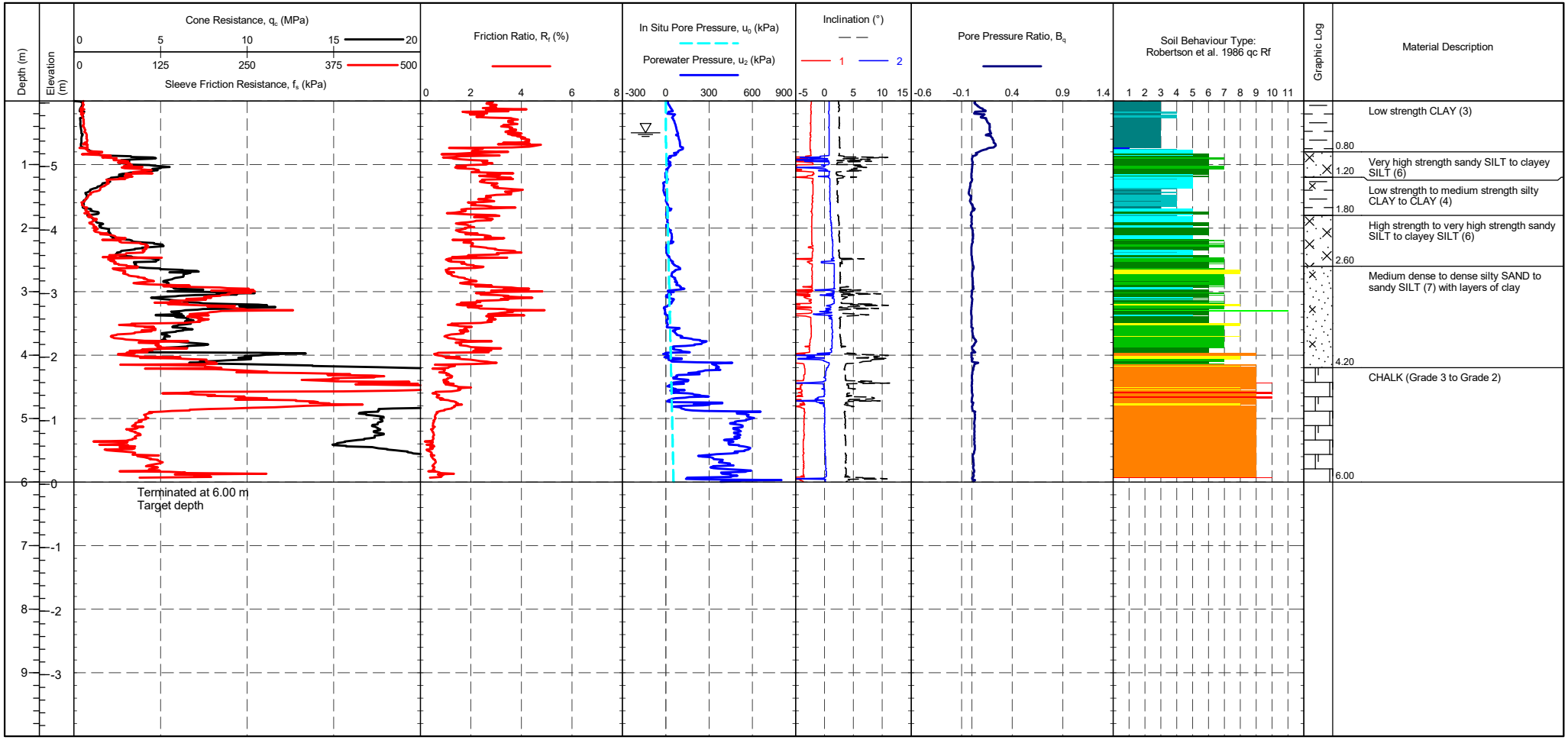
				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	Transducer	Pre	Post	Difference
CONE MODEL	: Subtraction	OPERATOR	: DHo	Tip	222 mV	215 mV	-0.077 MPa
				Sleeve	219 mV	212 mV	-0.005 kPa
				Pore Pressure 2	265 mV	249 mV	-0.005 kPa
				X-Y Inclinometer	2418 mV	2422 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP128**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500036.078 m NORTHING : 101955.813 m ELEVATION : 6.032 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



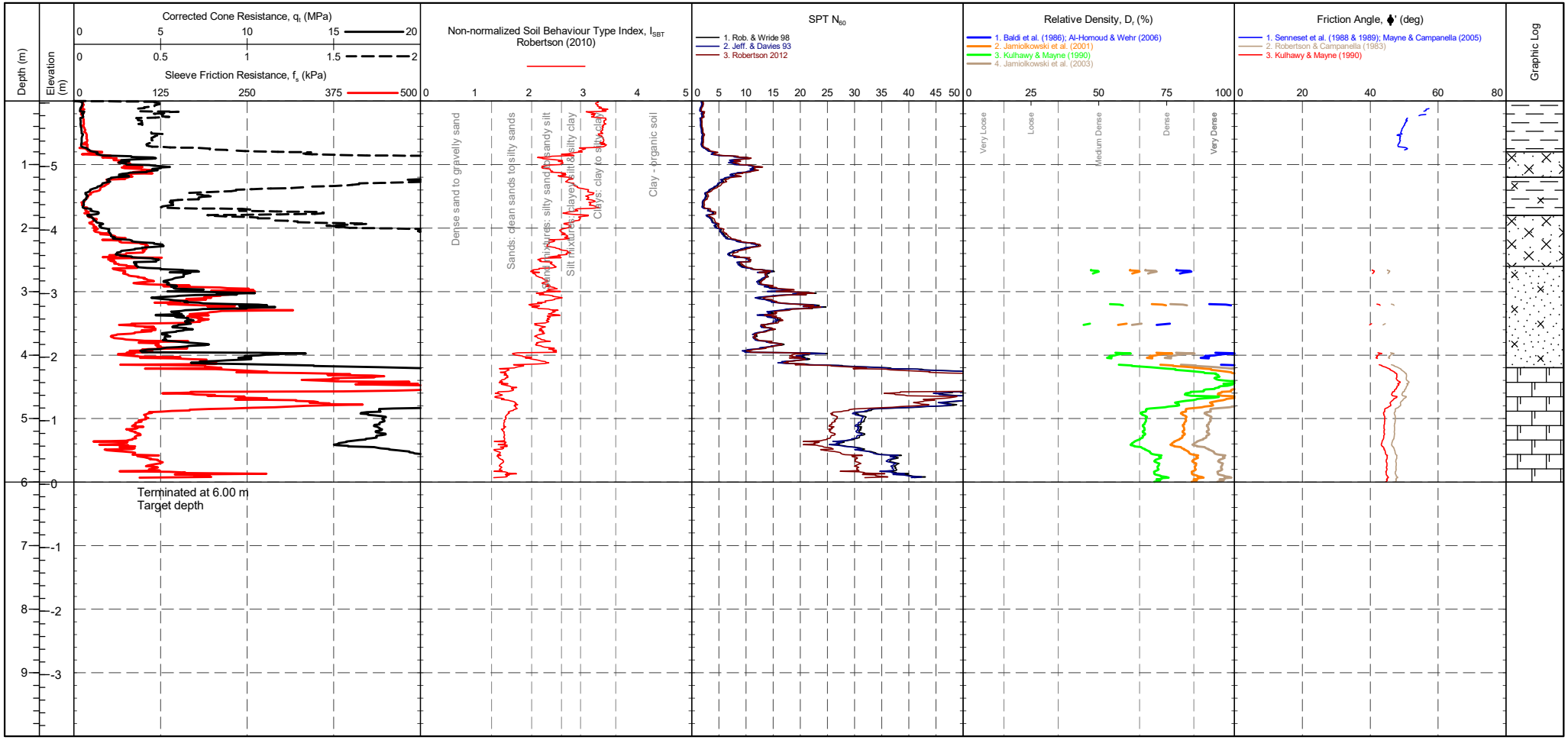
CONE ID : S15-CFIP.1186 CALIBRATION DATE : 09/08/2021 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES Transducer: Pre 222 mV, Post 214 mV, Difference -0.088 MPa Sleeve: Pre 216 mV, Post 208 mV, Difference -0.006 kPa Pore Pressure 2: Pre 266 mV, Post 236 mV, Difference -0.009 kPa X-Y Inclinometer: Pre 2236 mV, Post 2247 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND Groundwater Level Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP128**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500036.078 m NORTHING : 101955.813 m ELEVATION : 6.032 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: DHo		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold		

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	222 mV	214 mV	-0.088 MPa
Sleeve	216 mV	208 mV	-0.006 kPa
Pore Pressure 2	266 mV	236 mV	-0.009 kPa
X-Y Inclinometer	2236 mV	2247 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

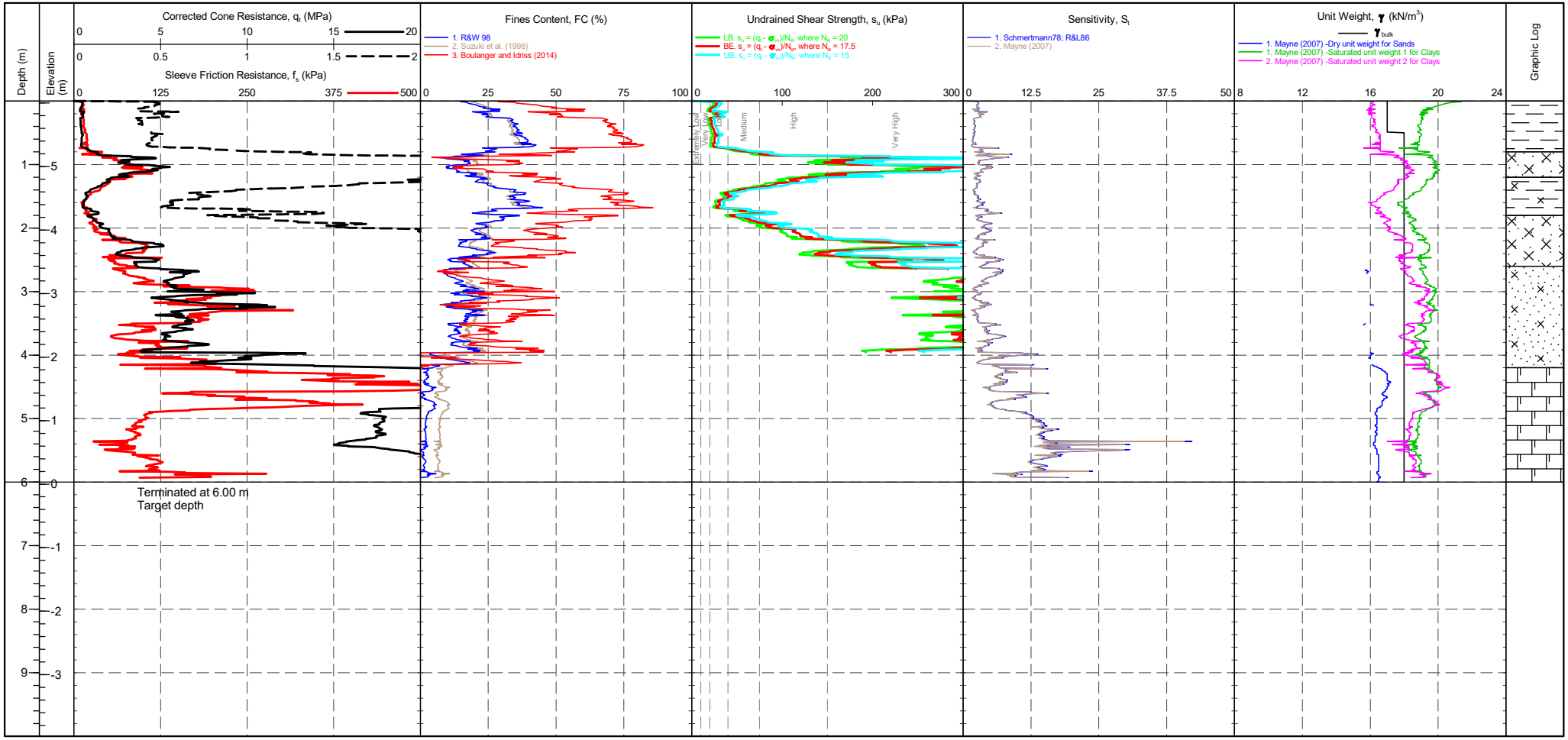
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP128**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500036.078 m NORTHING : 101955.813 m ELEVATION : 6.032 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



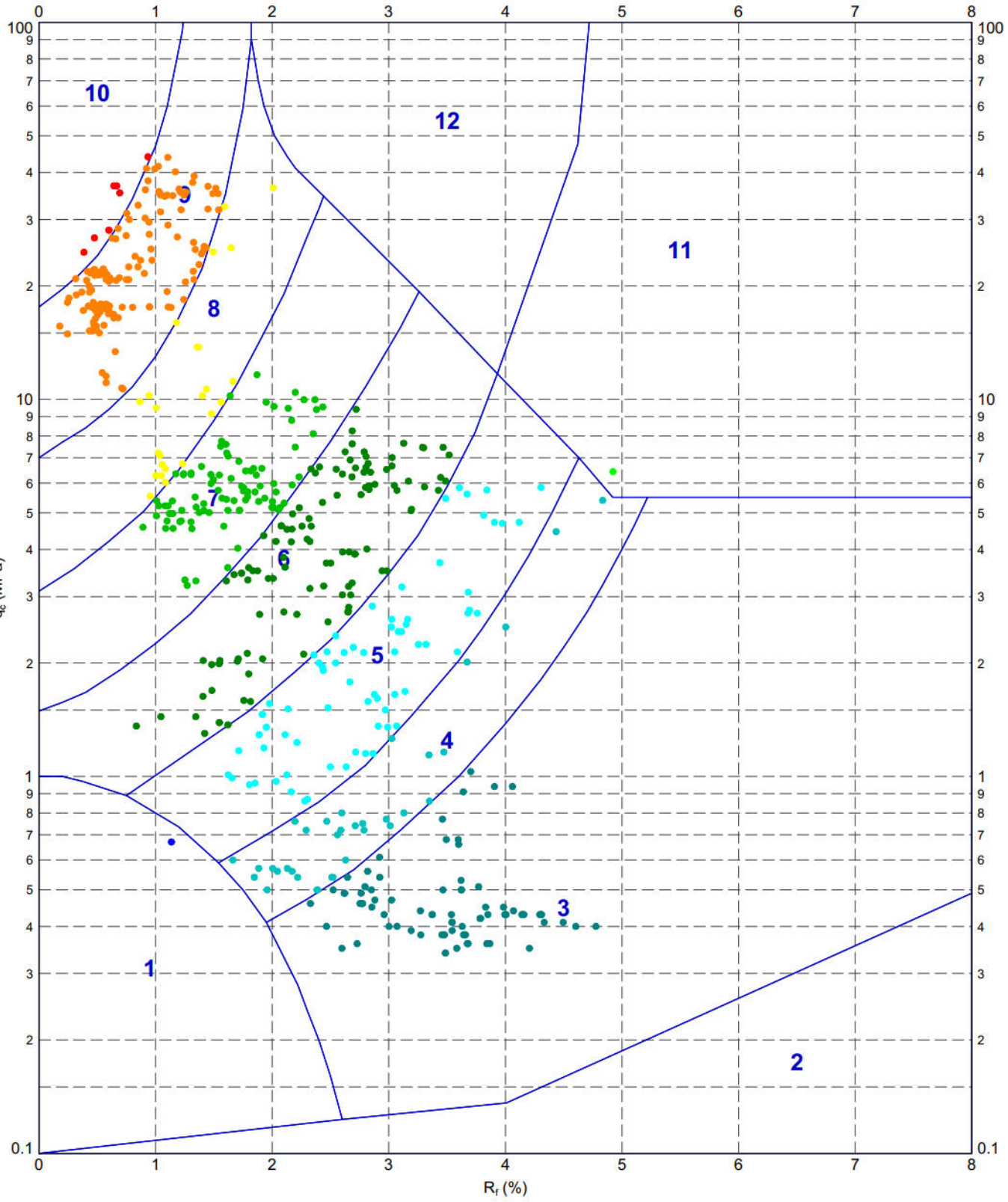
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	222 mV	214 mV	-0.088 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	216 mV	208 mV	-0.006 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	266 mV	236 mV	-0.009 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2236 mV	2247 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP128

DRAWN		DATE	12/04/2024
CHECKED		DATE	12/04/2024
SCALE	Not To Scale		A4
PROJECT No	1240182	FIGURE No	

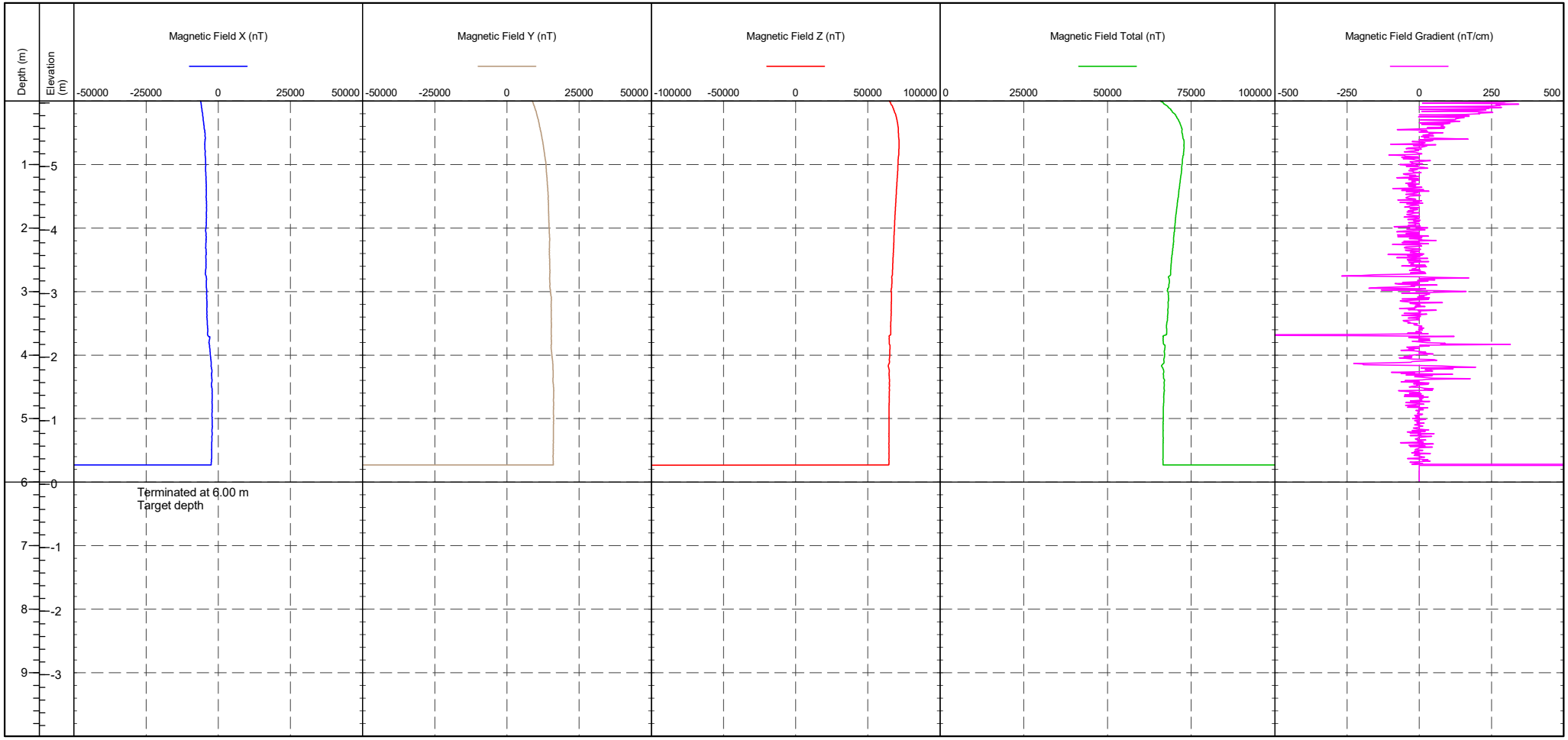
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:39 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP128**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500036.078 m NORTHING : 101955.813 m ELEVATION : 6.032 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1186 CONE MODEL : Subtraction	RIG : CPT 017 - Griffen OPERATOR : DHo	CPTU ZERO VALUES	

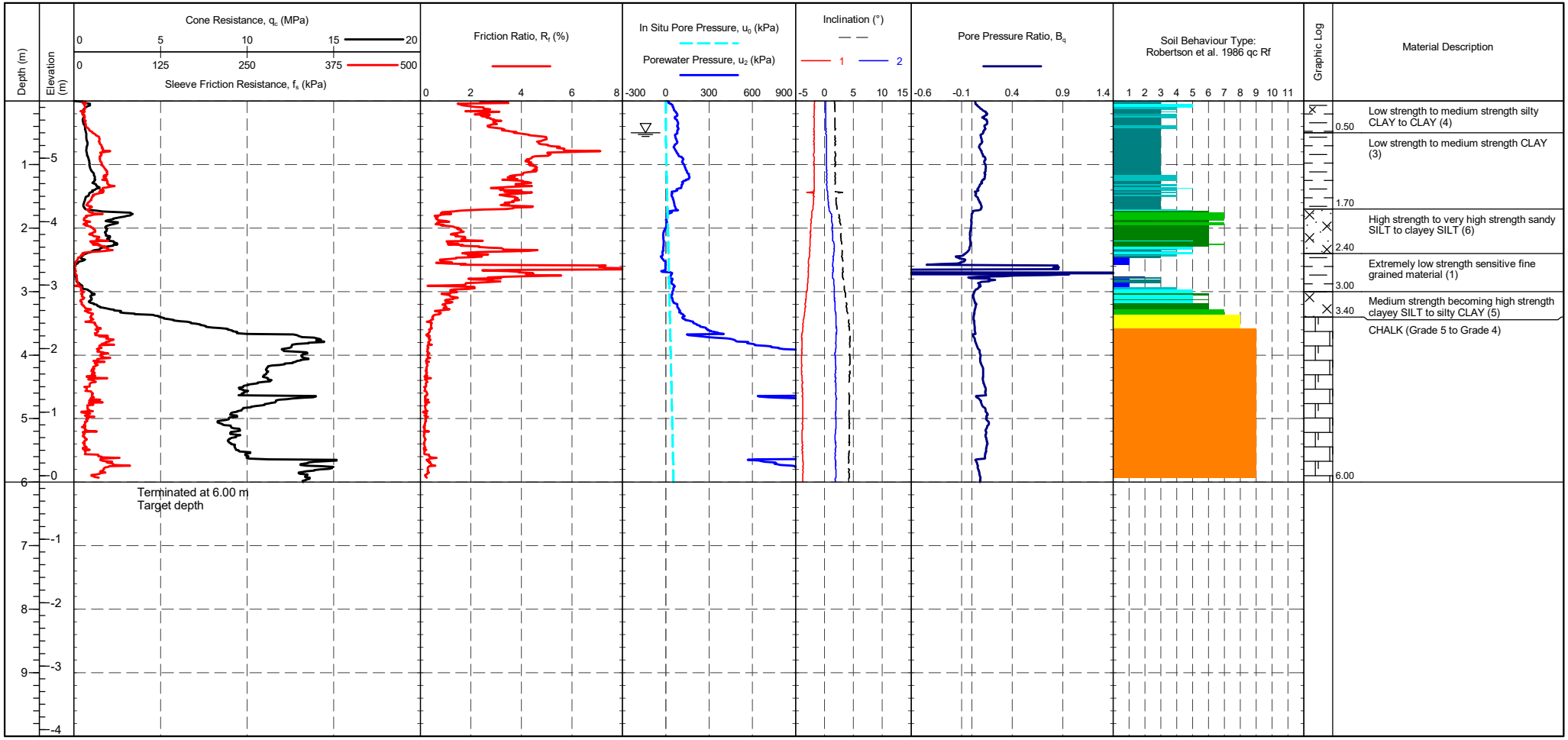
Transducer	Pre	Post	Difference
Tip	222 mV	214 mV	-0.088 MPa
Sleeve	216 mV	208 mV	-0.006 kPa
Pore Pressure 2	266 mV	236 mV	-0.009 kPa
X-Y Inclinometer	2236 mV	2247 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP129**

CLIENT : Ground and Water	EASTING : 500103.299 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101973.777 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.899 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	218 mV	-0.033 MPa
Sleeve	216 mV	213 mV	-0.002 kPa
Pore Pressure 2	263 mV	265 mV	0.001 kPa
X-Y Inclinometer	2329 mV	2308 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

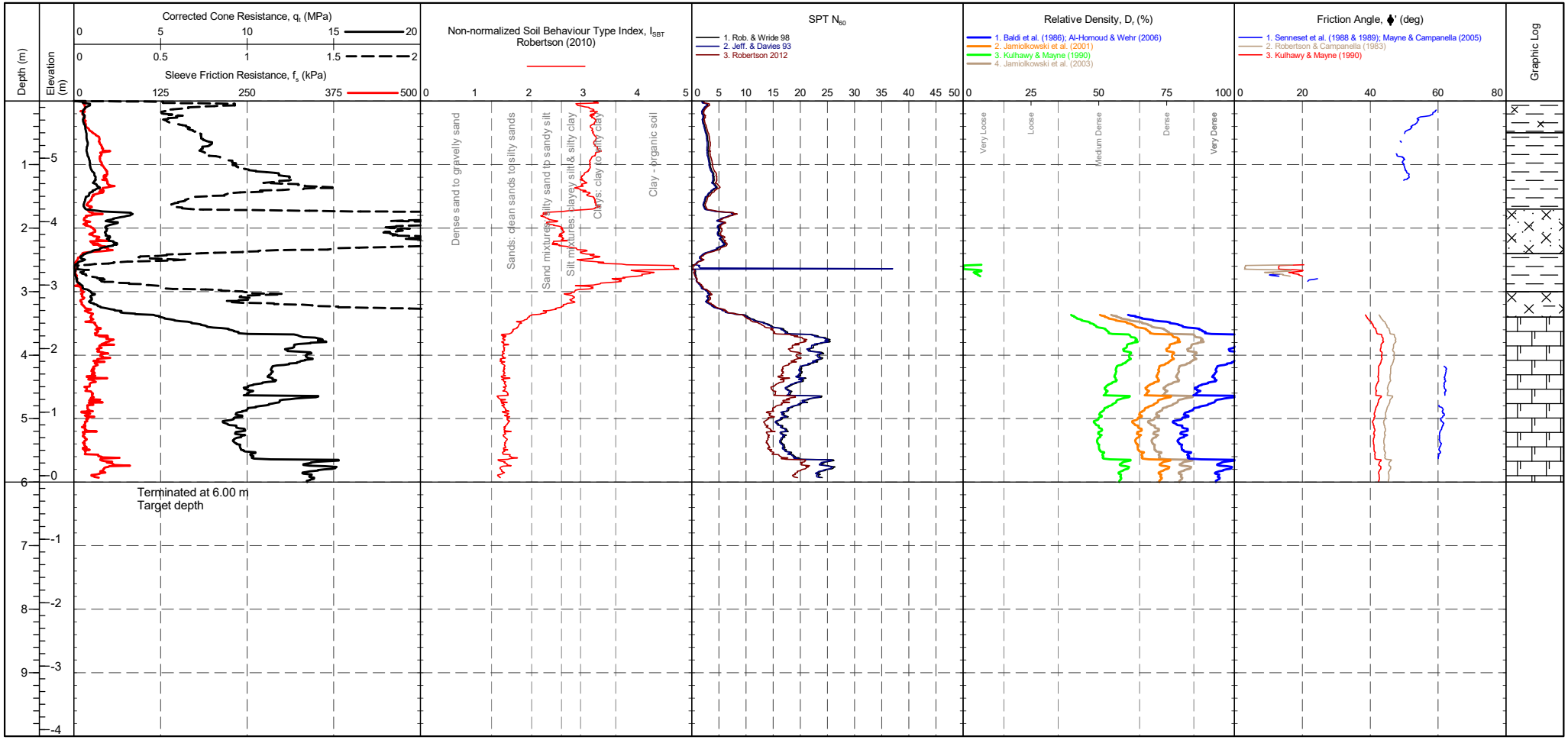
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID **DP129**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500103.299 m NORTHING : 101973.777 m ELEVATION : 5.899 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: DHo		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	218 mV	-0.033 MPa
Sleeve	216 mV	213 mV	-0.002 kPa
Pore Pressure 2	263 mV	265 mV	0.001 kPa
X-Y Inclinometer	2329 mV	2308 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

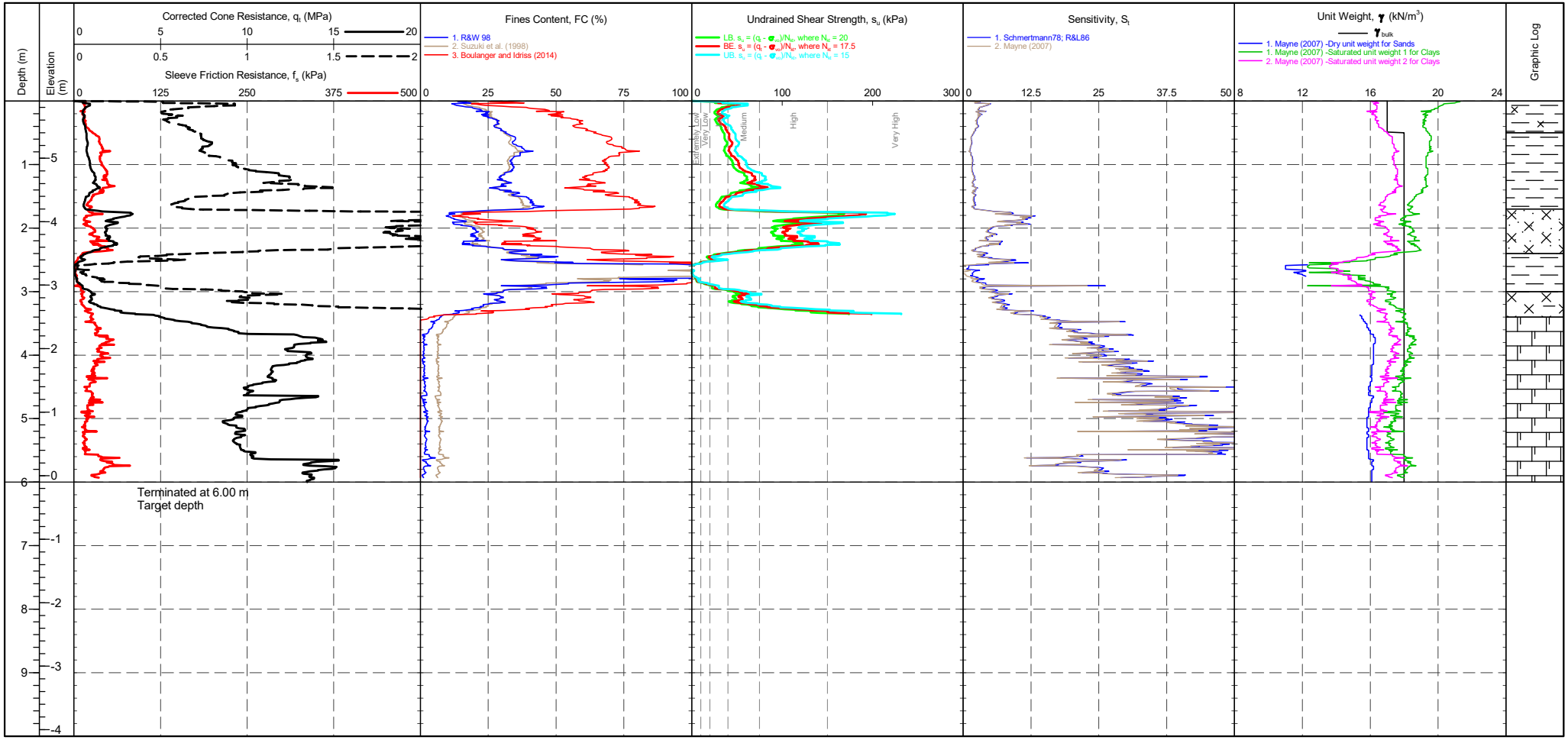
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP129**

CLIENT : Ground and Water	EASTING : 500103.299 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101973.777 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.899 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



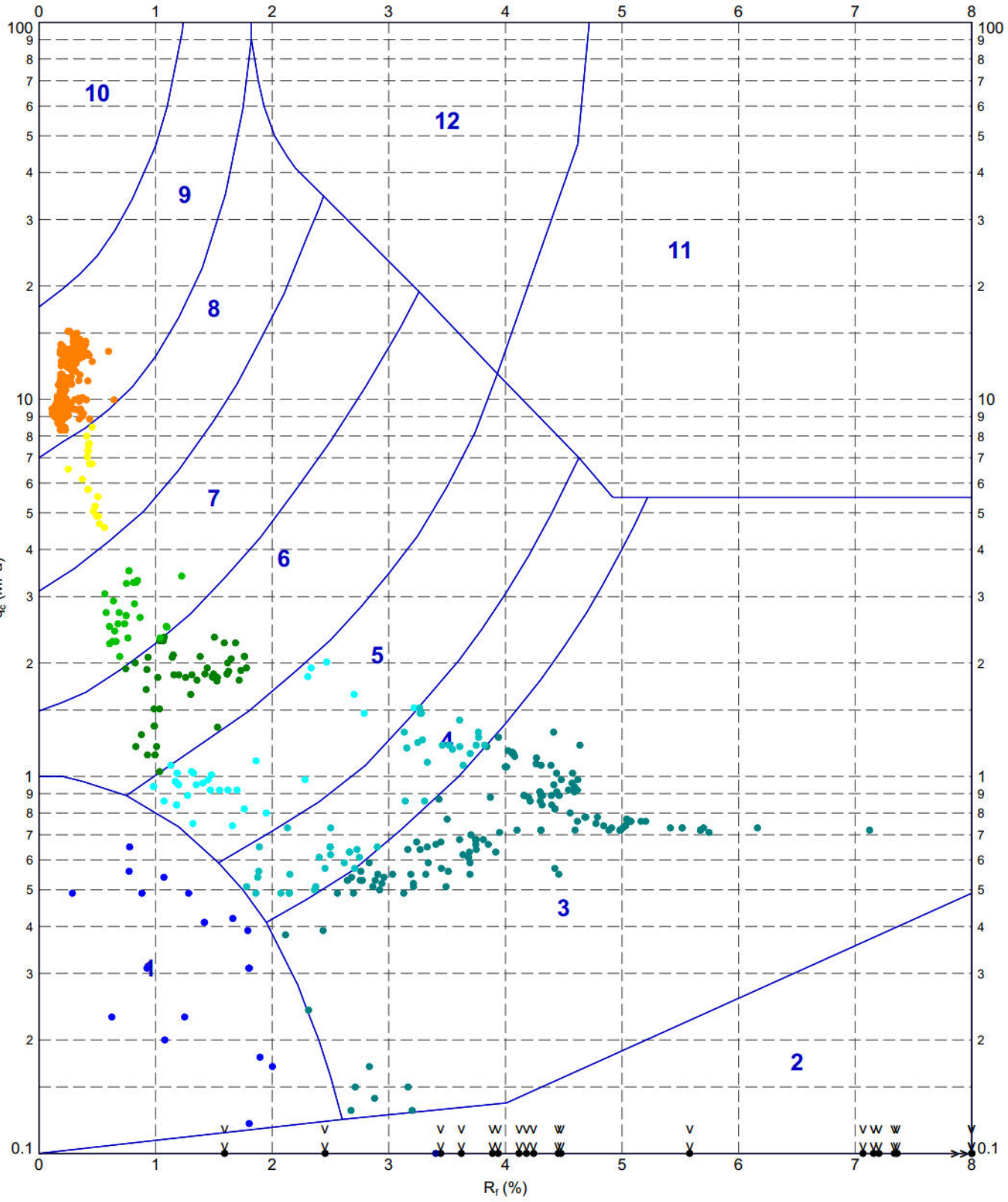
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	221 mV	218 mV	-0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	216 mV	213 mV	-0.002 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	263 mV	265 mV	0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2329 mV	2308 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP129

DRAWN	DATE 12/04/2024	
CHECKED	DATE 12/04/2024	
SCALE Not To Scale		A4
PROJECT No 1240182	FIGURE No	

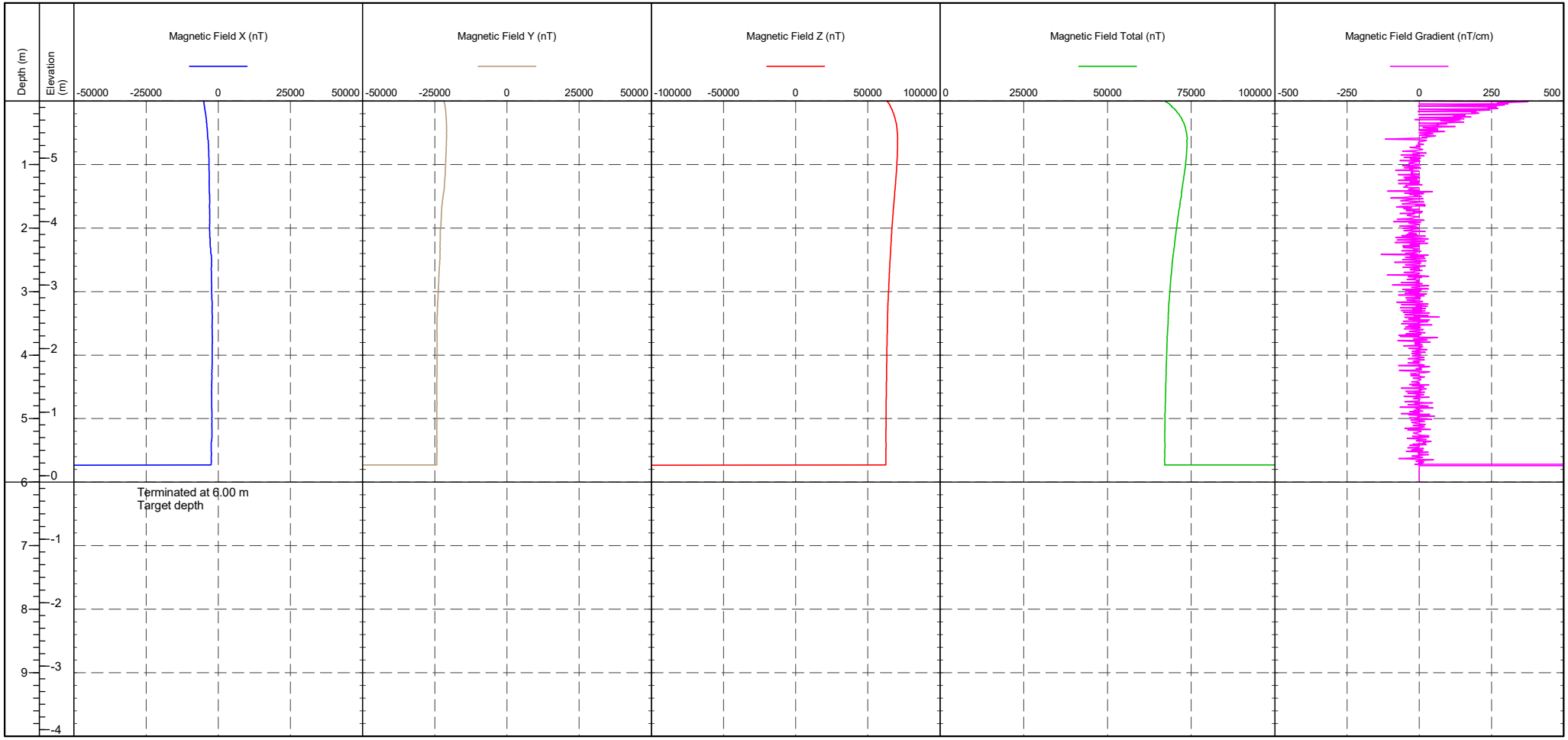
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:40 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP129**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500103.299 m NORTHING : 101973.777 m ELEVATION : 5.899 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



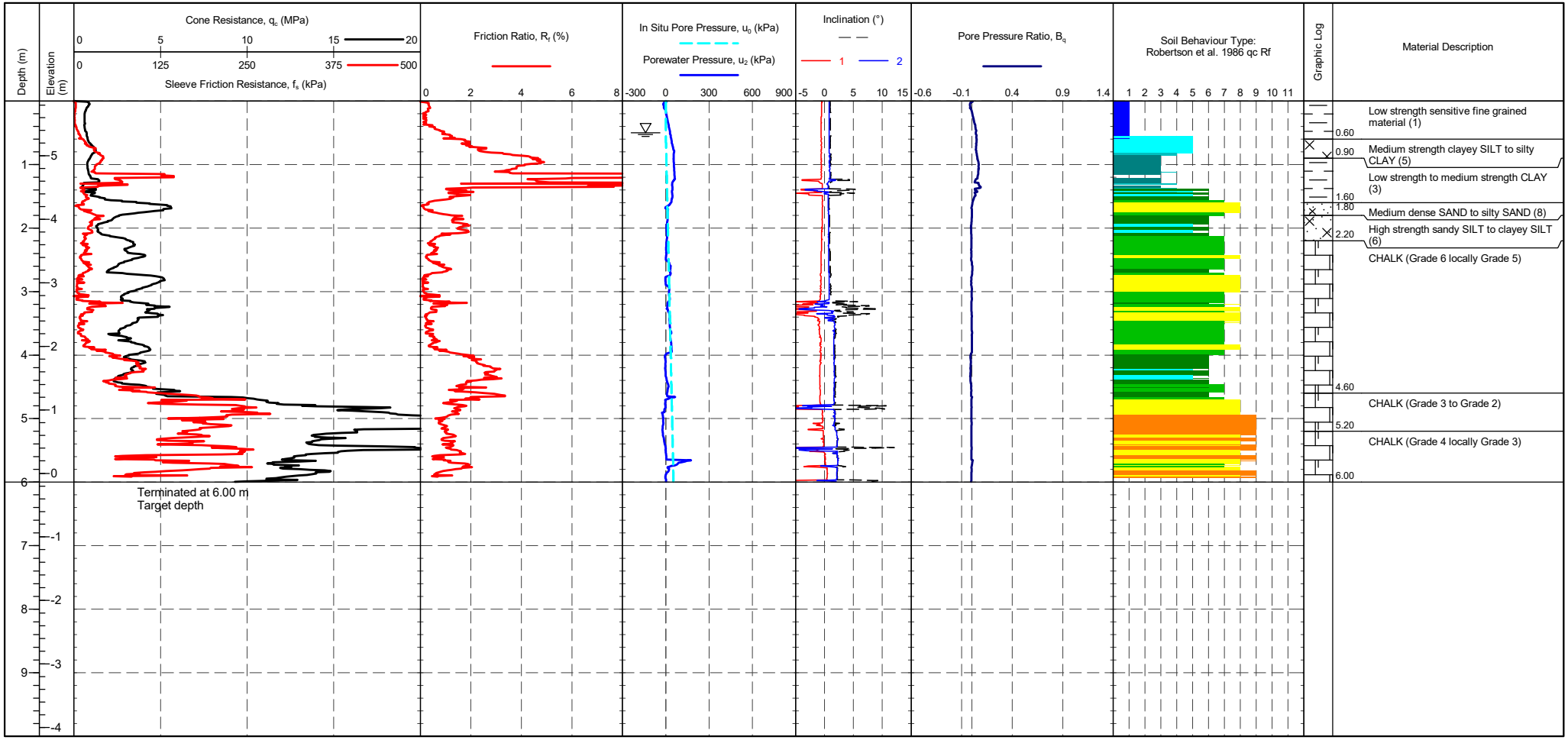
CONE ID : S15-CFIP.1186 CONE MODEL : Subtraction	RIG : CPT 017 - Griffen OPERATOR : DHo	CPTU ZERO VALUES		
		Transducer	Pre	Post	Difference
		Tip	221 mV	218 mV	-0.033 MPa
		Sleeve	216 mV	213 mV	-0.002 kPa
		Pore Pressure 2	263 mV	265 mV	0.001 kPa
		X-Y Inclinometer	2329 mV	2308 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP130**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500169.992 m NORTHING : 102019.031 m ELEVATION : 5.863 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	216 mV	219 mV	0.033 MPa
Sleeve	215 mV	218 mV	0.002 kPa
Pore Pressure 2	273 mV	273 mV	0 kPa
X-Y Inclinometer	2441 mV	2439 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

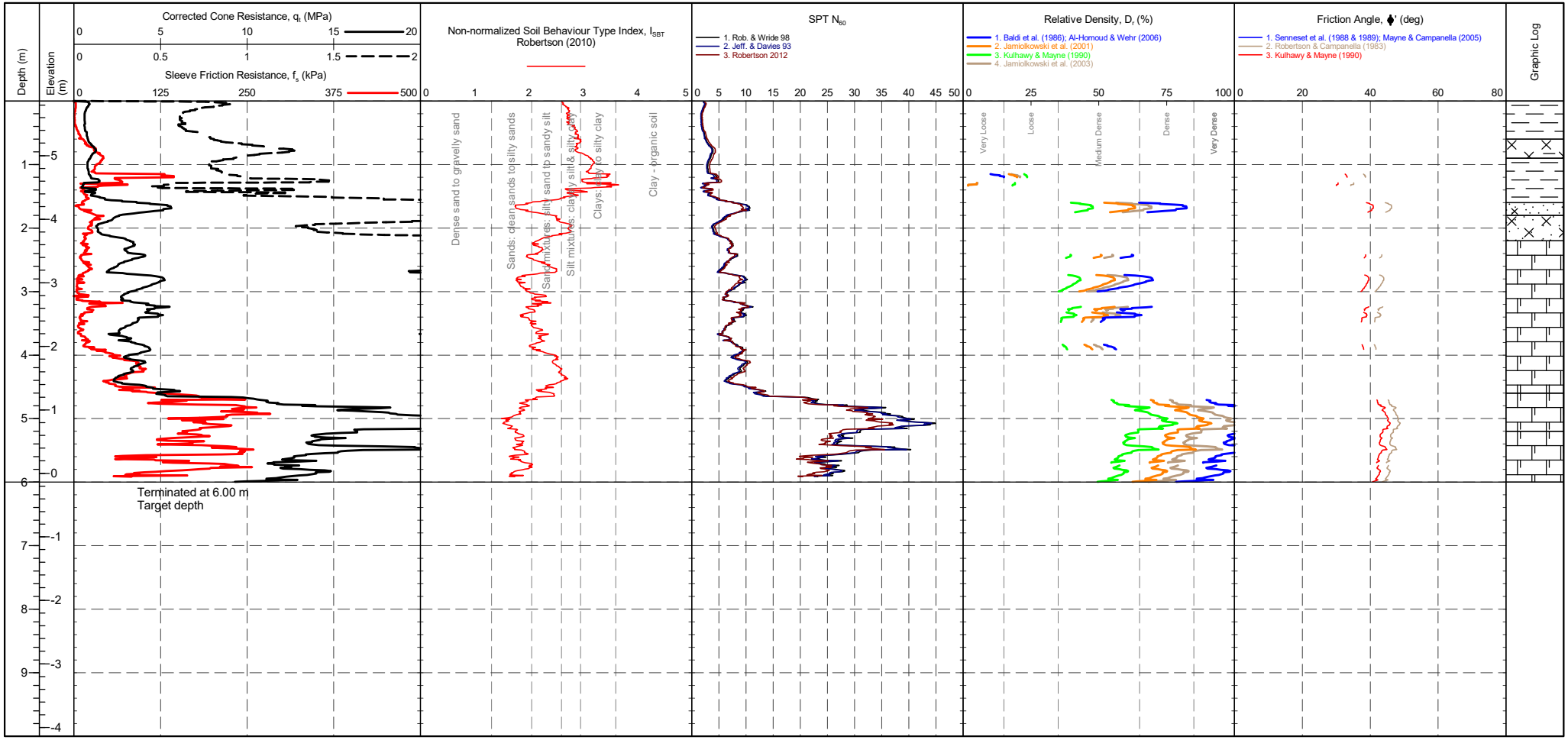
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP130**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500169.992 m NORTHING : 102019.031 m ELEVATION : 5.863 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2			
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen			
CONE AREA RATIO	: 0.79	OPERATOR	: DHo			
FILTER POSITION	: u2	FRICTION REDUCER	: None			
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold			

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	216 mV	219 mV	0.033 MPa
Sleeve	215 mV	218 mV	0.002 kPa
Pore Pressure 2	273 mV	273 mV	0 kPa
X-Y Inclinometer	2441 mV	2439 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

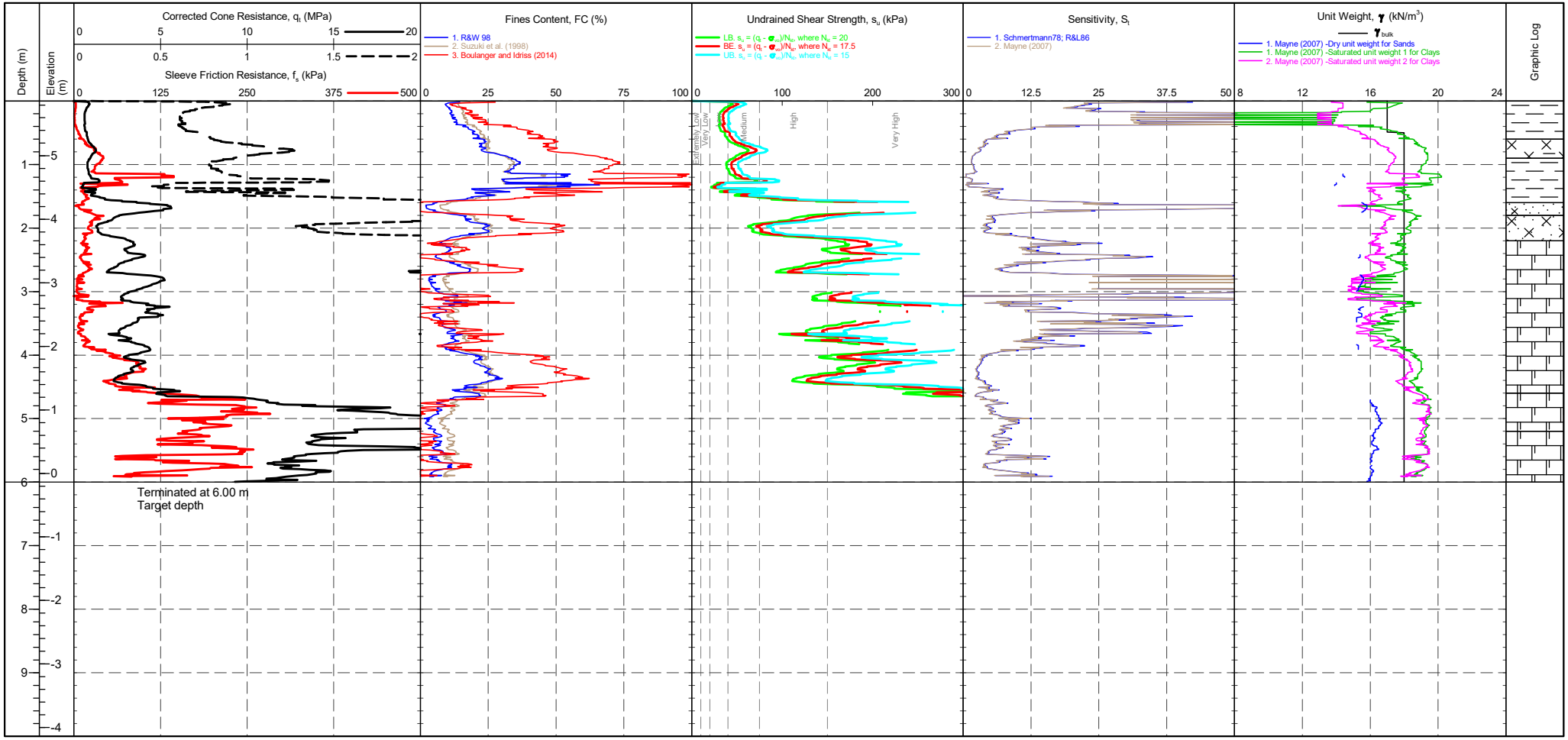
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP130**

CLIENT : Ground and Water	EASTING : 500169.992 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102019.031 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.863 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



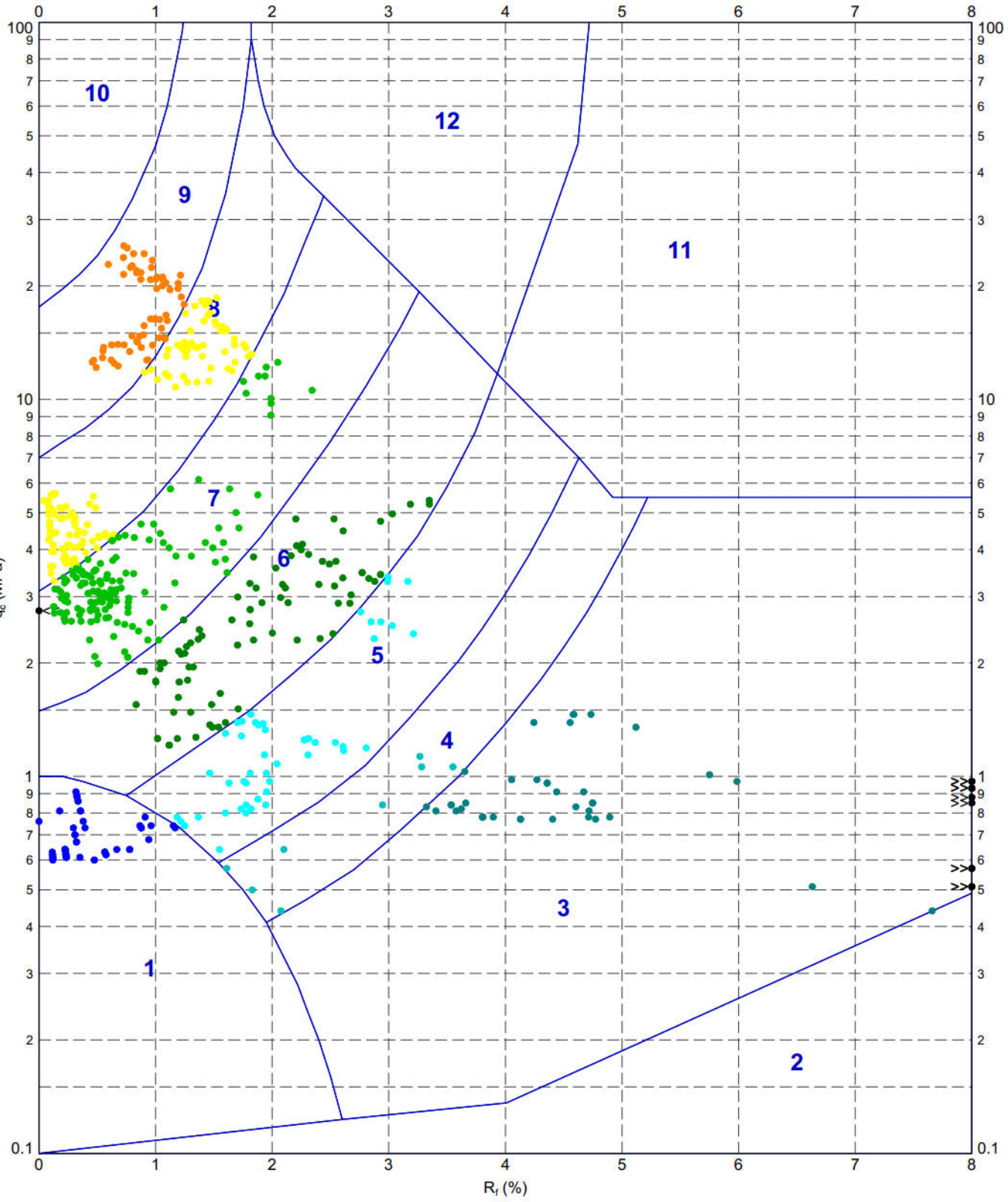
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	216 mV	219 mV	0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	215 mV	218 mV	0.002 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	273 mV	273 mV	0 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2441 mV	2439 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP130

DRAWN	DATE 12/04/2024	
CHECKED	DATE 12/04/2024	
SCALE Not To Scale		A4
PROJECT No 1240182	FIGURE No	

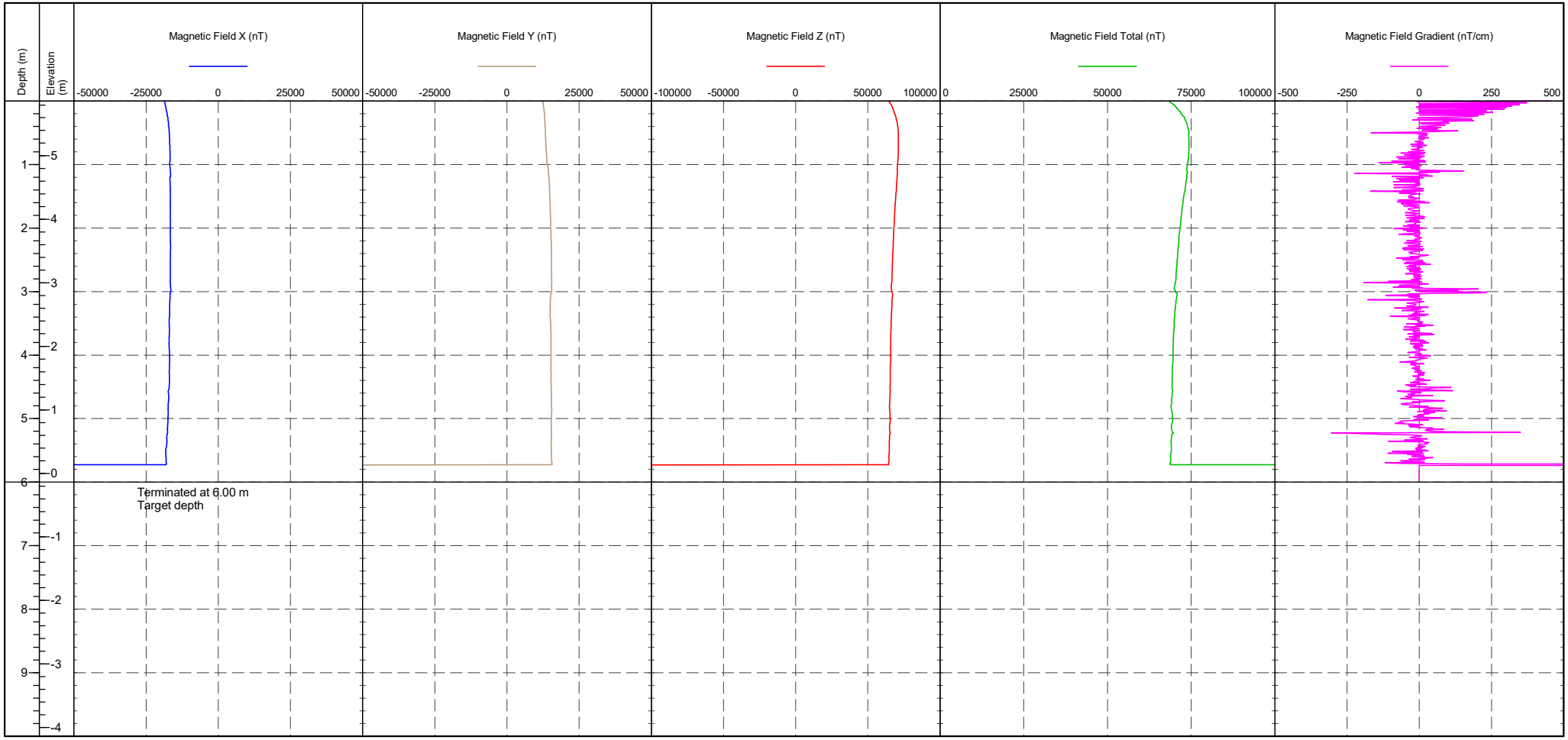
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:41 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP130**

CLIENT : Ground and Water	EASTING : 500169.992 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102019.031 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.863 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



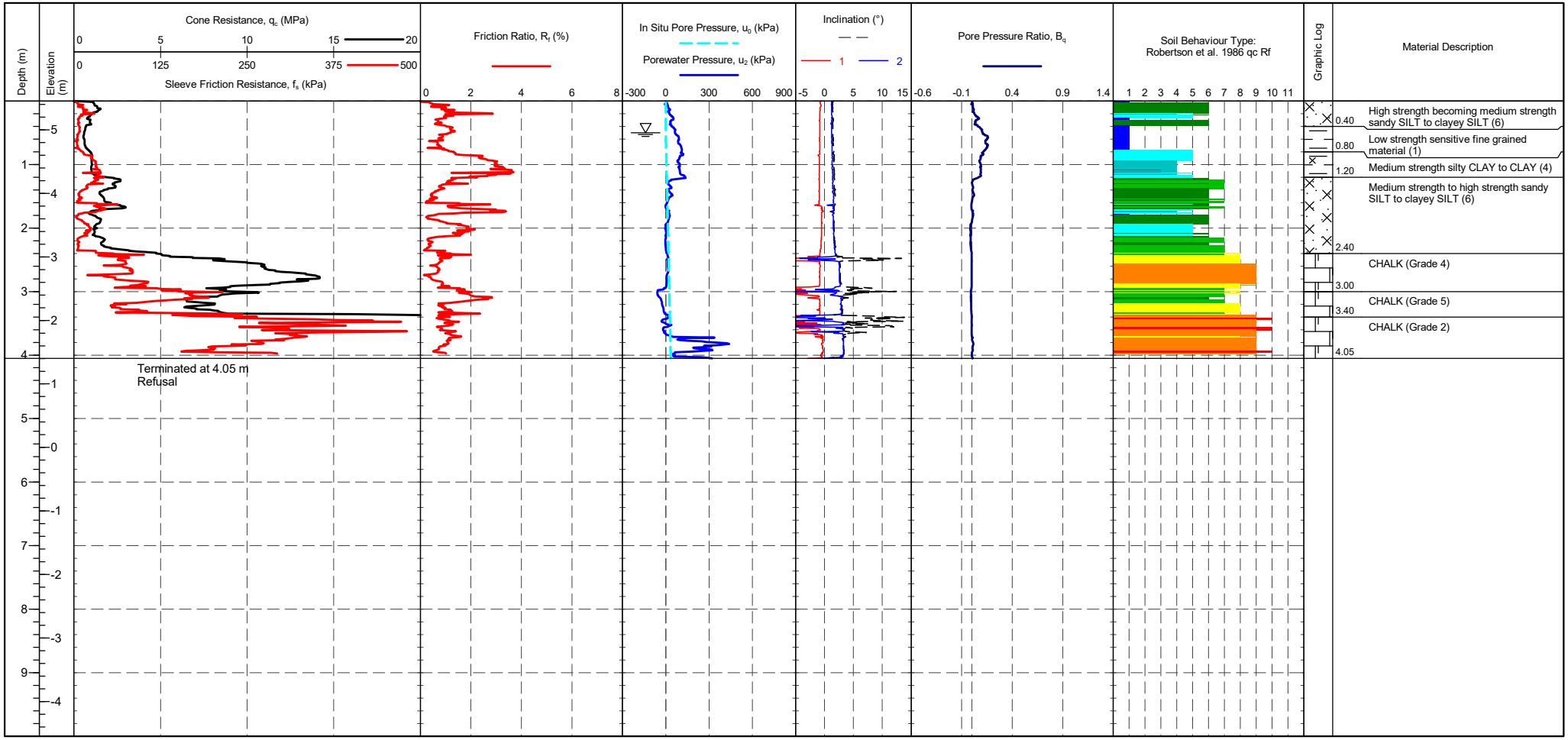
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	216 mV	219 mV	0.033 MPa
				Sleeve	215 mV	218 mV	0.002 kPa
				Pore Pressure 2	273 mV	273 mV	0 kPa
				X-Y Inclinometer	2441 mV	2439 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP131**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500231.472 m NORTHING : 102043.110 m ELEVATION : 5.454 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



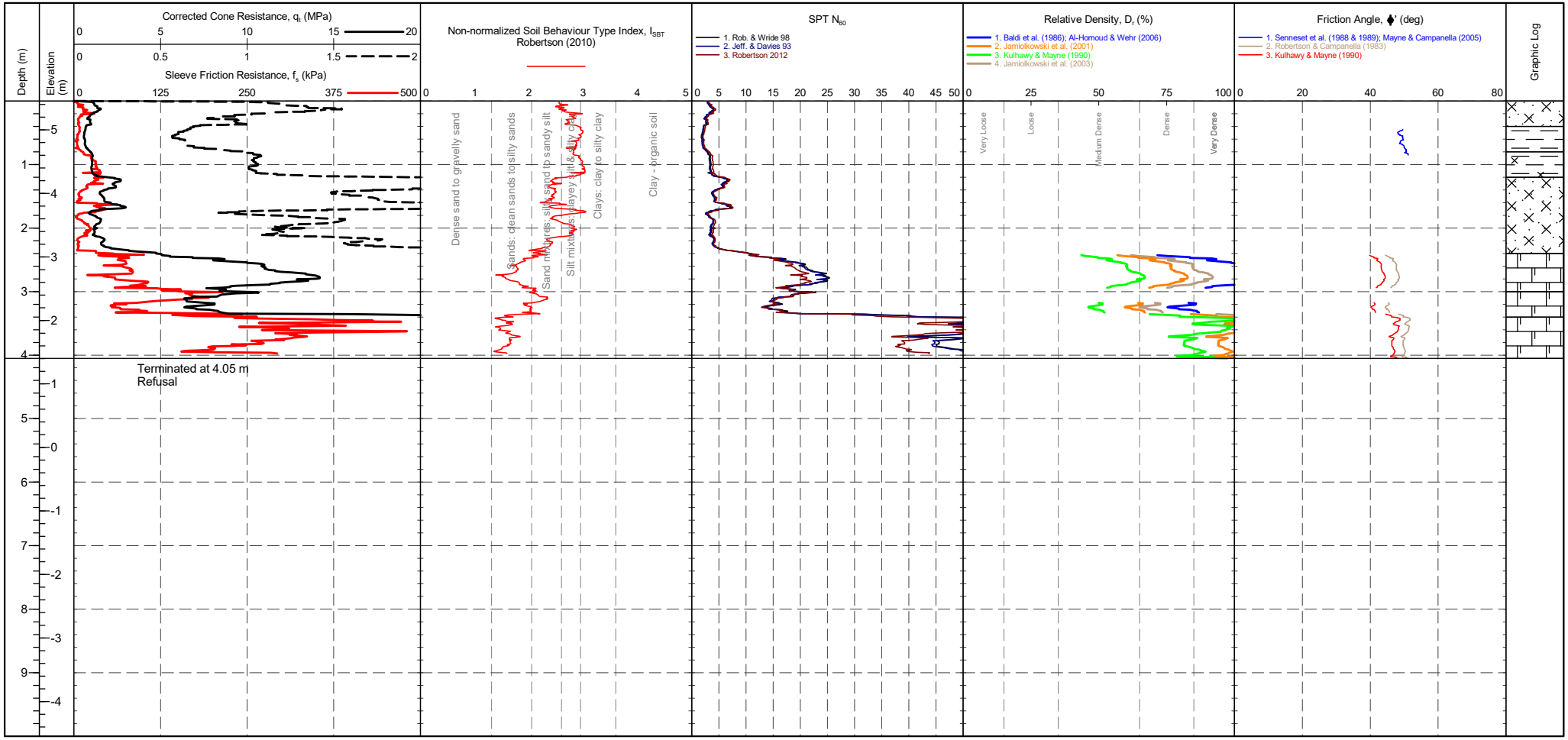
CONE ID : S15-CFIP.1186 CALIBRATION DATE : 09/08/2021 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES Transducer: Pre / Post / Difference Tip: 218 mV / 210 mV / -0.088 MPa Sleeve: 217 mV / 210 mV / -0.005 kPa Pore Pressure 2: 265 mV / 262 mV / -0.001 kPa X-Y Inclinometer: 2428 mV / 2405 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND Groundwater Level Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP131**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500231.472 m NORTHING : 102043.110 m ELEVATION : 5.454 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2			
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen			
CONE AREA RATIO	: 0.79	OPERATOR	: DHo			
FILTER POSITION	: u2	FRICTION REDUCER	: None			
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold			

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	218 mV	210 mV	-0.088 MPa
Sleeve	217 mV	210 mV	-0.005 kPa
Pore Pressure 2	265 mV	262 mV	-0.001 kPa
X-Y Inclinometer	2428 mV	2405 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

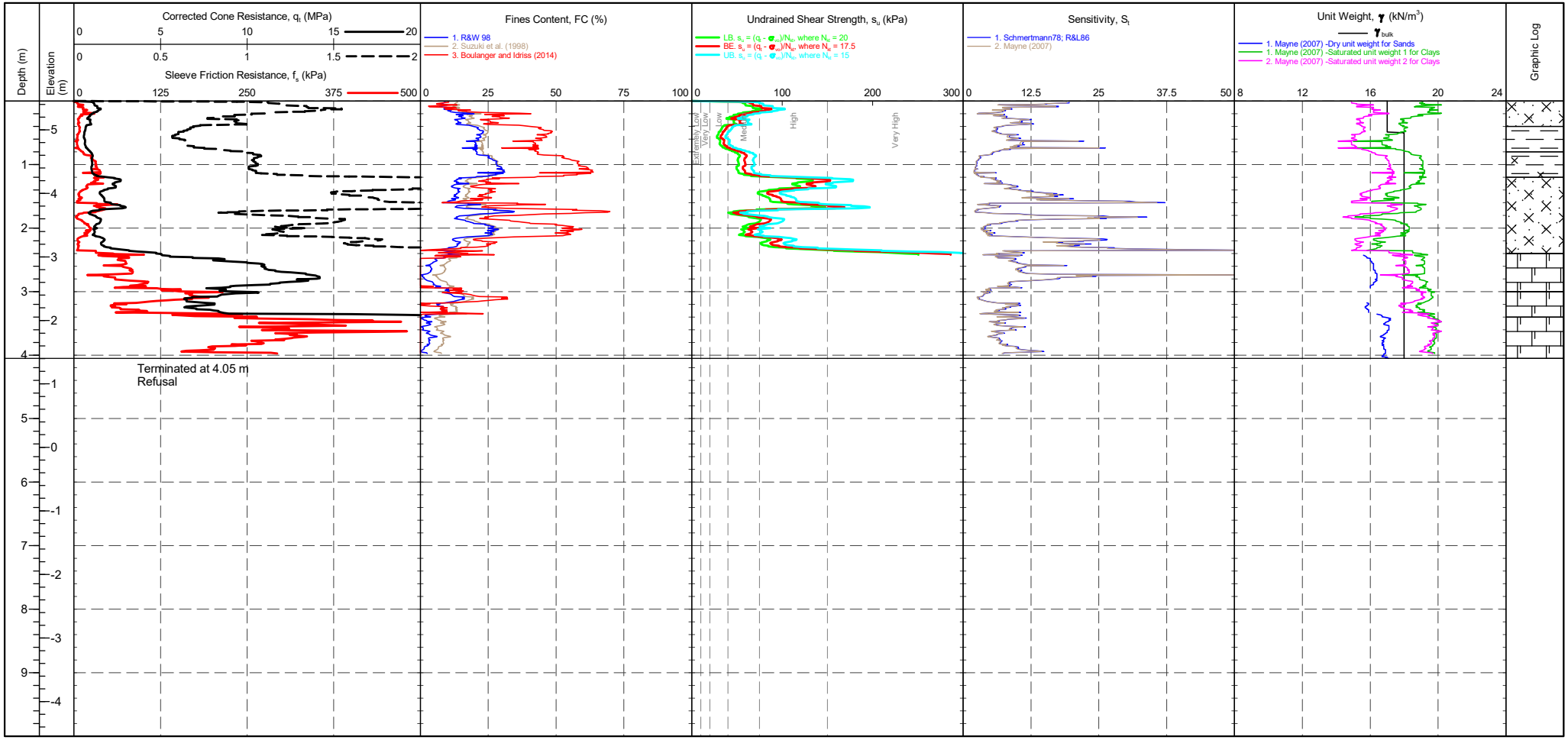
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP131**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500231.472 m NORTHING : 102043.110 m ELEVATION : 5.454 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2				
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2				
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen				
CONE AREA RATIO	: 0.79	OPERATOR	: DHo				
FILTER POSITION	: u2	FRICTION REDUCER	: None				
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold				

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	218 mV	210 mV	-0.088 MPa
Sleeve	217 mV	210 mV	-0.005 kPa
Pore Pressure 2	265 mV	262 mV	-0.001 kPa
X-Y Inclinometer	2428 mV	2405 mV	

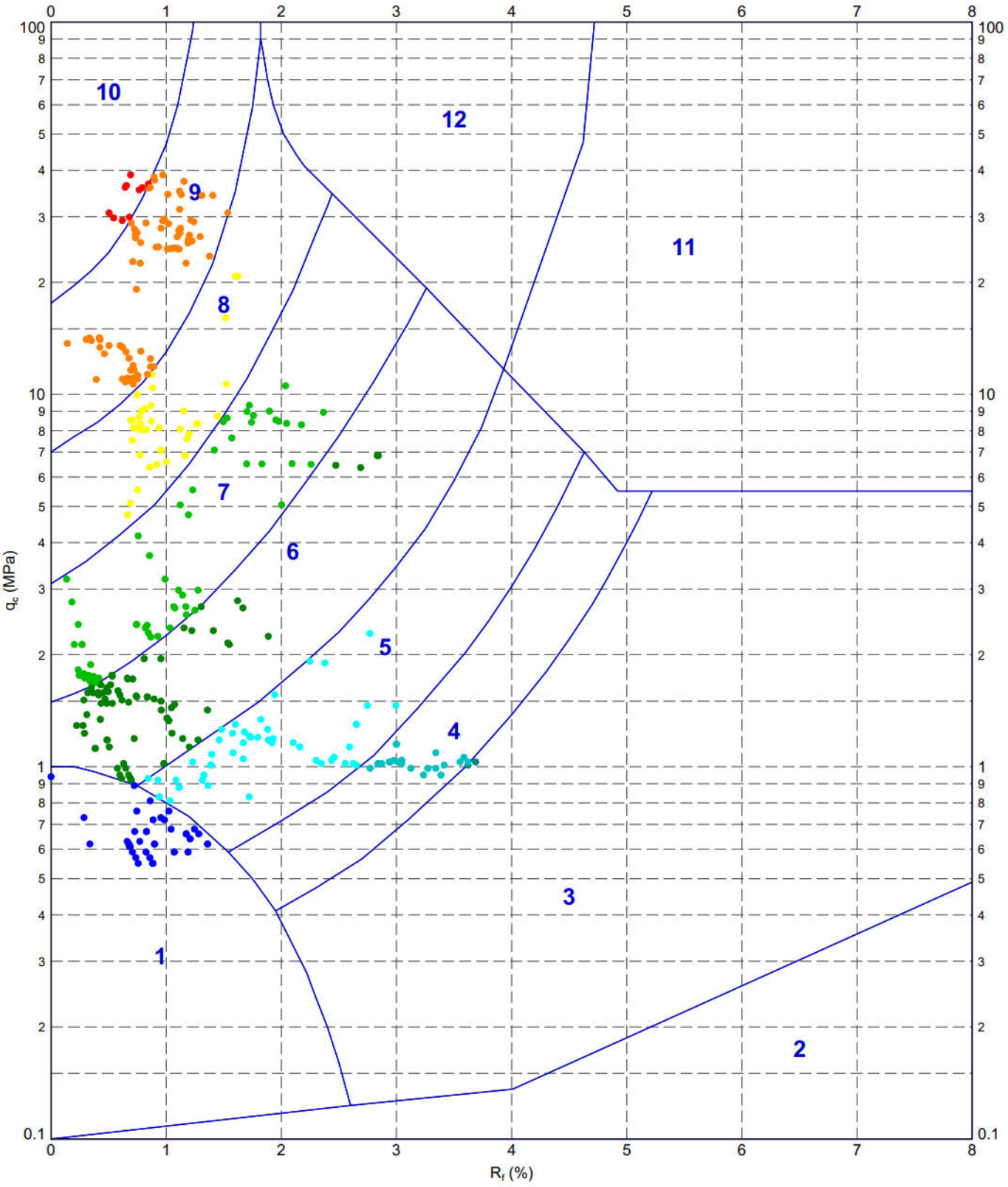
COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)
Extremely low strength	<10
Very low strength	10-20
Low strength	20-40

Term based on measurement	su (kPa)
Medium strength	40-75
High strength	75-150
Very high strength	150-300
Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	Ground and Water Climping, West Sussex Church Lane Robertson et al. 1986 q_c vs. R_f - DP131
DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE	Not To Scale — A4
PROJECT No	1240182
FIGURE No	

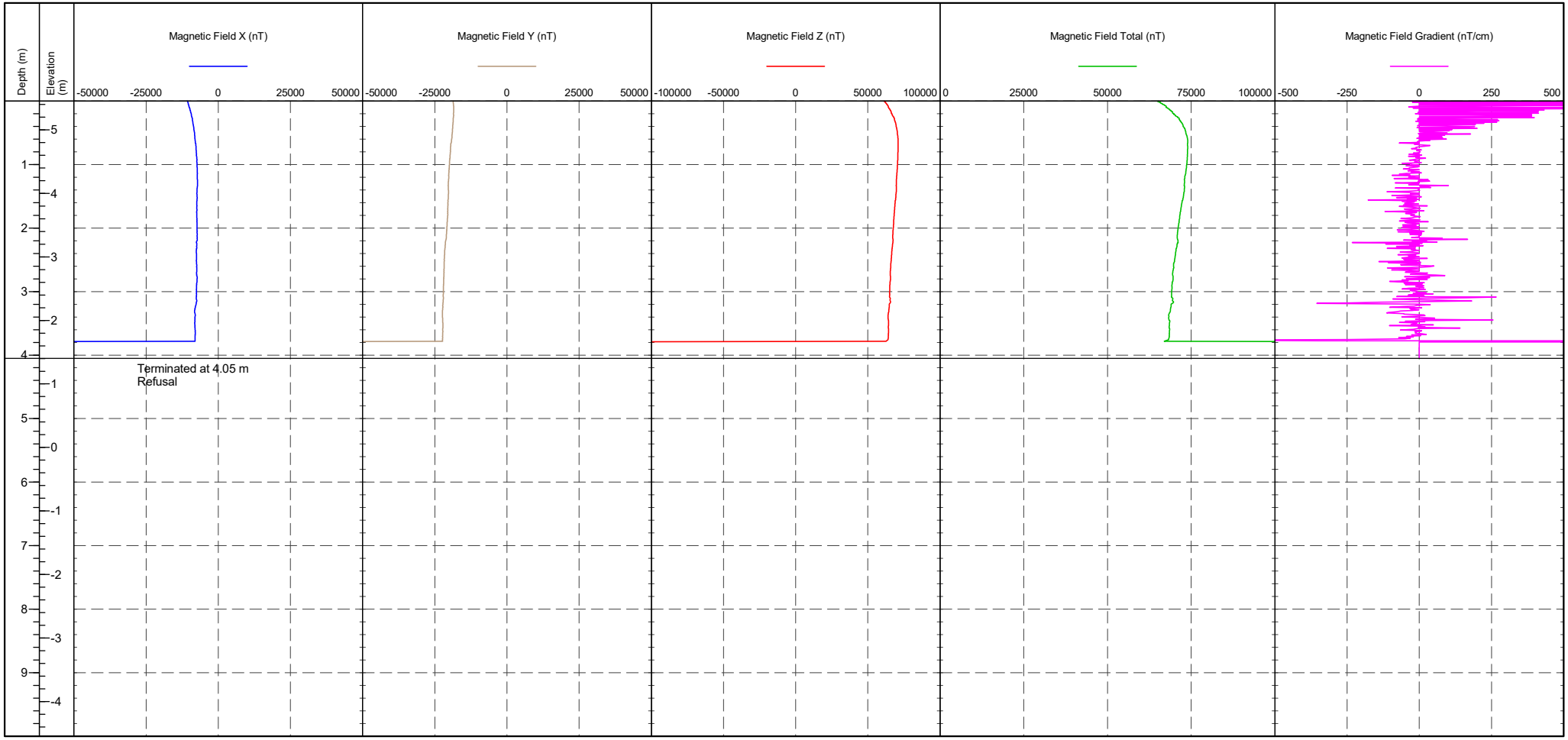
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:42 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP131**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500231.472 m NORTHING : 102043.110 m ELEVATION : 5.454 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



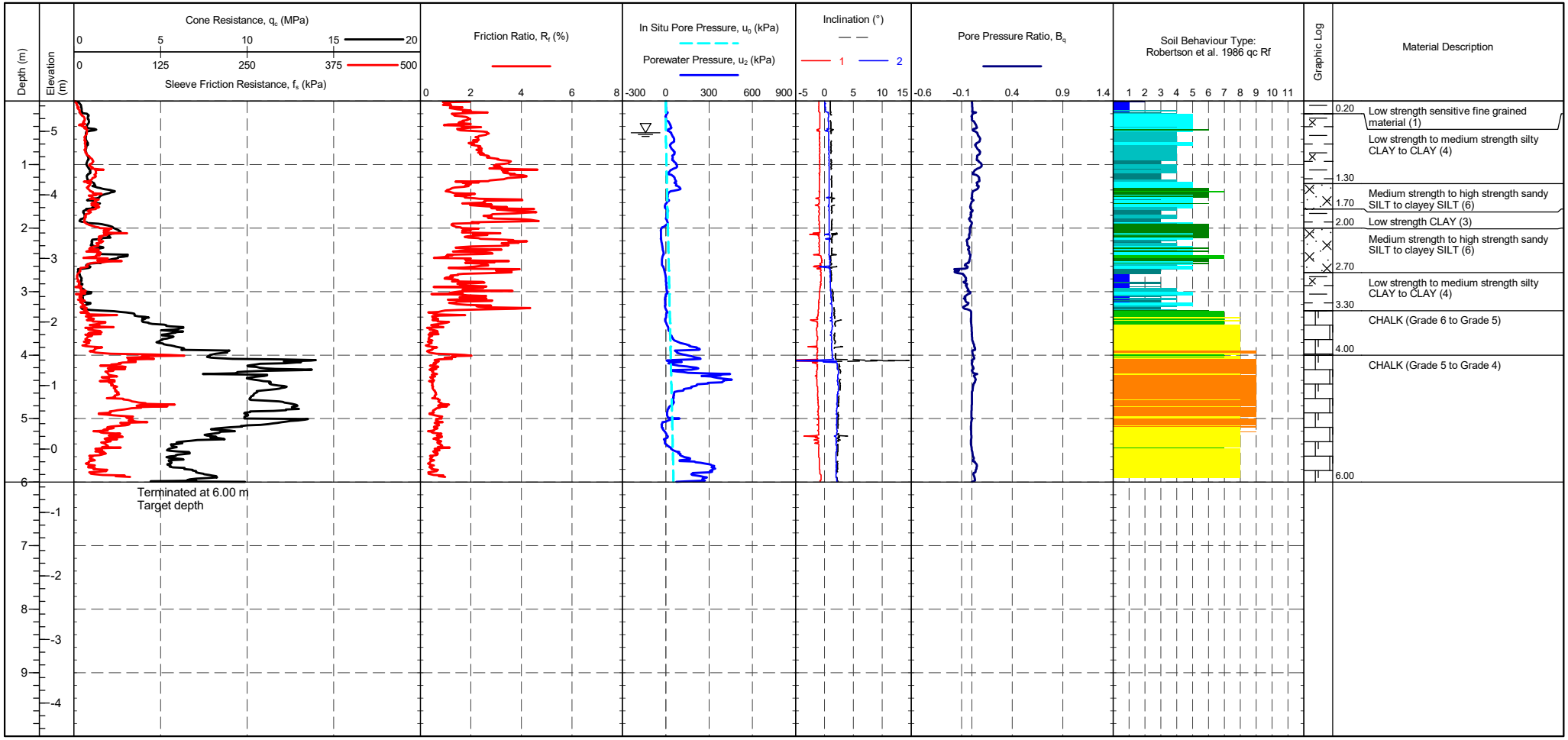
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	218 mV	210 mV	-0.088 MPa
				Sleeve	217 mV	210 mV	-0.005 kPa
				Pore Pressure 2	265 mV	262 mV	-0.001 kPa
				X-Y Inclinometer	2428 mV	2405 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP132**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500299.435 m NORTHING : 102053.376 m ELEVATION : 5.478 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	217 mV	-0.055 MPa
Sleeve	216 mV	217 mV	0.001 kPa
Pore Pressure 2	266 mV	261 mV	-0.001 kPa
X-Y Inclinometer	2385 mV	2401 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

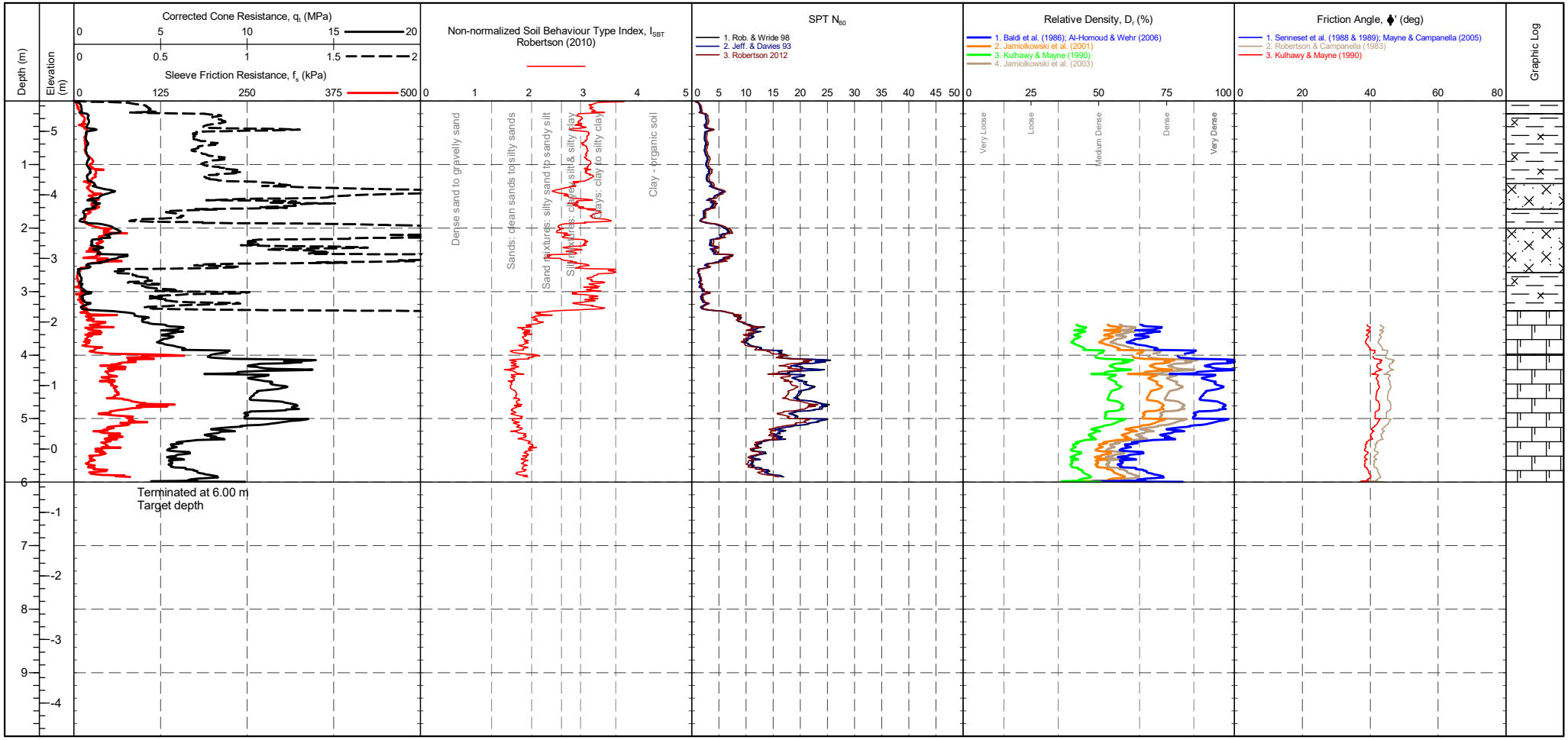
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP132**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500299.435 m NORTHING : 102053.376 m ELEVATION : 5.478 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2			
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen			
CONE AREA RATIO	: 0.79	OPERATOR	: DHo			
FILTER POSITION	: u2	FRICTION REDUCER	: None			
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold			

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	217 mV	-0.055 MPa
Sleeve	216 mV	217 mV	0.001 kPa
Pore Pressure 2	266 mV	261 mV	-0.001 kPa
X-Y Inclinometer	2385 mV	2401 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

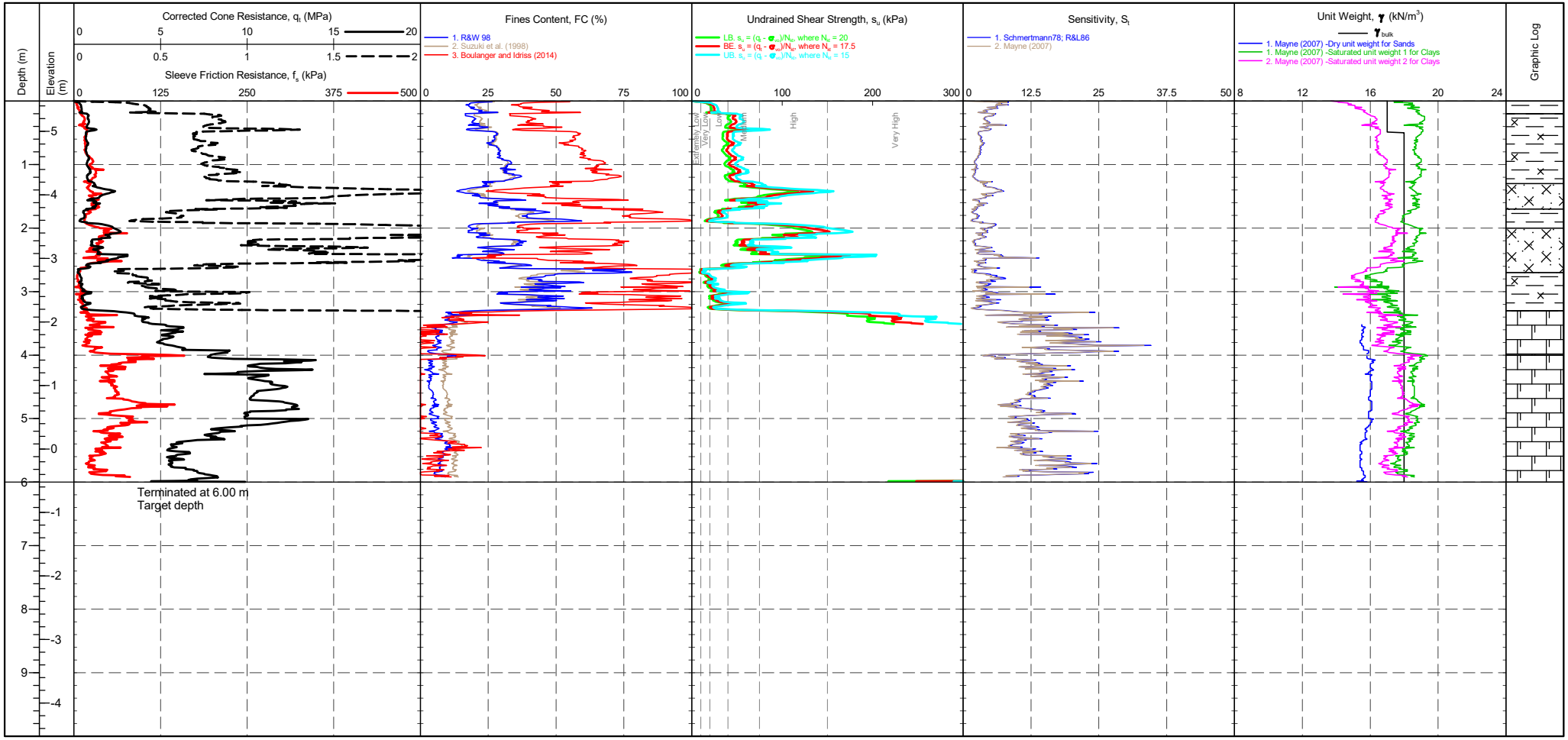
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP132**

CLIENT : Ground and Water	EASTING : 500299.435 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102053.376 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.478 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



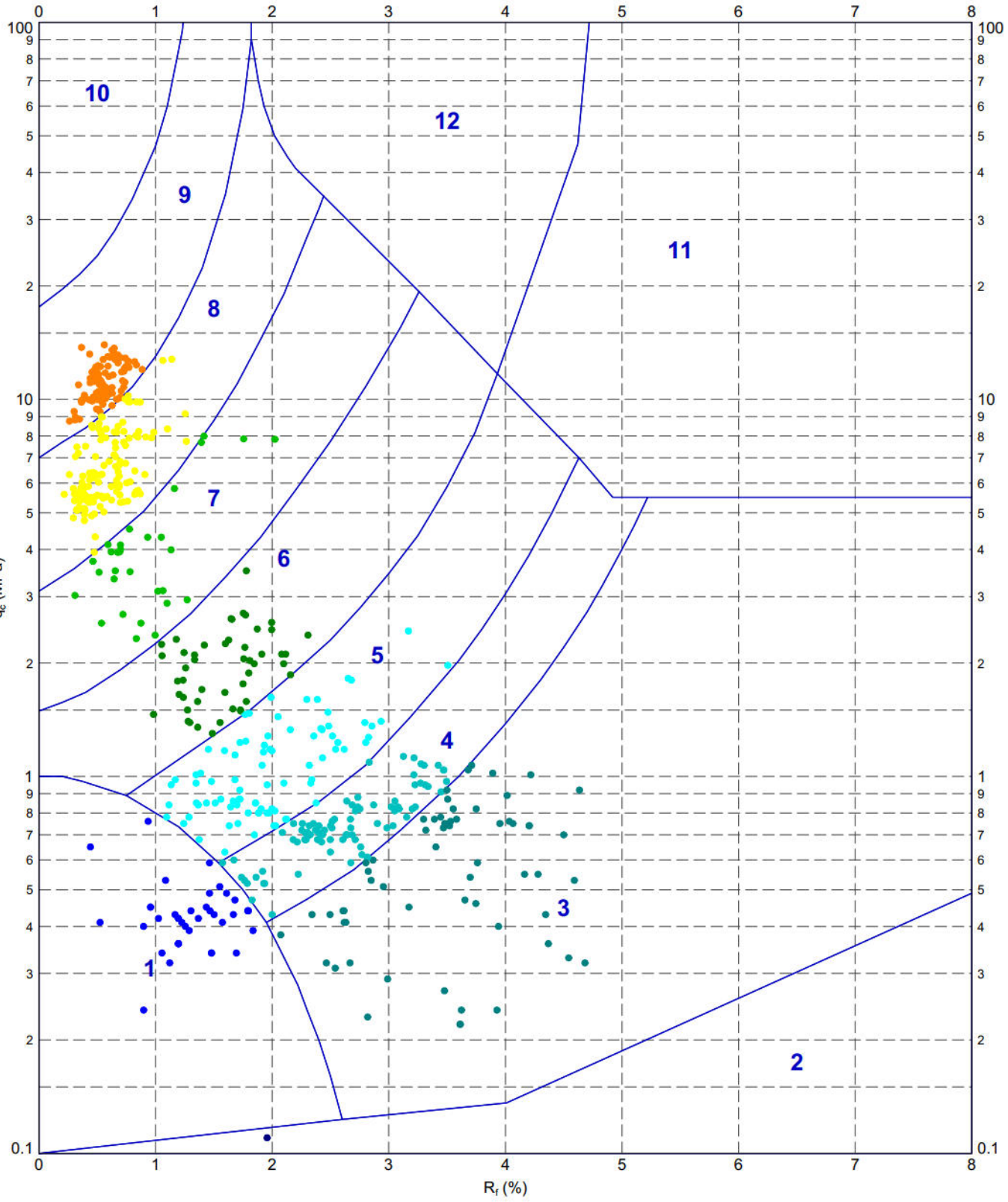
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	222 mV	217 mV	-0.055 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	216 mV	217 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	266 mV	261 mV	-0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2385 mV	2401 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP132

DRAWN	DATE 12/04/2024	
CHECKED	DATE 12/04/2024	
SCALE Not To Scale		A4
PROJECT No 1240182	FIGURE No	

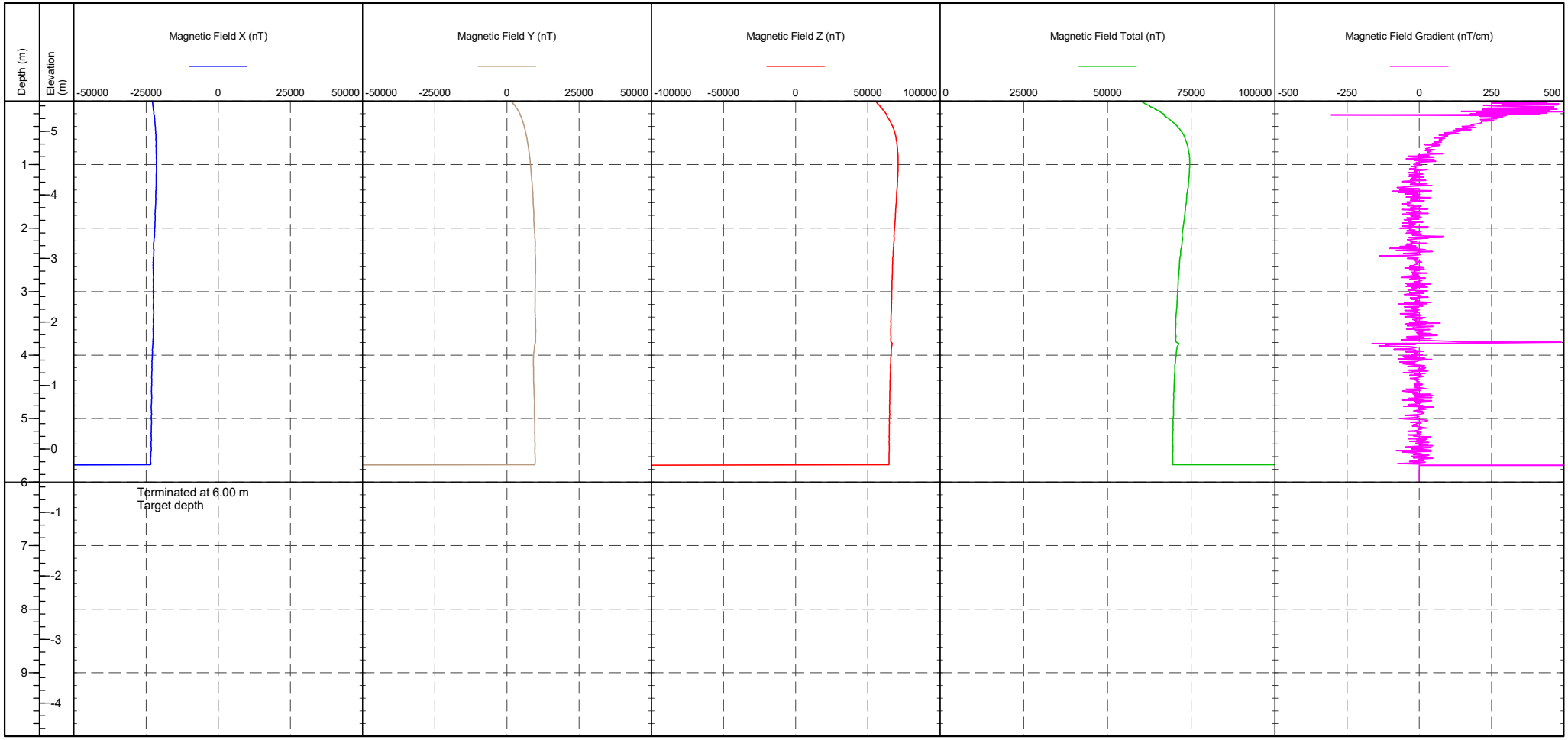
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:42 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID **DP132**

CLIENT : Ground and Water	EASTING : 500299.435 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102053.376 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.478 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



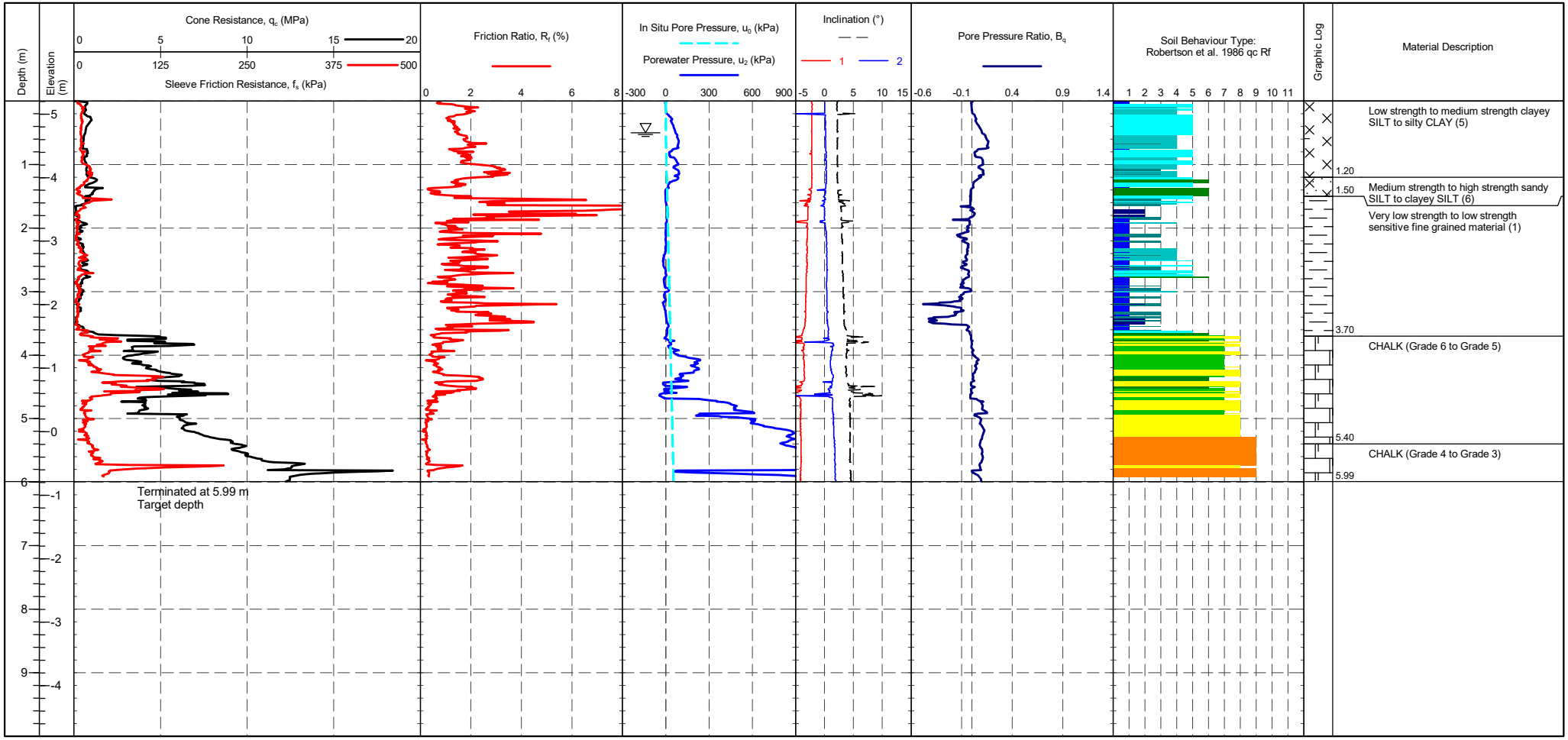
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	222 mV	217 mV	-0.055 MPa
				Sleeve	216 mV	217 mV	0.001 kPa
				Pore Pressure 2	266 mV	261 mV	-0.001 kPa
				X-Y Inclinometer	2385 mV	2401 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID **DP133**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500370.562 m NORTHING : 102077.627 m ELEVATION : 5.206 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	217 mV	-0.044 MPa
Sleeve	217 mV	215 mV	-0.001 kPa
Pore Pressure 2	259 mV	264 mV	0.001 kPa
X-Y Inclinometer	2237 mV	2237 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

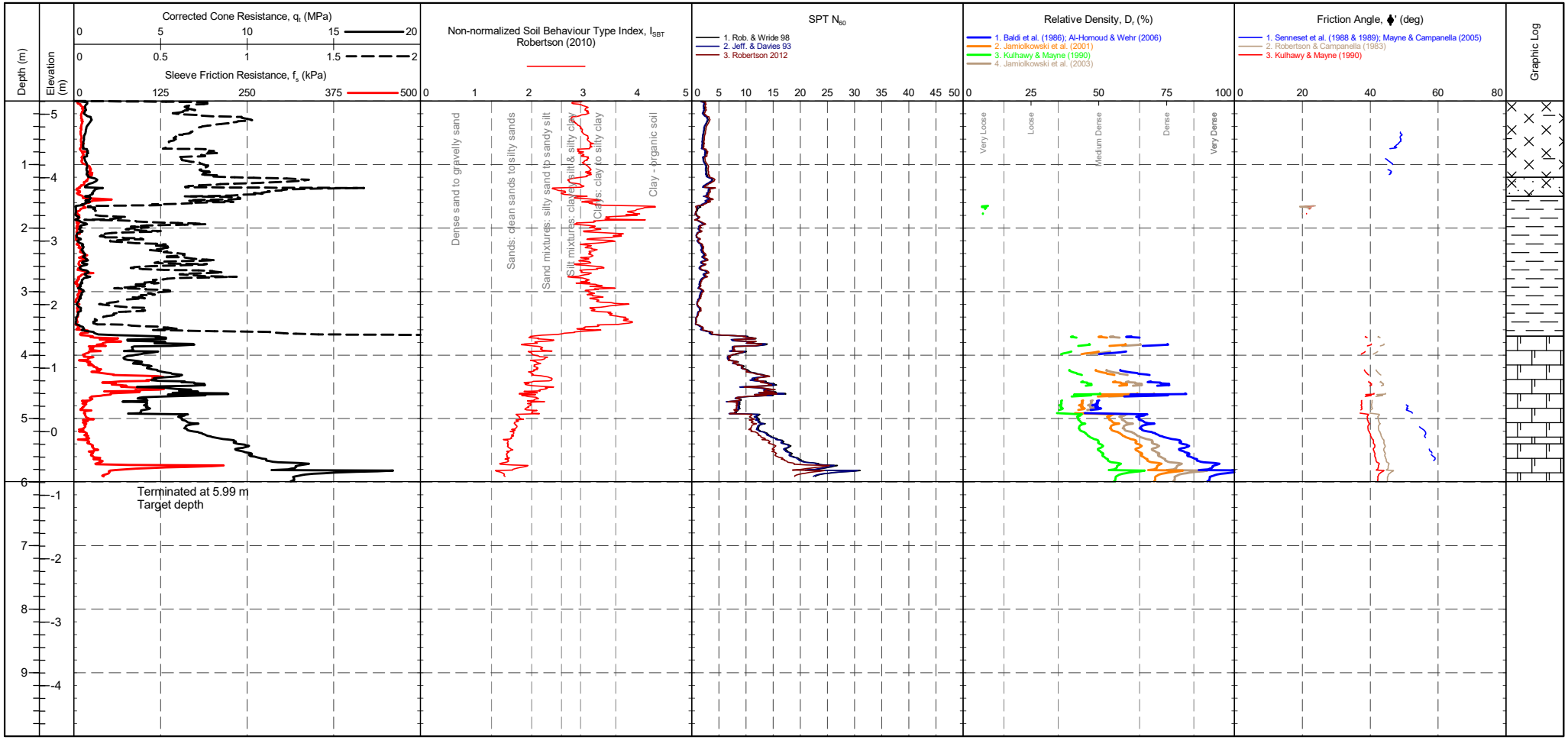
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP133**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500370.562 m NORTHING : 102077.627 m ELEVATION : 5.206 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	221 mV	217 mV
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	217 mV	215 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	259 mV	264 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2237 mV	2237 mV

Transducer	Difference
Tip	-0.044 MPa
Sleeve	-0.001 kPa
Pore Pressure 2	0.001 kPa
X-Y Inclinometer	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

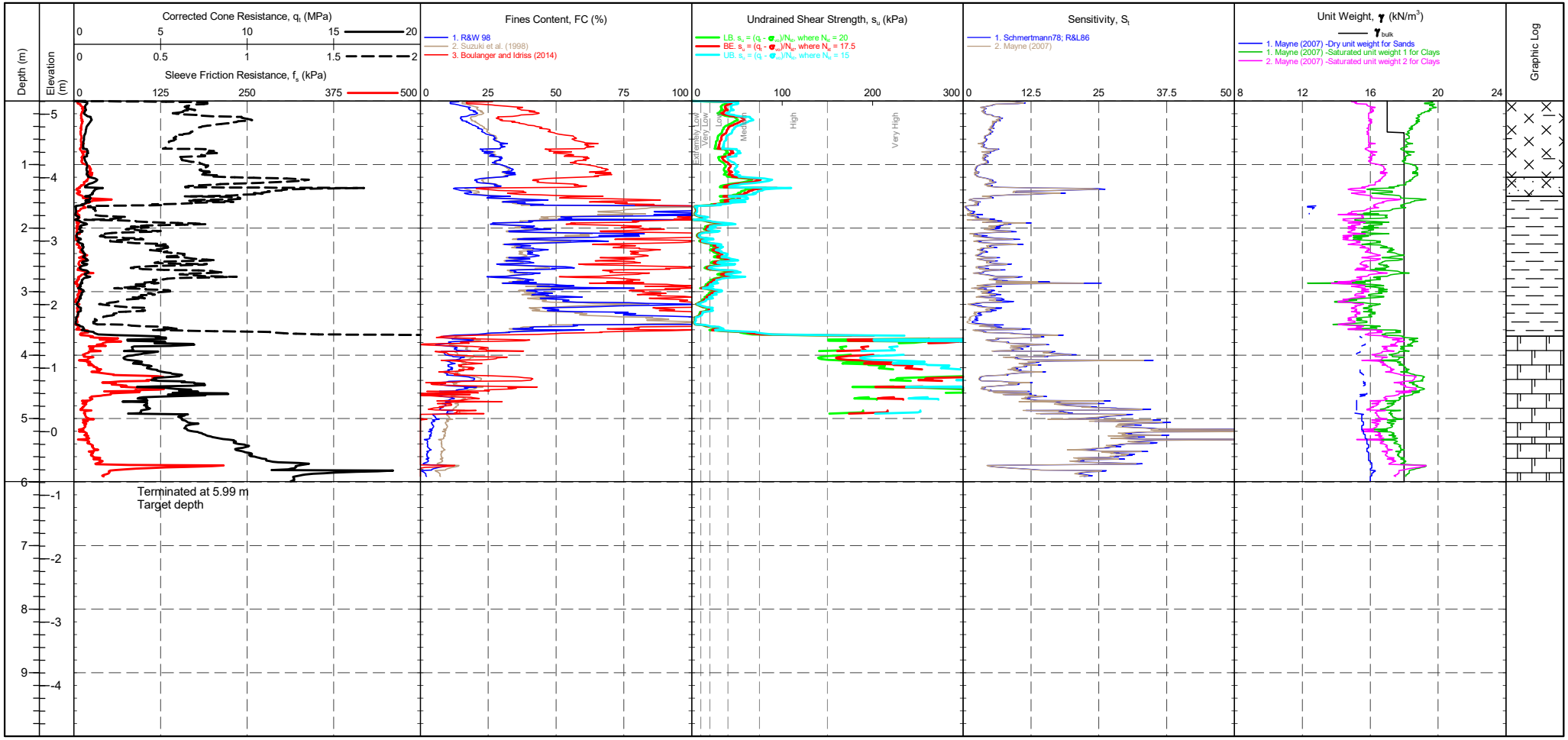
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP133**

CLIENT : Ground and Water	EASTING : 500370.562 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102077.627 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.206 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



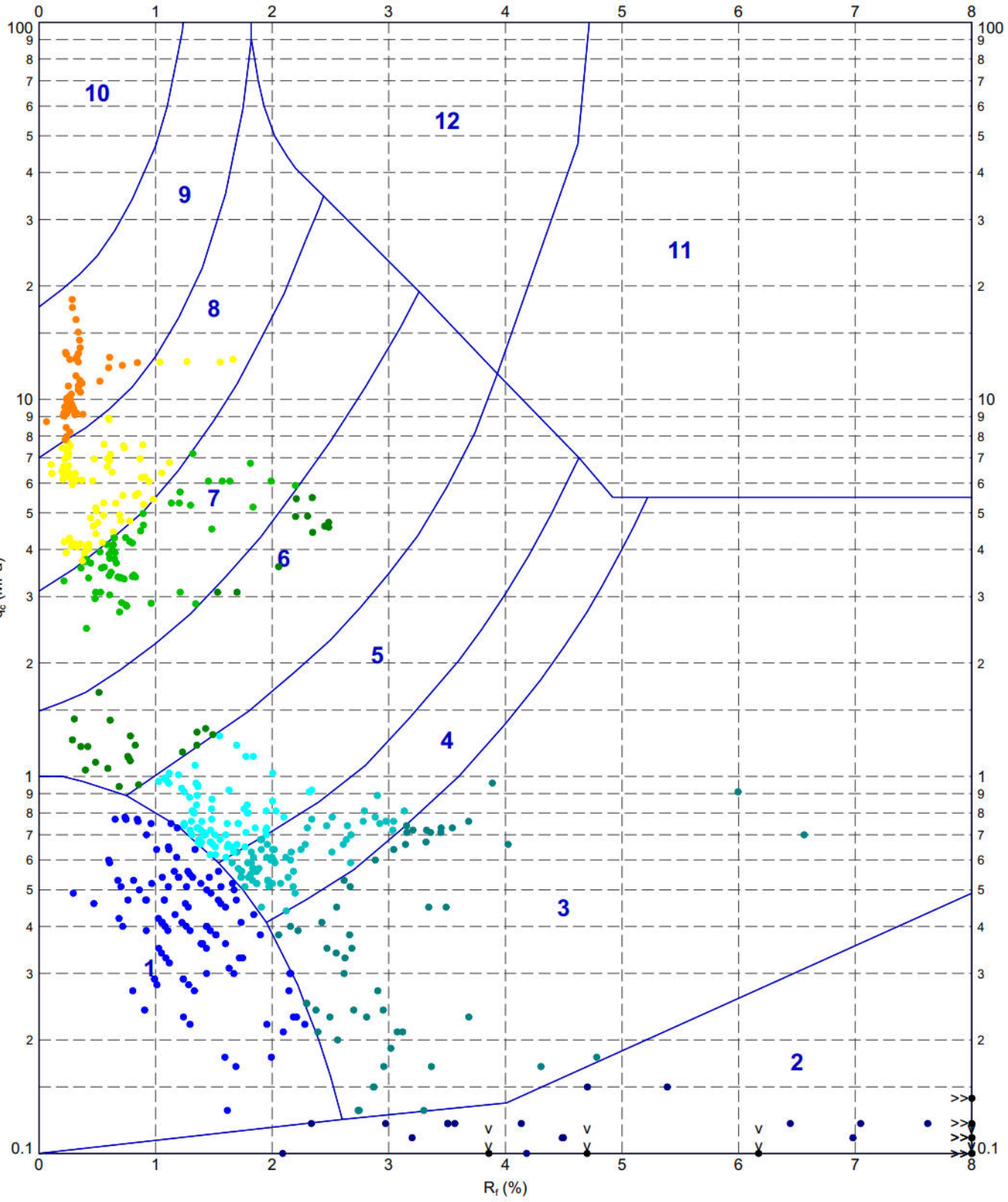
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	221 mV	217 mV	-0.044 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	217 mV	215 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	259 mV	264 mV	0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2237 mV	2237 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP133

DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE Not To Scale	A4
PROJECT No 1240182	FIGURE No

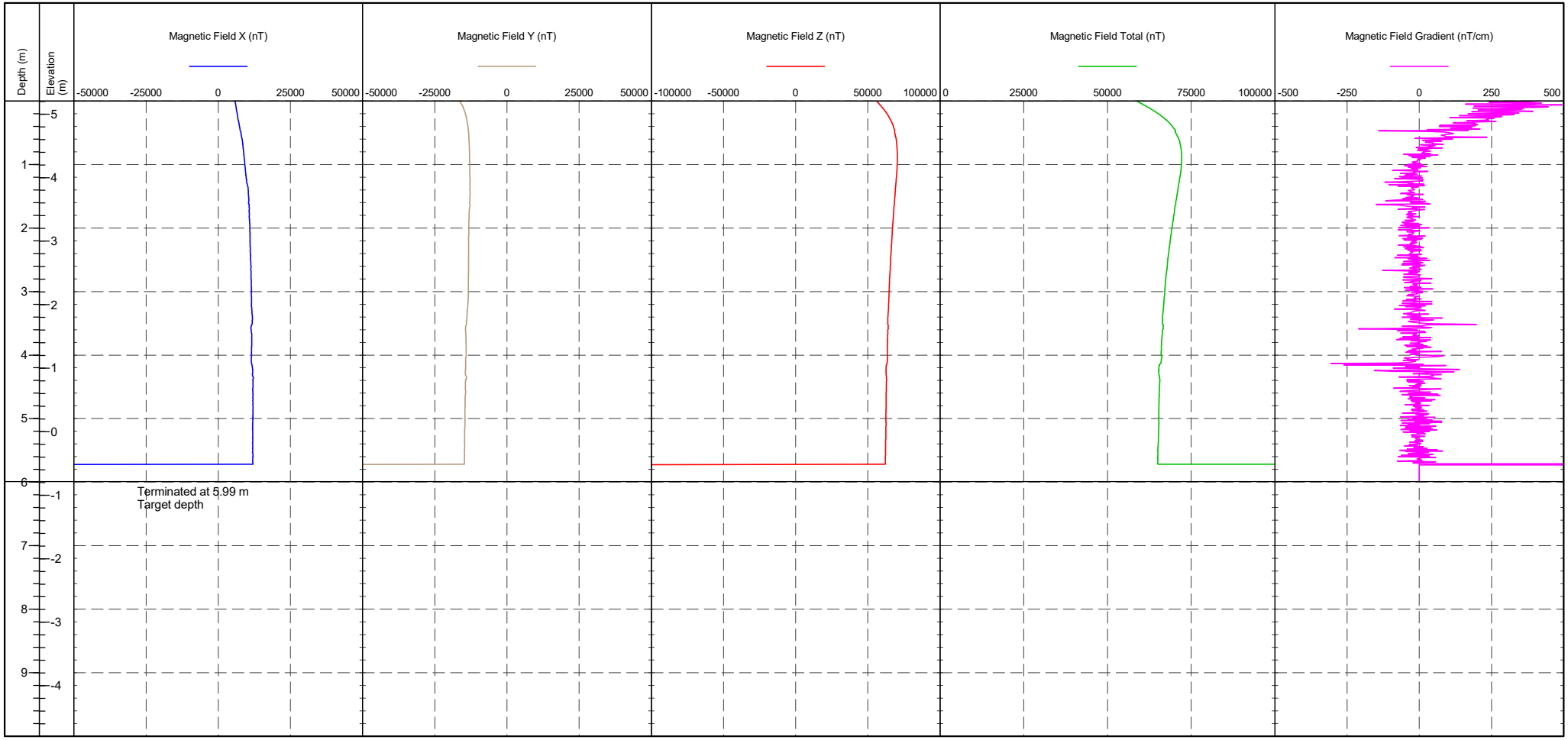
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:43 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP133**

CLIENT : Ground and Water	EASTING : 500370.562 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102077.627 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.206 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



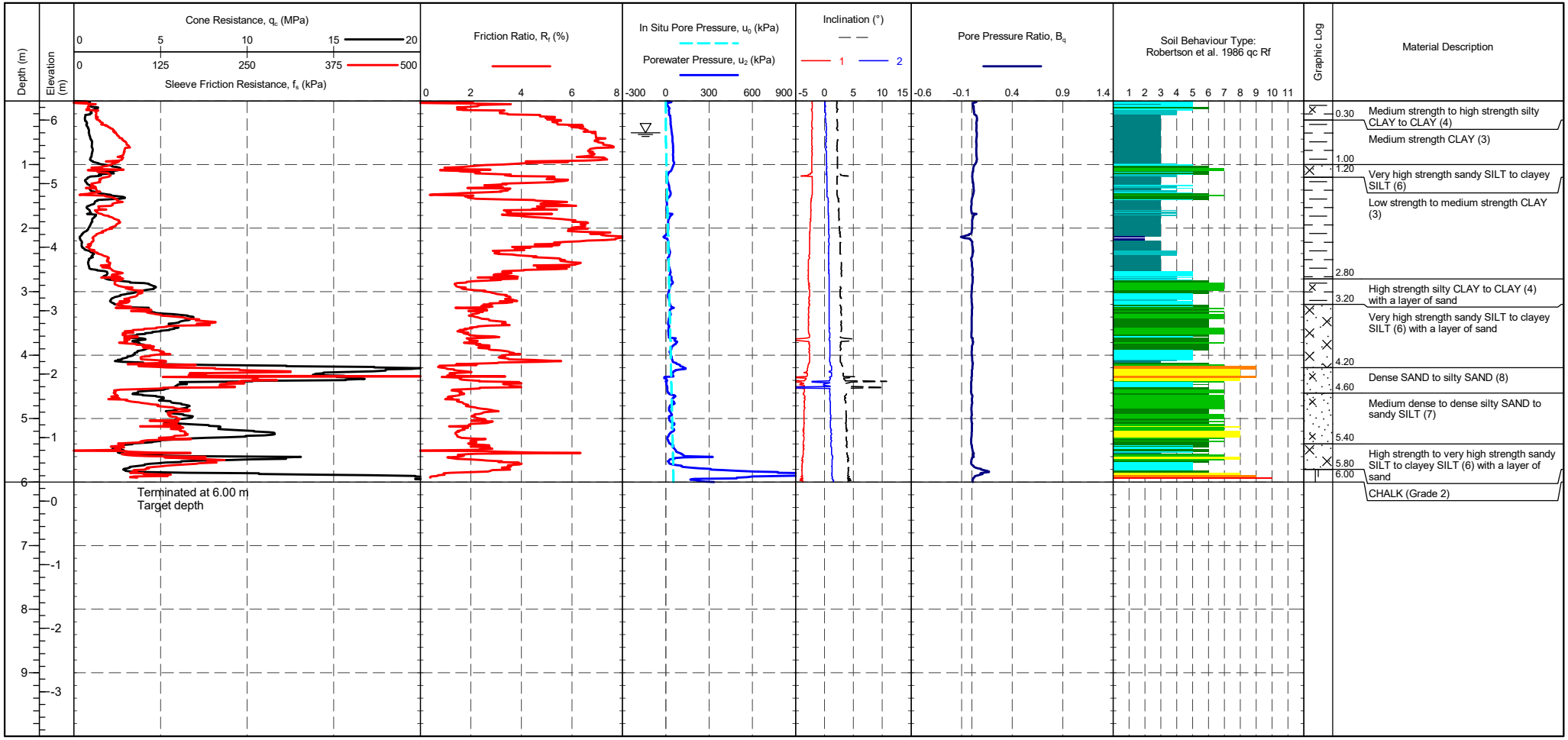
				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	Transducer	Pre	Post	Difference
CONE MODEL	: Subtraction	OPERATOR	: DHo	Tip	221 mV	217 mV	-0.044 MPa
				Sleeve	217 mV	215 mV	-0.001 kPa
				Pore Pressure 2	259 mV	264 mV	0.001 kPa
				X-Y Inclinometer	2237 mV	2237 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP137**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 499914.533 m NORTHING : 101842.976 m ELEVATION : 6.300 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	220 mV	221 mV	0.011 MPa
Sleeve	212 mV	213 mV	0.001 kPa
Pore Pressure 2	262 mV	256 mV	-0.002 kPa
X-Y Inclinometer	2266 mV	2345 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

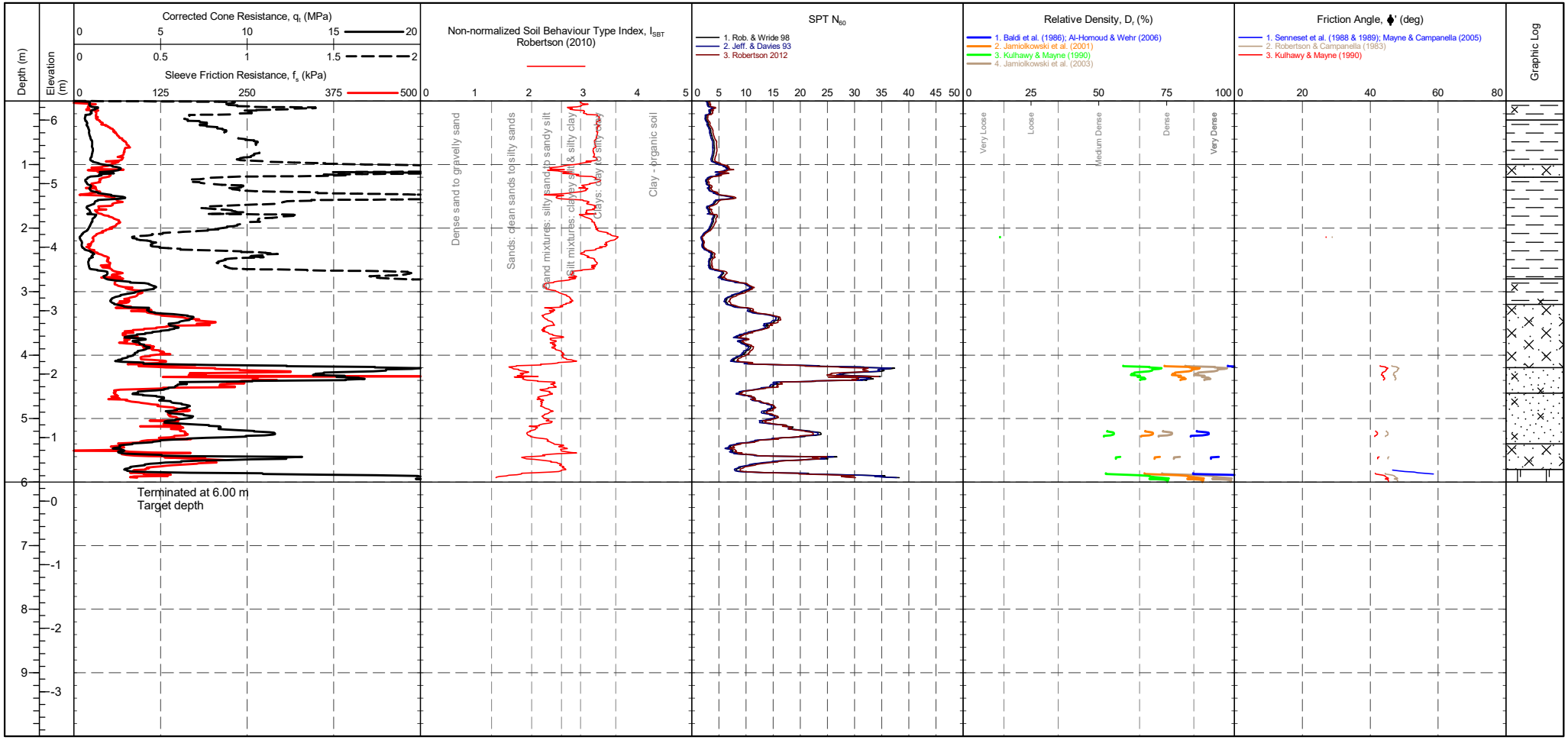
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP137**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 499914.533 m NORTHING : 101842.976 m ELEVATION : 6.300 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	220 mV	221 mV
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	212 mV	213 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	262 mV	256 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2266 mV	2345 mV

Transducer	Difference
Tip	0.011 MPa
Sleeve	0.001 kPa
Pore Pressure 2	-0.002 kPa

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

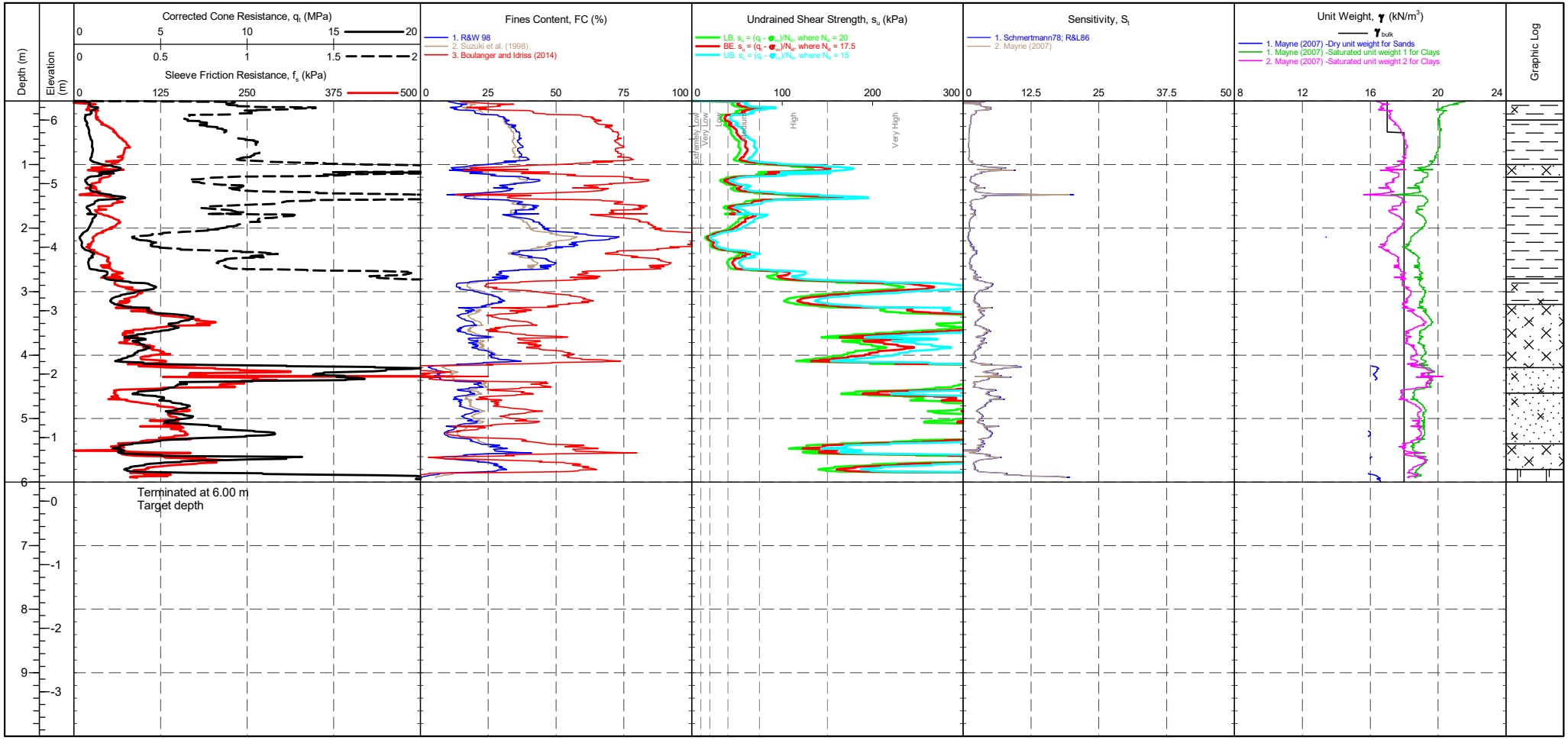
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP137**

CLIENT : Ground and Water	EASTING : 499914.533 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101842.976 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 6.300 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



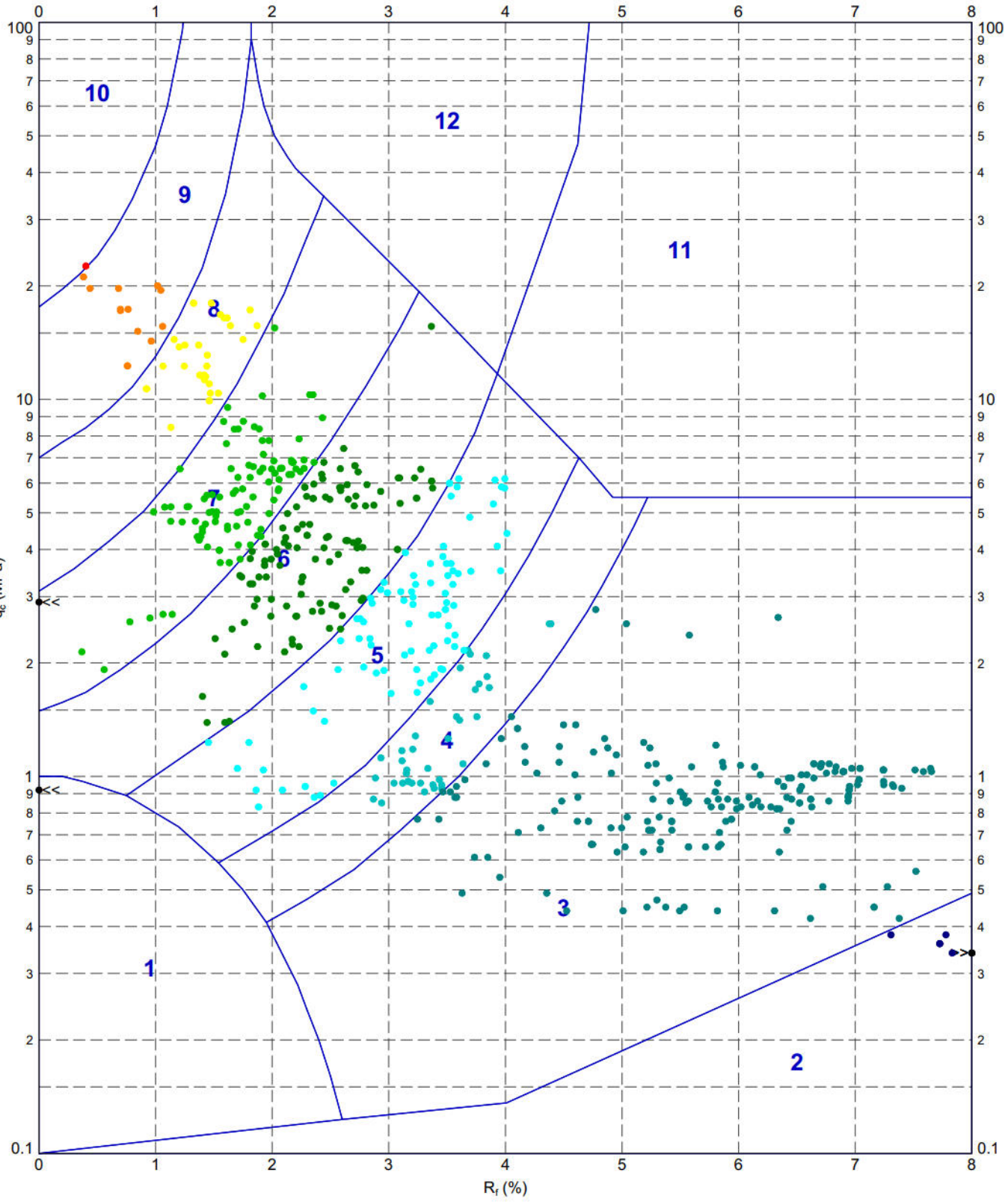
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	220 mV	221 mV	0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	212 mV	213 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	262 mV	256 mV	-0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2266 mV	2345 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP137

DRAWN	DATE 12/04/2024	
CHECKED	DATE 12/04/2024	
SCALE Not To Scale		A4
PROJECT No 1240182	FIGURE No	

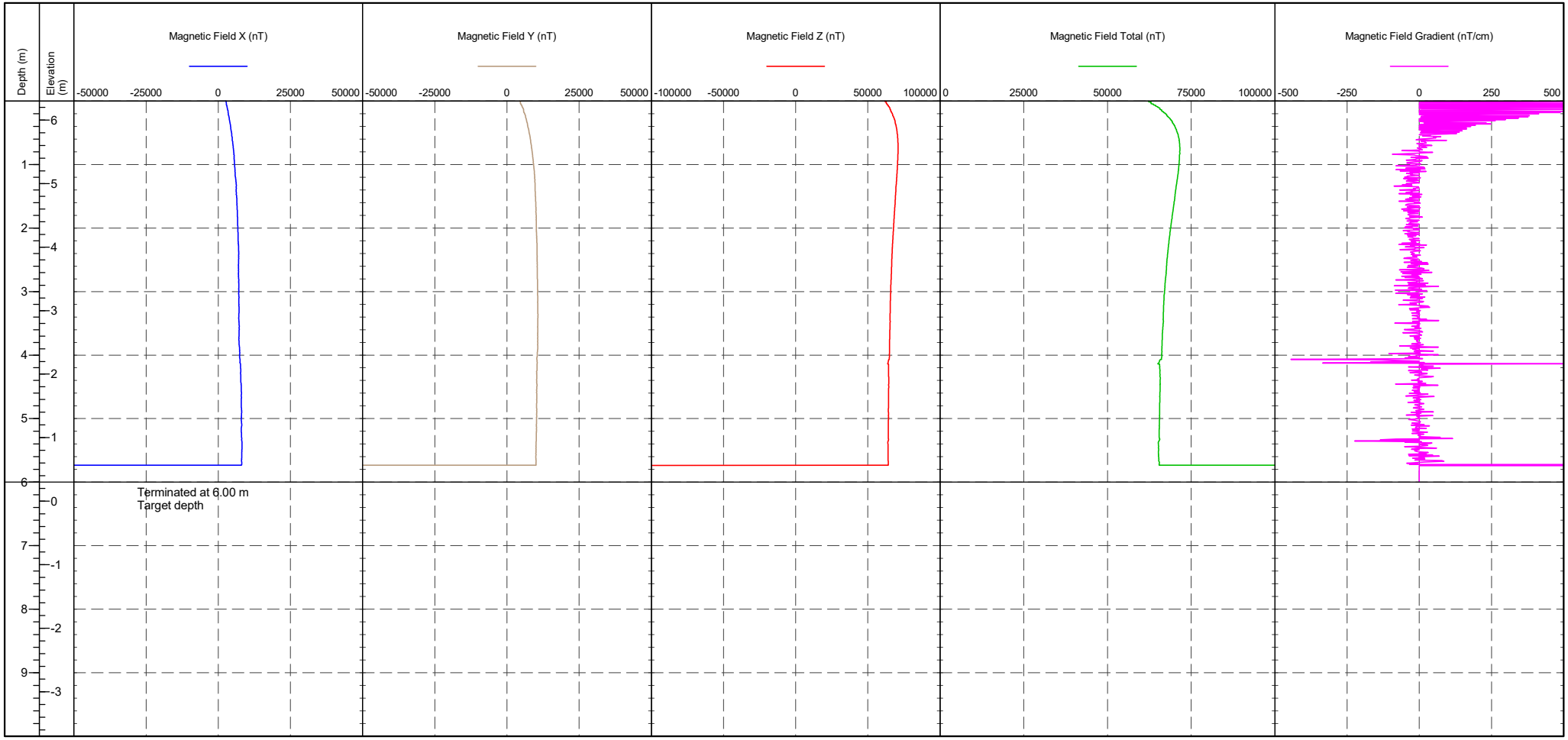
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:44 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP137**

CLIENT : Ground and Water	EASTING : 499914.533 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101842.976 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 6.300 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



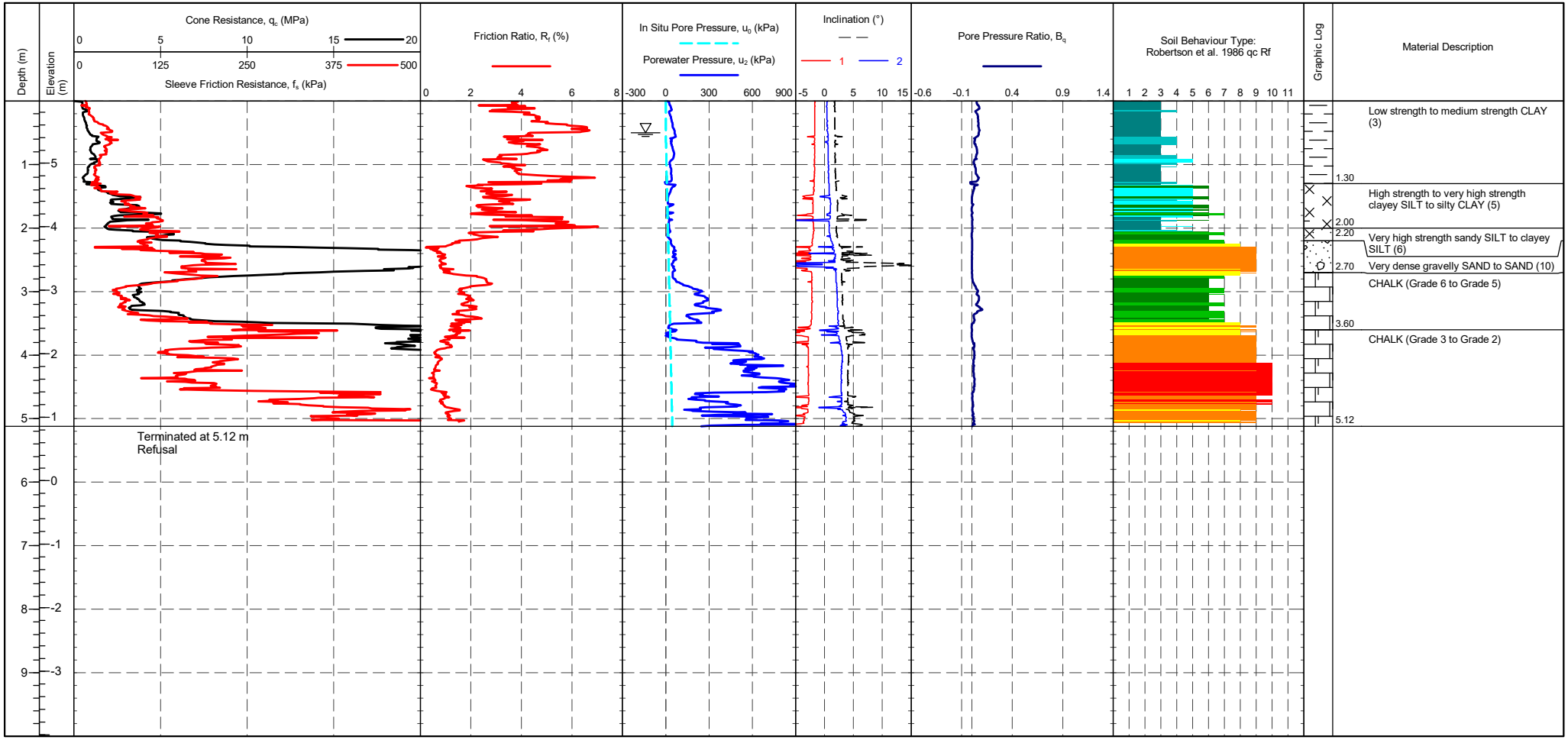
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	220 mV	221 mV	0.011 MPa
				Sleeve	212 mV	213 mV	0.001 kPa
				Pore Pressure 2	262 mV	256 mV	-0.002 kPa
				X-Y Inclinometer	2266 mV	2345 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP138**

CLIENT : Ground and Water	EASTING : 499982.467 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101869.554 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.978 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	212 mV	-0.11 MPa
Sleeve	214 mV	206 mV	-0.006 kPa
Pore Pressure 2	257 mV	249 mV	-0.002 kPa
X-Y Inclinometer	2319 mV	2306 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

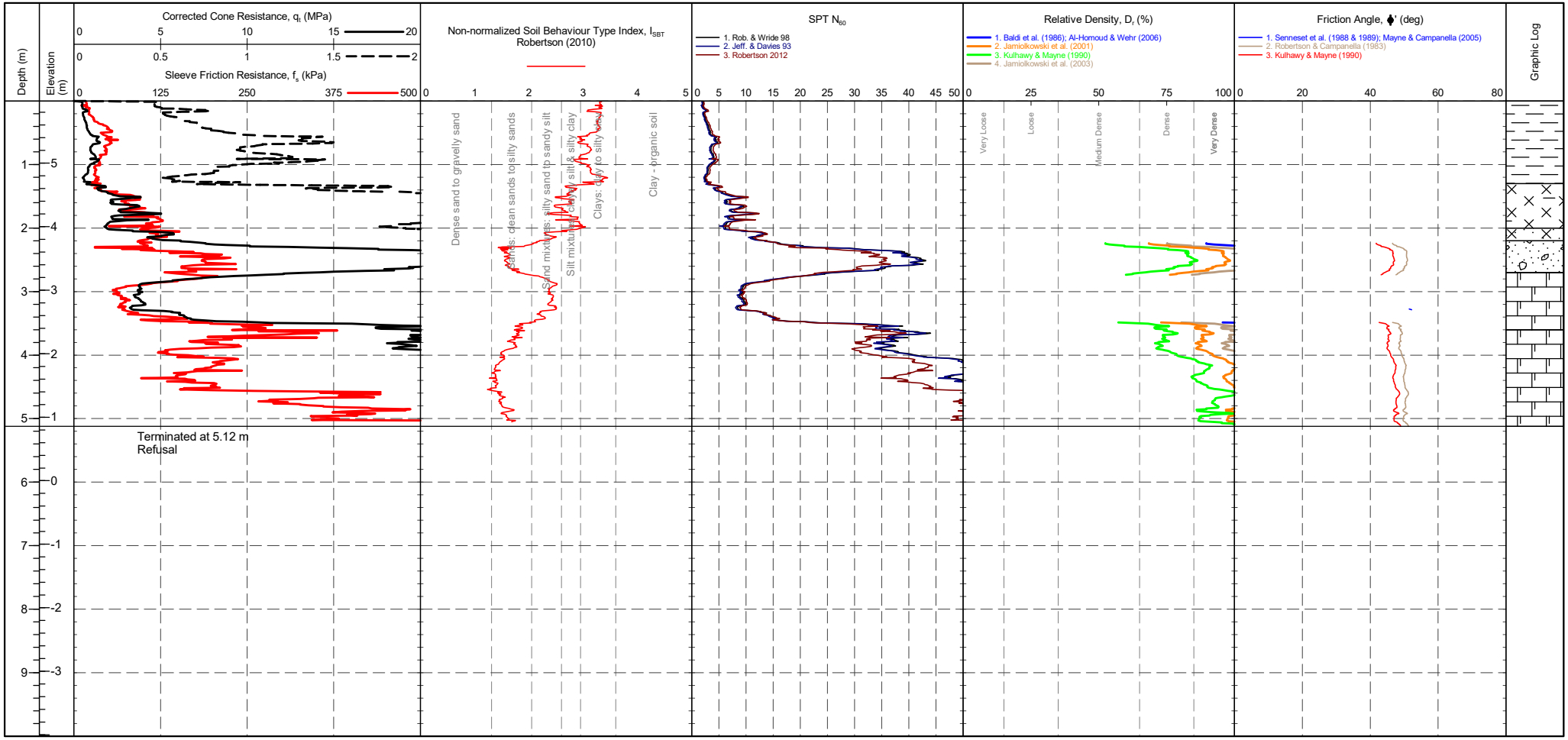
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP138**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 499982.467 m NORTHING : 101869.554 m ELEVATION : 5.978 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	222 mV	212 mV	-0.11 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	214 mV	206 mV	-0.006 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	257 mV	249 mV	-0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2319 mV	2306 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

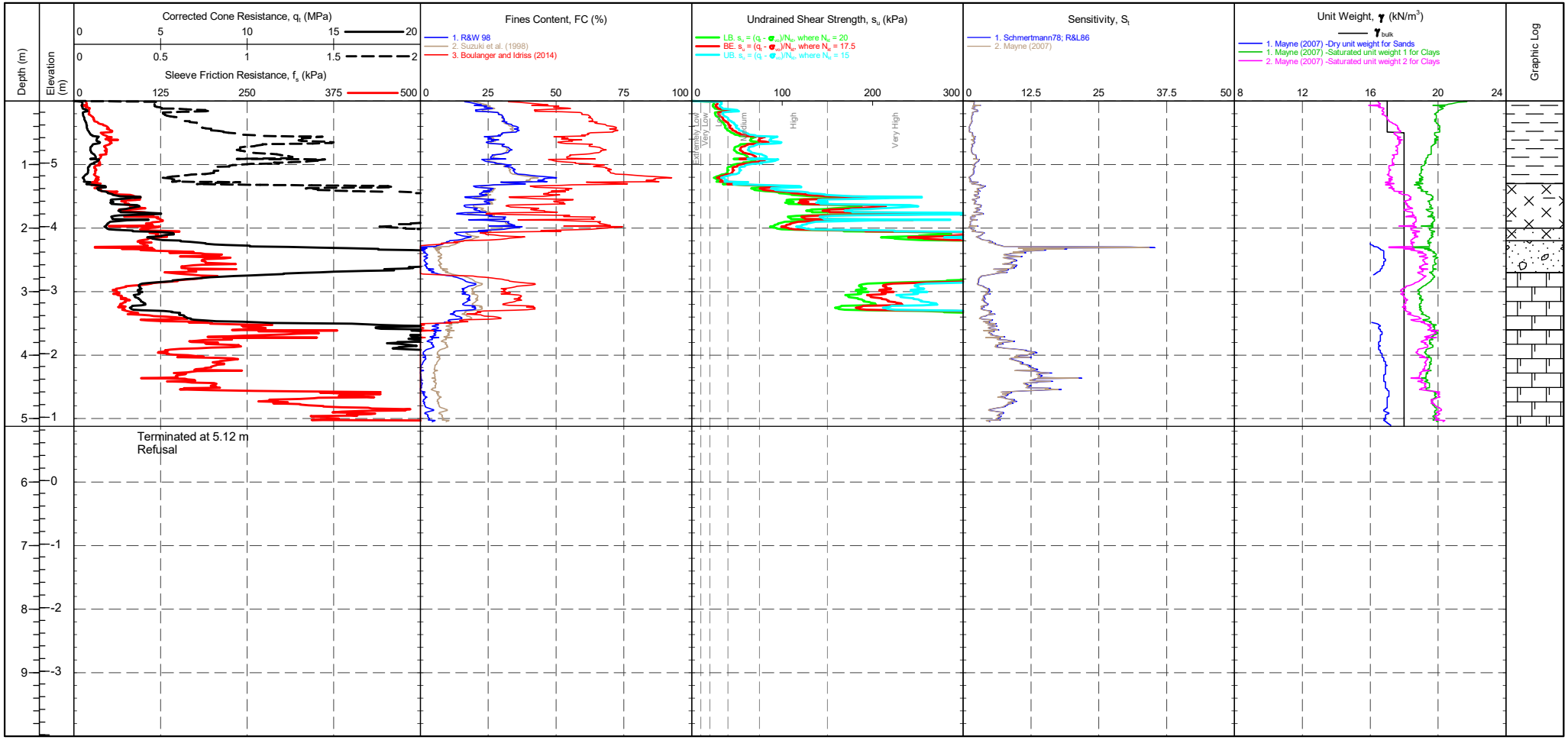
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP138**

CLIENT : Ground and Water	EASTING : 499982.467 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101869.554 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.978 m OD		TEST DATE : 15/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



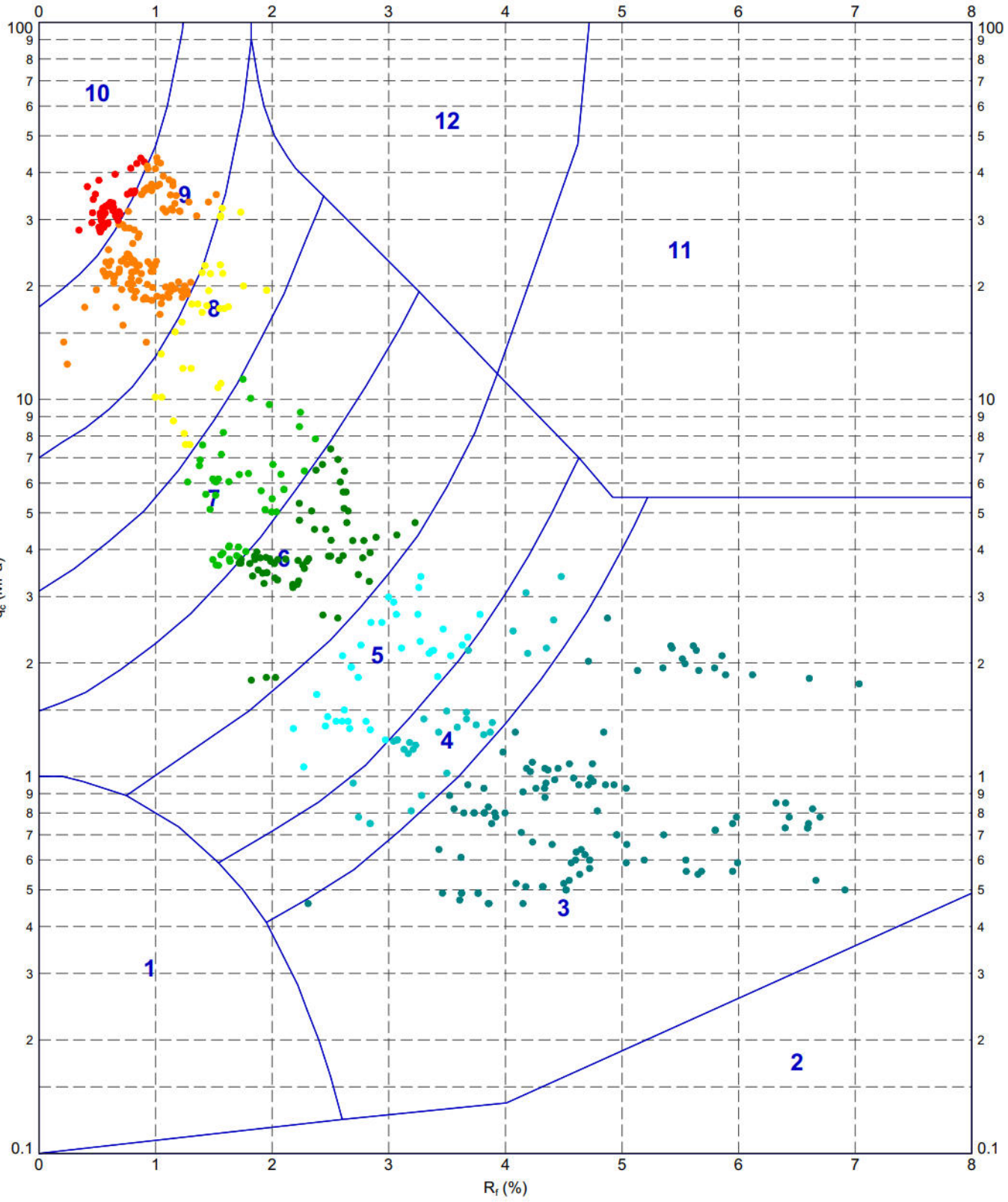
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	222 mV	212 mV	-0.11 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	214 mV	206 mV	-0.006 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	257 mV	249 mV	-0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2319 mV	2306 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP138

DRAWN		DATE	12/04/2024
CHECKED		DATE	12/04/2024
SCALE	Not To Scale		A4
PROJECT No	1240182	FIGURE No	

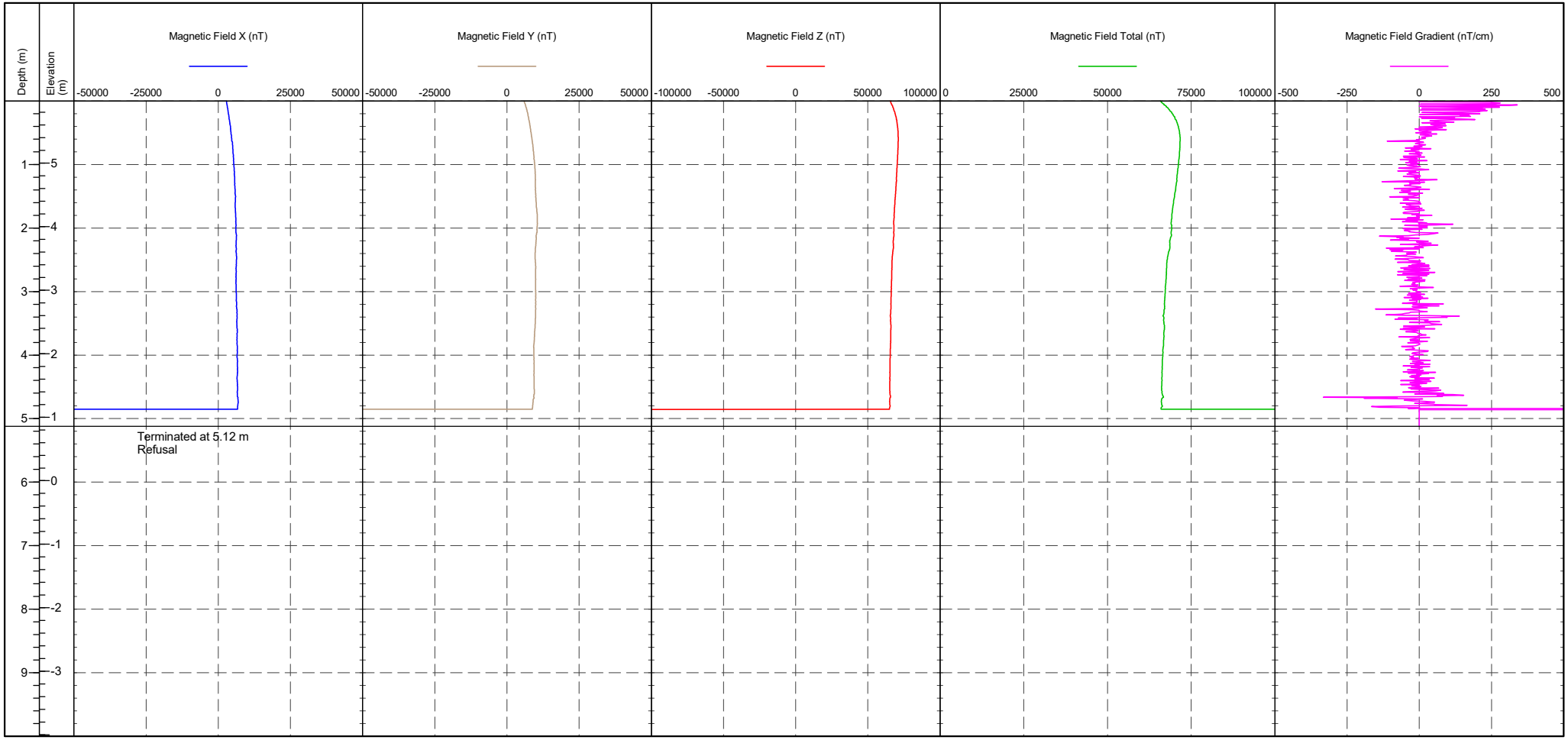
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:45 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP138**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 499982.467 m NORTHING : 101869.554 m ELEVATION : 5.978 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 15/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	
CONE MODEL	: Subtraction	OPERATOR	: DHo	

CPTU ZERO VALUES

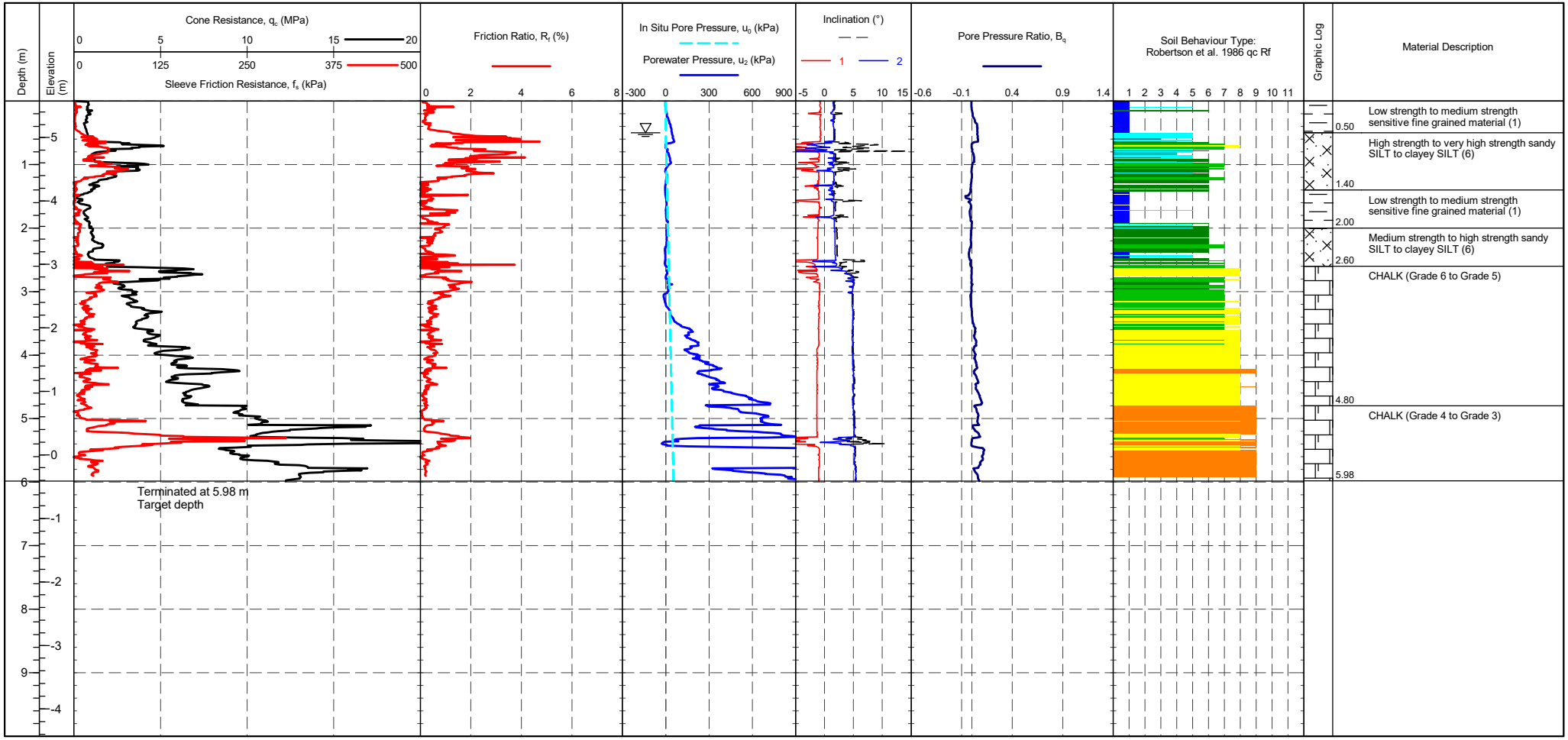
Transducer	Pre	Post	Difference
Tip	222 mV	212 mV	-0.11 MPa
Sleeve	214 mV	206 mV	-0.006 kPa
Pore Pressure 2	257 mV	249 mV	-0.002 kPa
X-Y Inclinometer	2319 mV	2306 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID **DP141**

CLIENT : Ground and Water	EASTING : 500185.442 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101952.284 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.572 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	216 mV	213 mV	-0.033 MPa
Sleeve	214 mV	212 mV	-0.001 kPa
Pore Pressure 2	258 mV	288 mV	0.009 kPa
X-Y Inclinometer	2353 mV	2392 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

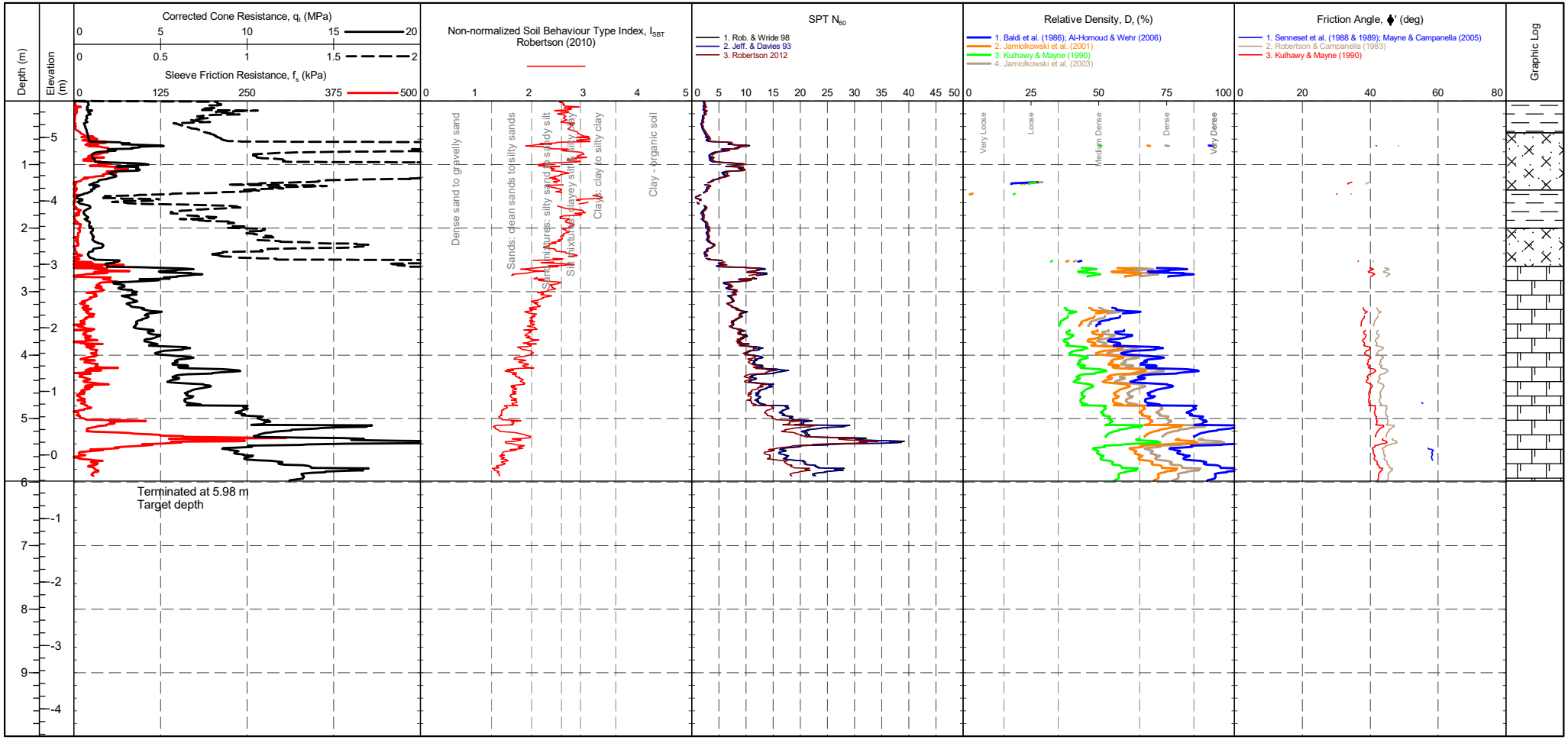
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID **DP141**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500185.442 m NORTHING : 101952.284 m ELEVATION : 5.572 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	216 mV	213 mV	-0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	214 mV	212 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	258 mV	288 mV	0.009 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2353 mV	2392 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

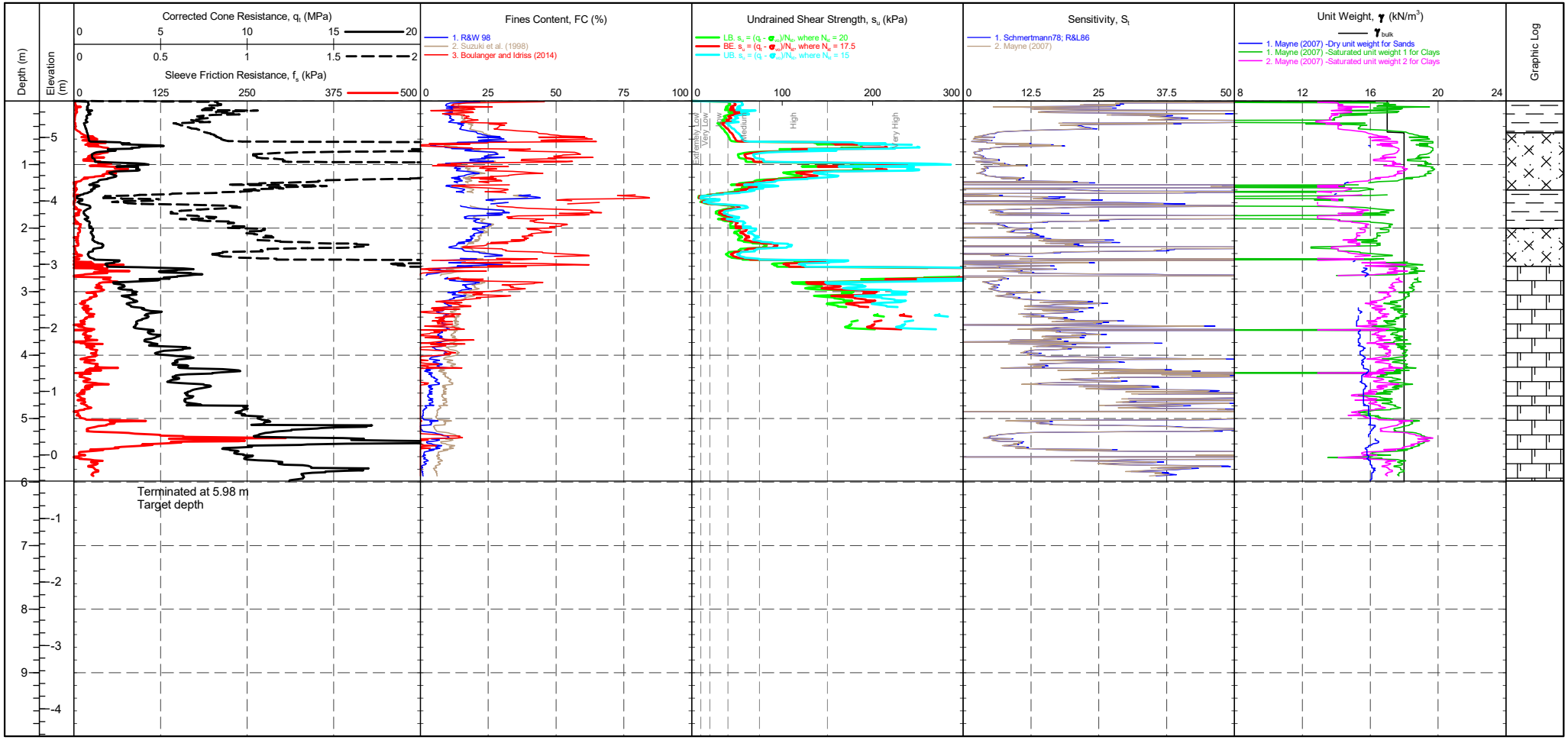
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP141**

CLIENT : Ground and Water	EASTING : 500185.442 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101952.284 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.572 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



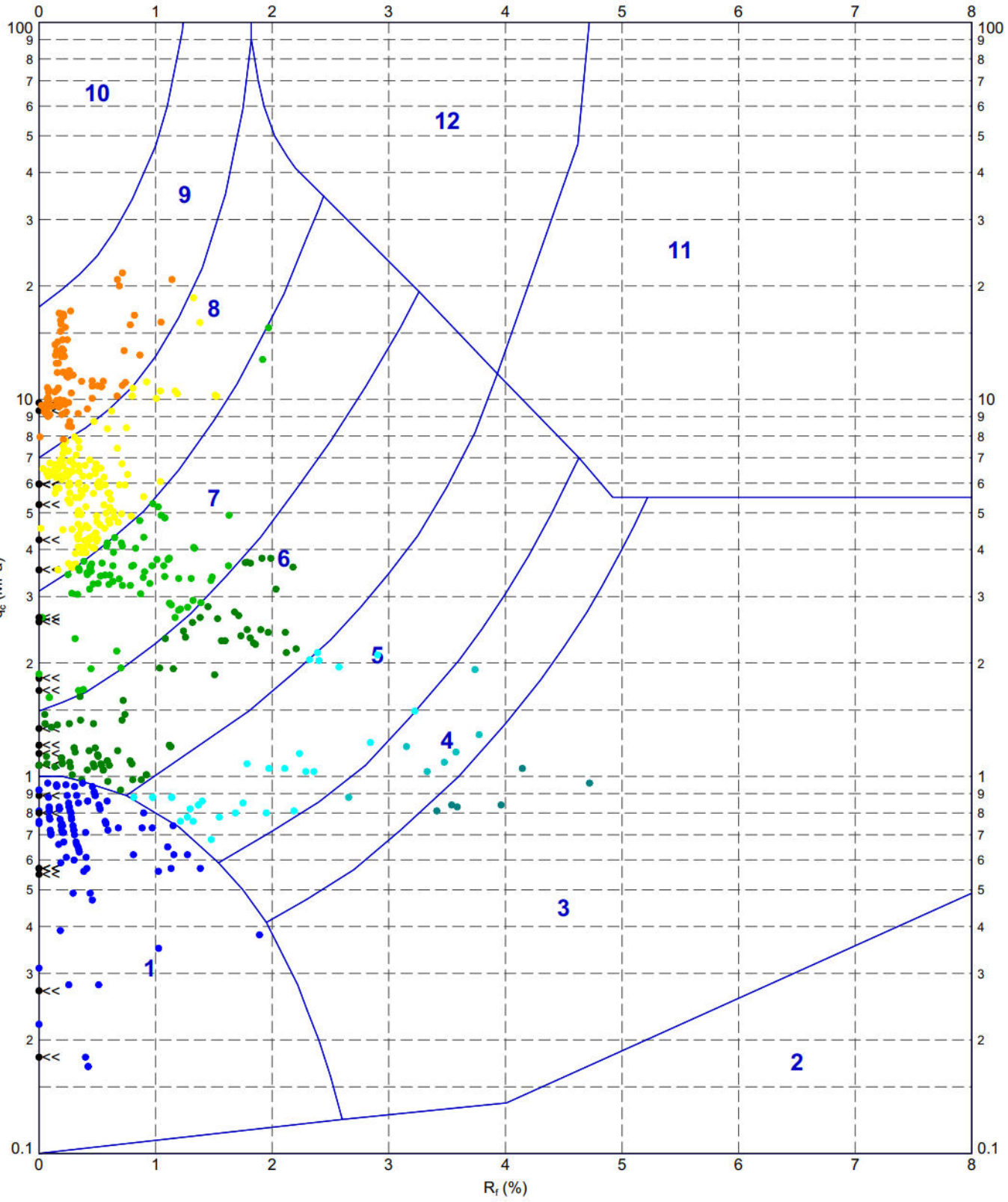
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	216 mV	213 mV	-0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	214 mV	212 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	258 mV	288 mV	0.009 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2353 mV	2392 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP141

DRAWN		DATE	12/04/2024
CHECKED		DATE	12/04/2024
SCALE	Not To Scale		A4
PROJECT No	1240182	FIGURE No	

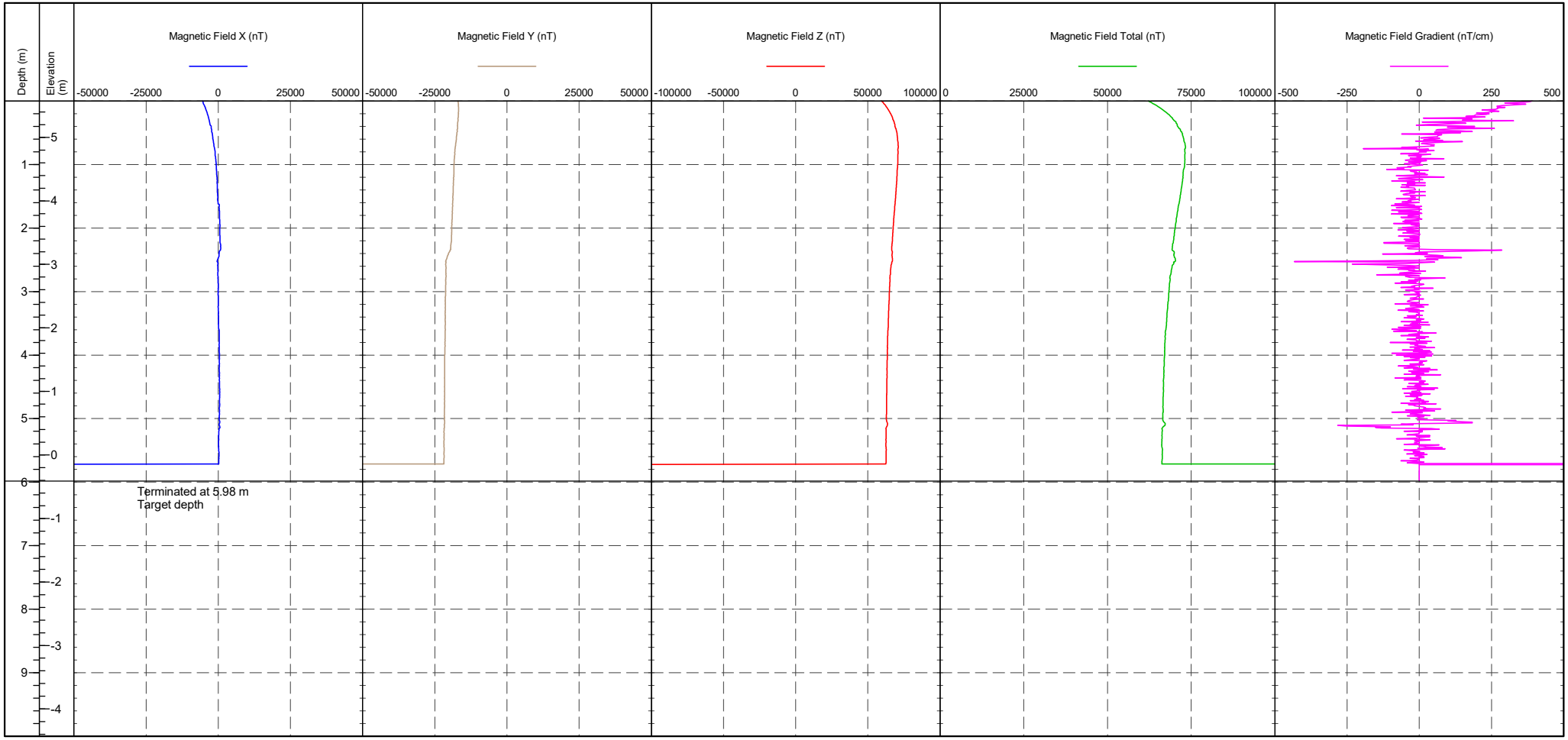
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:45 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP141**

CLIENT : Ground and Water	EASTING : 500185.442 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101952.284 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.572 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



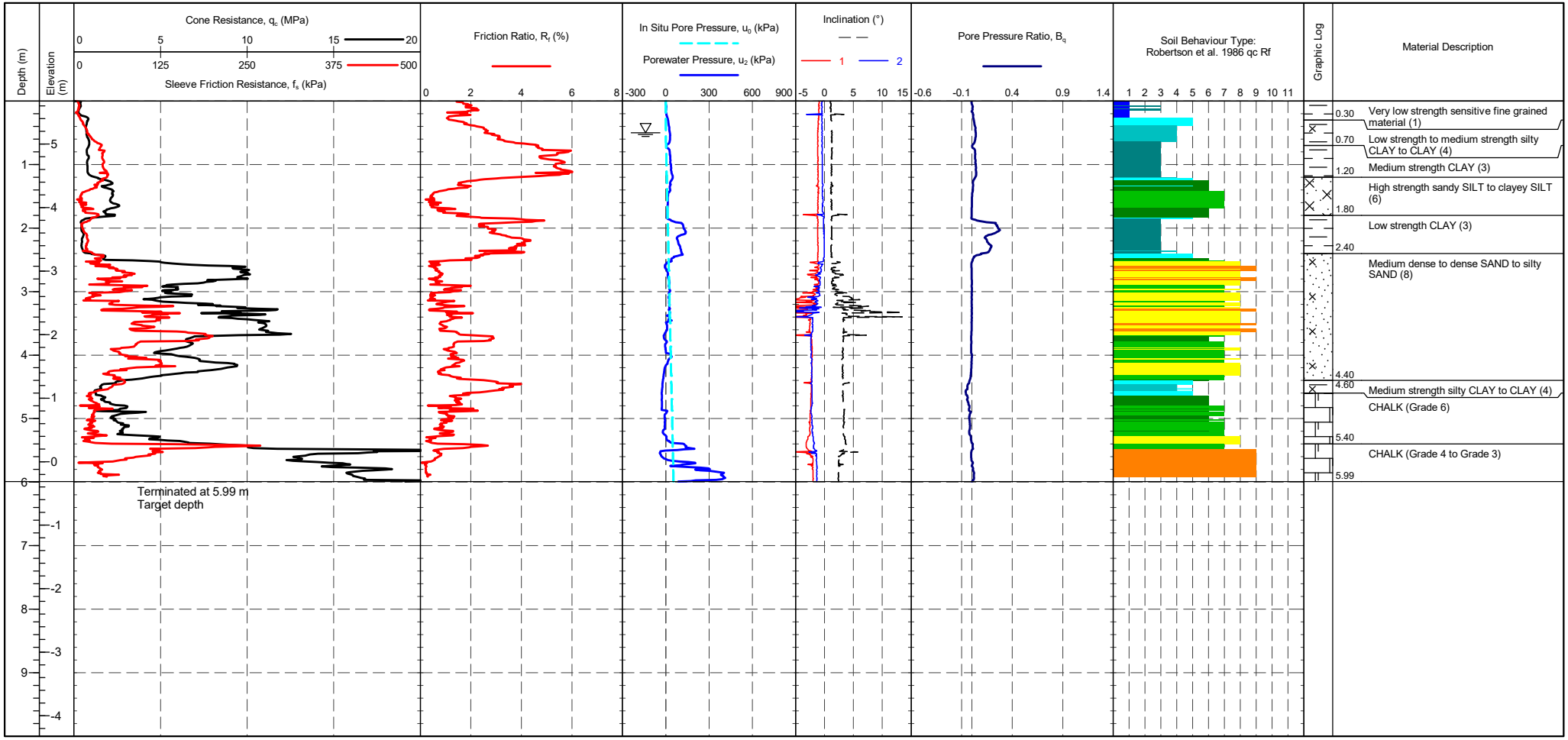
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	216 mV	213 mV	-0.033 MPa
				Sleeve	214 mV	212 mV	-0.001 kPa
				Pore Pressure 2	258 mV	288 mV	0.009 kPa
				X-Y Inclinometer	2353 mV	2392 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP143**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500322.997 m NORTHING : 101984.729 m ELEVATION : 5.678 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1186 CALIBRATION DATE : 09/08/2021 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES	

Transducer	Pre	Post	Difference
Tip	223 mV	220 mV	-0.033 MPa
Sleeve	216 mV	215 mV	-0.001 kPa
Pore Pressure 2	256 mV	275 mV	0.006 kPa
X-Y Inclinometer	2384 mV	2375 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

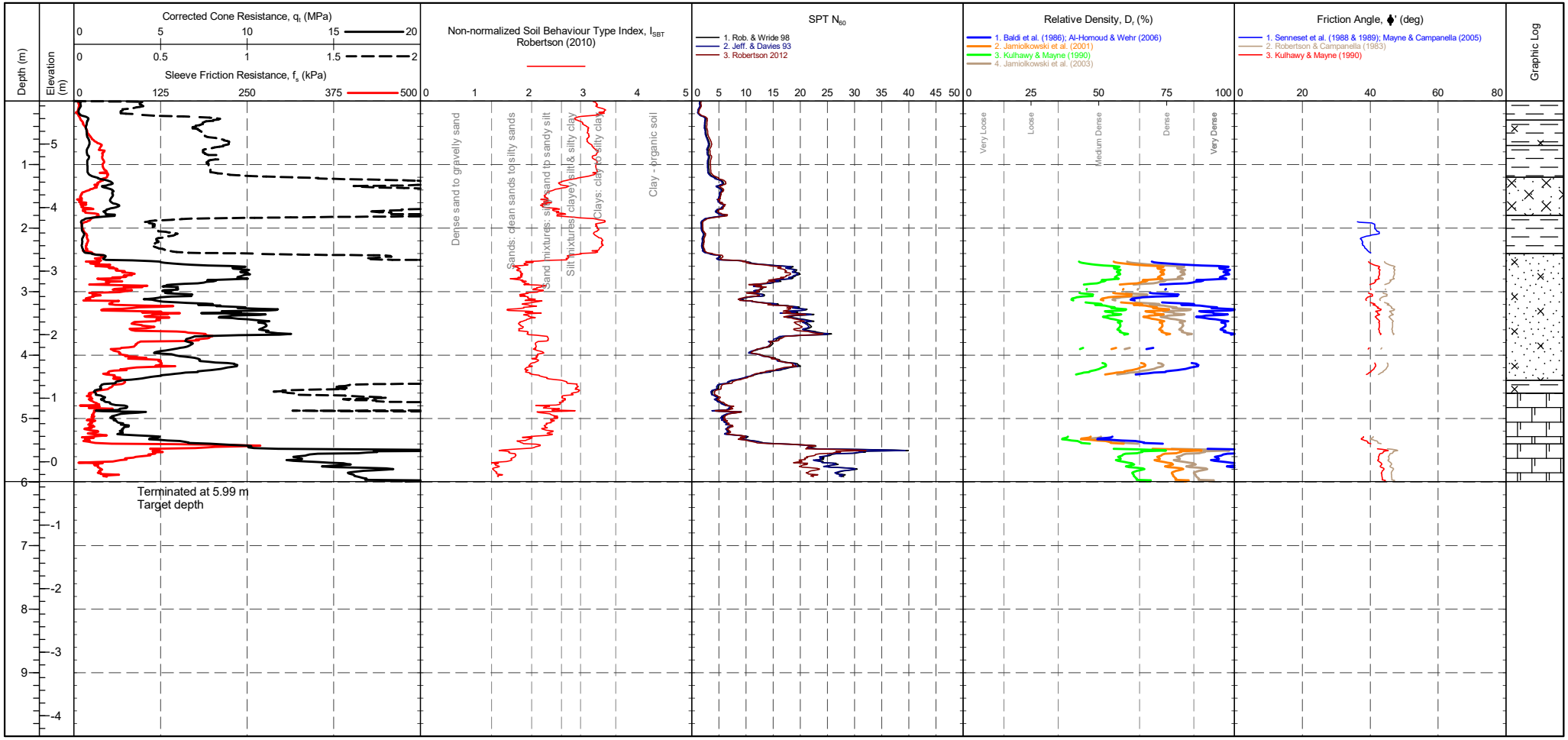
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID **DP143**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500322.997 m NORTHING : 101984.729 m ELEVATION : 5.678 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	223 mV	220 mV	-0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	216 mV	215 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	256 mV	275 mV	0.006 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2384 mV	2375 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

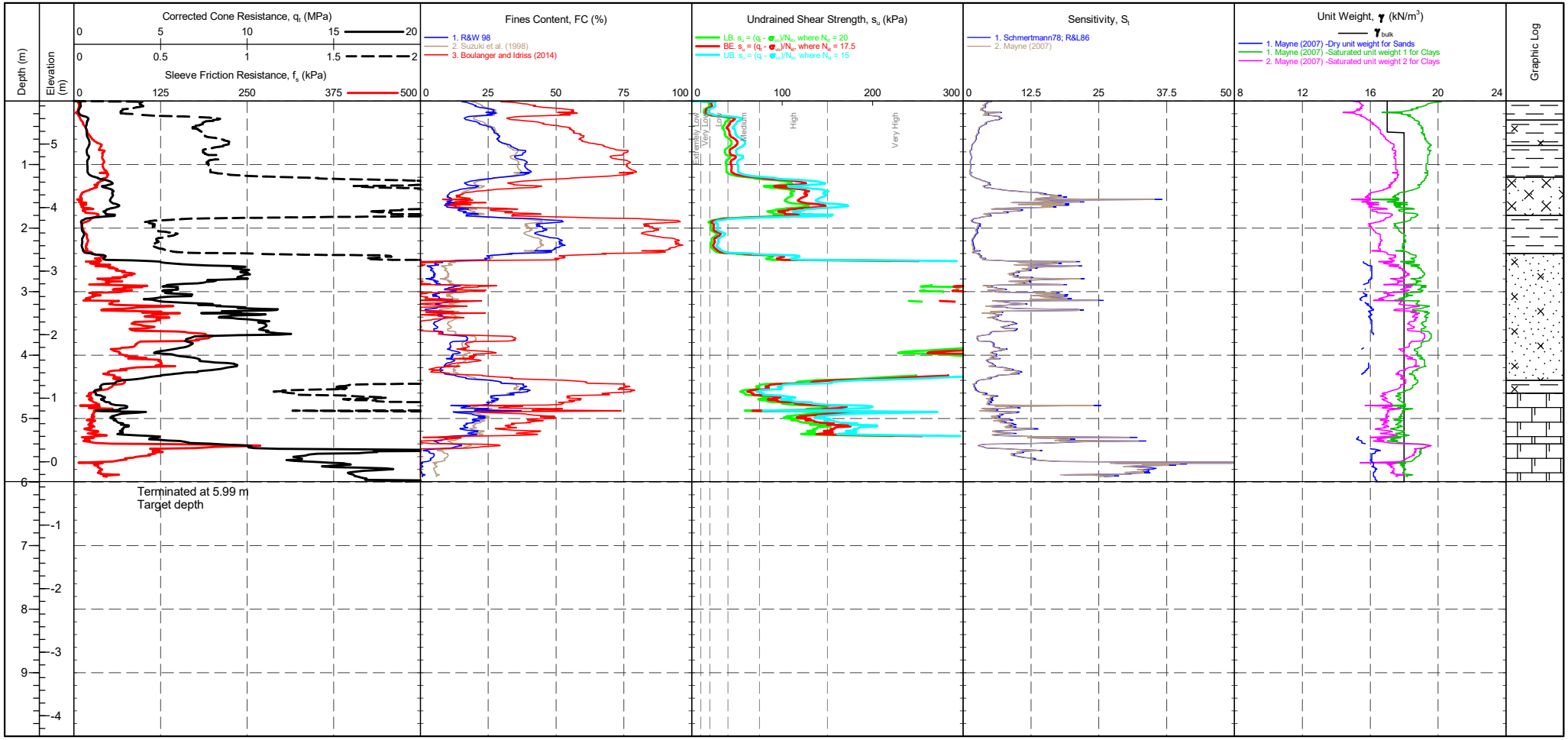
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP143**

CLIENT : Ground and Water	EASTING : 500322.997 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 101984.729 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.678 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



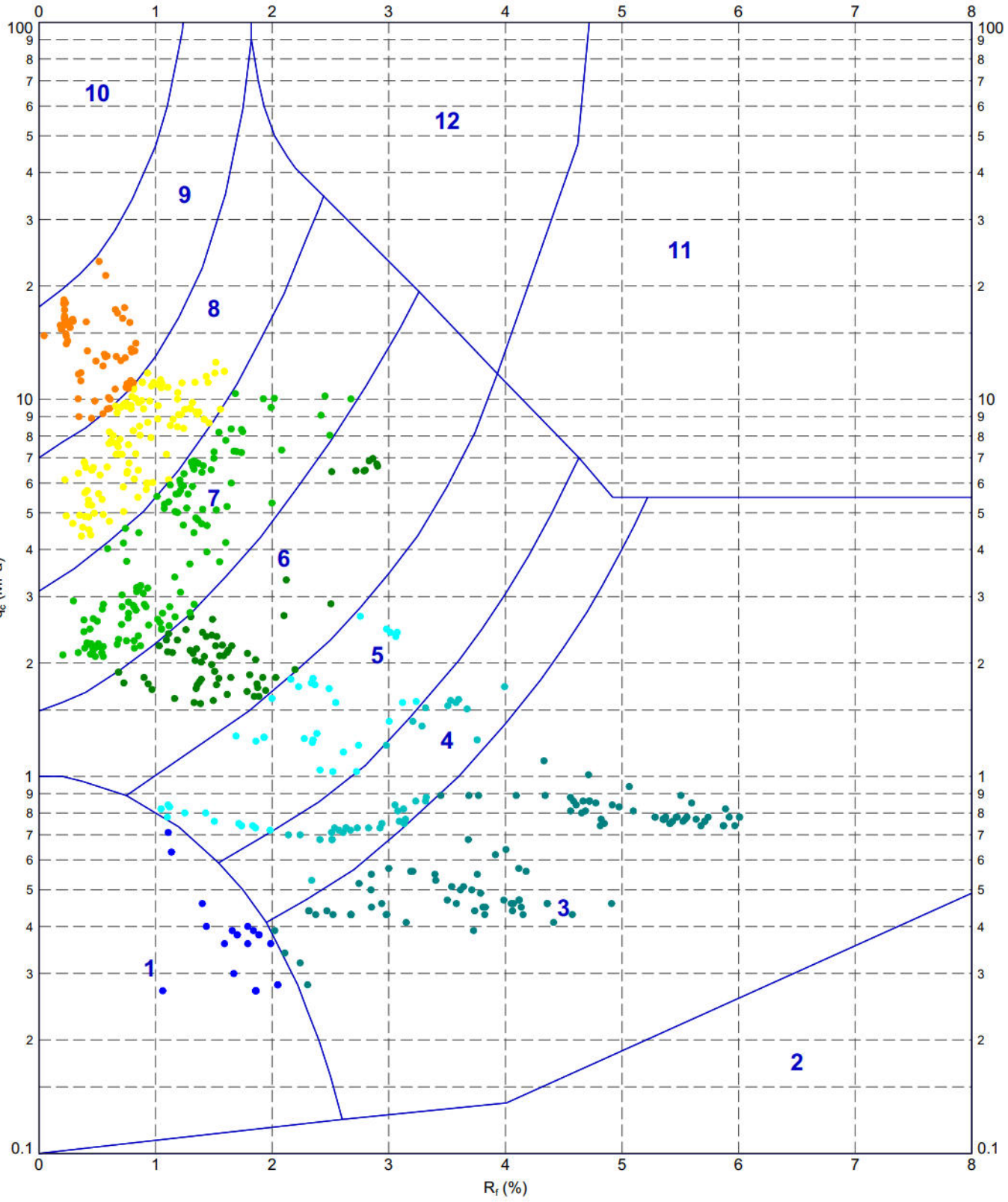
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	223 mV	220 mV	-0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	216 mV	215 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	256 mV	275 mV	0.006 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2384 mV	2375 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	Ground and Water Climping, West Sussex Church Lane Robertson et al. 1986 q_c vs. R_f - DP143
DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE	Not To Scale — A4
PROJECT No	1240182
FIGURE No	

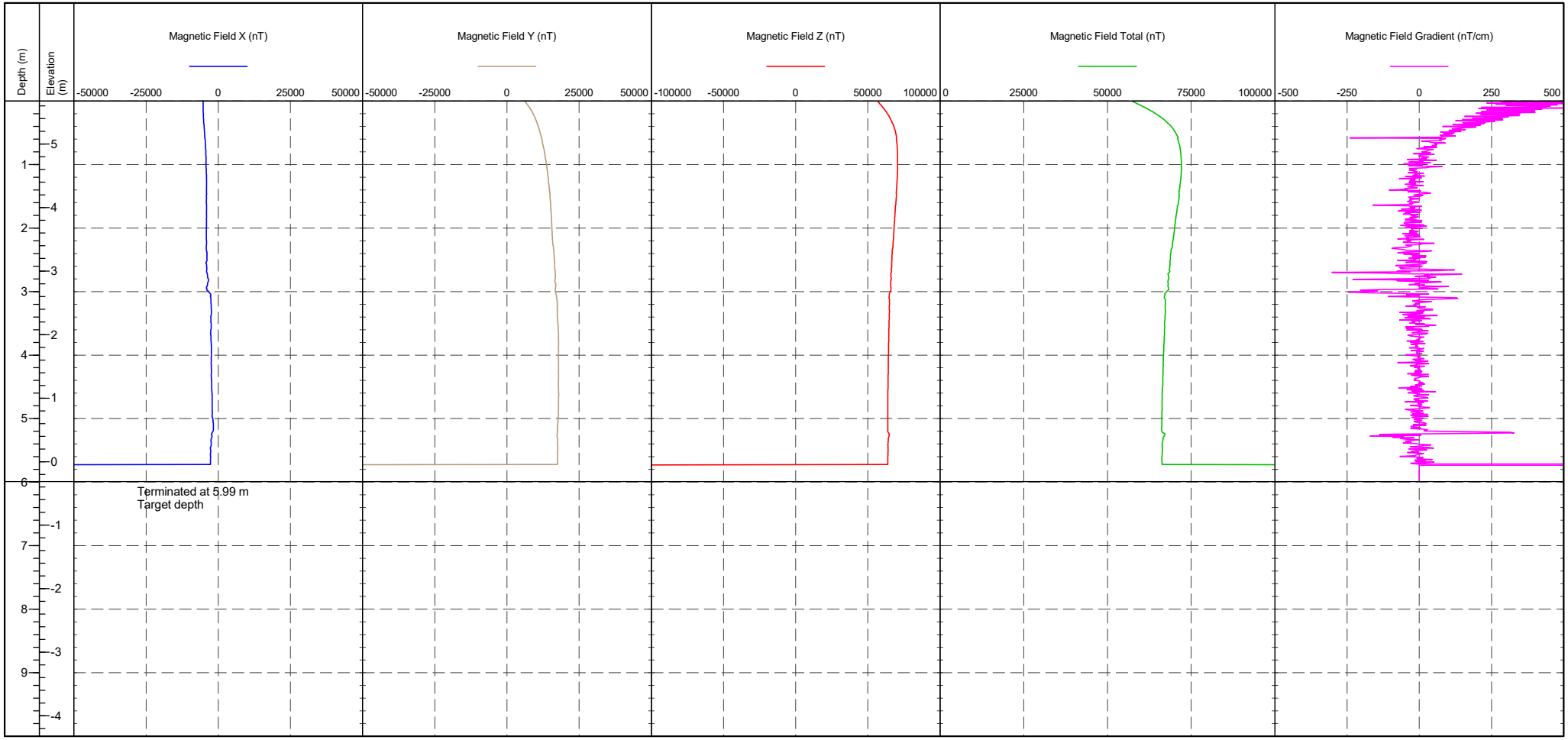
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:46 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP143**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500322.997 m NORTHING : 101984.729 m ELEVATION : 5.678 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



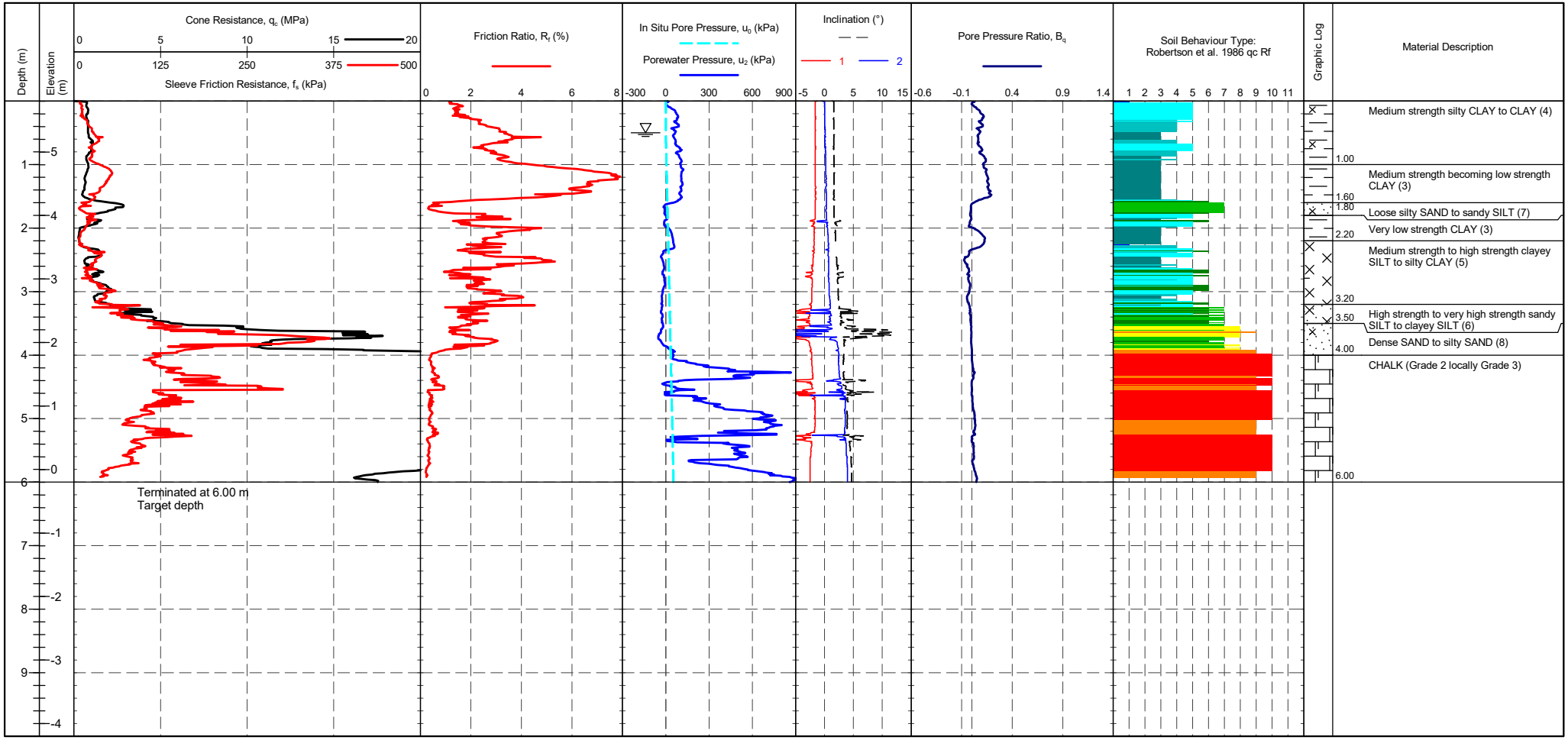
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	223 mV	220 mV	-0.033 MPa
				Sleeve	216 mV	215 mV	-0.001 kPa
				Pore Pressure 2	256 mV	275 mV	0.006 kPa
				X-Y Inclinometer	2384 mV	2375 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP144**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500394.417 m NORTHING : 102005.626 m ELEVATION : 5.802 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1186 CALIBRATION DATE : 09/08/2021 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES	

Transducer	Pre	Post	Difference
Tip	221 mV	213 mV	-0.088 MPa
Sleeve	218 mV	209 mV	-0.006 kPa
Pore Pressure 2	268 mV	244 mV	-0.007 kPa
X-Y Inclinometer	2355 mV	2355 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

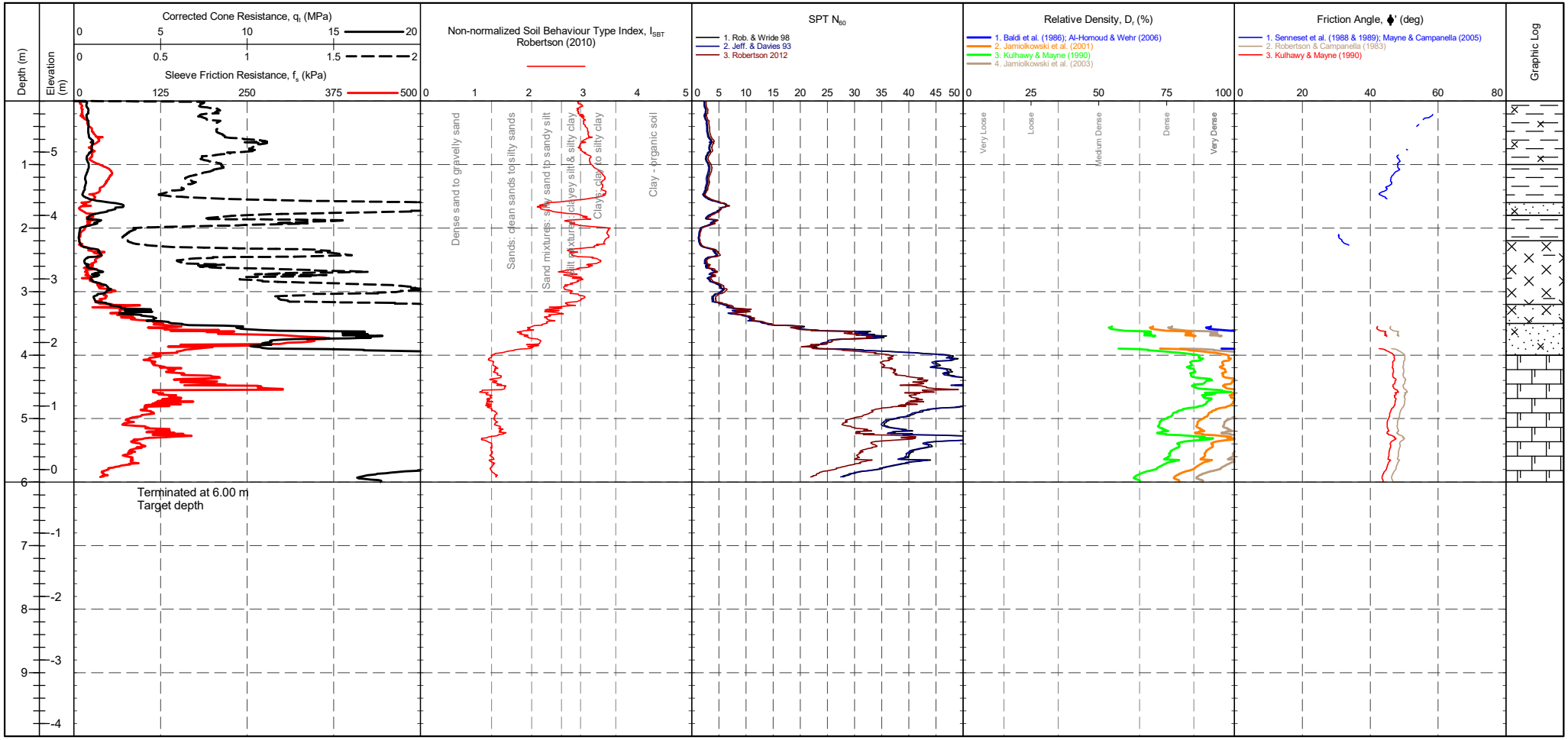
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID **DP144**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500394.417 m NORTHING : 102005.626 m ELEVATION : 5.802 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2			
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen			
CONE AREA RATIO	: 0.79	OPERATOR	: DHo			
FILTER POSITION	: u2	FRICTION REDUCER	: None			
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold			

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	213 mV	-0.088 MPa
Sleeve	218 mV	209 mV	-0.006 kPa
Pore Pressure 2	268 mV	244 mV	-0.007 kPa
X-Y Inclinometer	2355 mV	2355 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

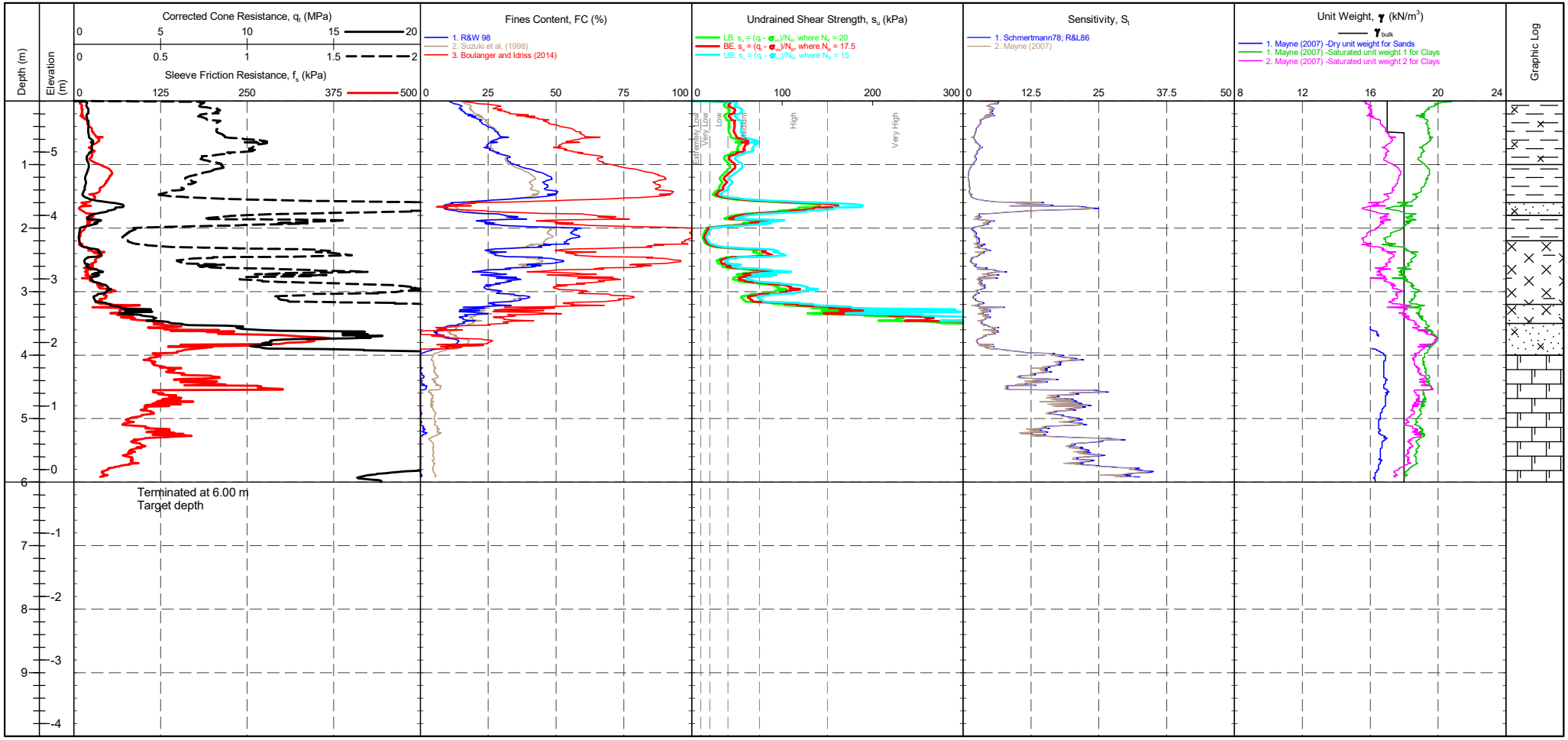
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP144**

CLIENT : Ground and Water	EASTING : 500394.417 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102005.626 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.802 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



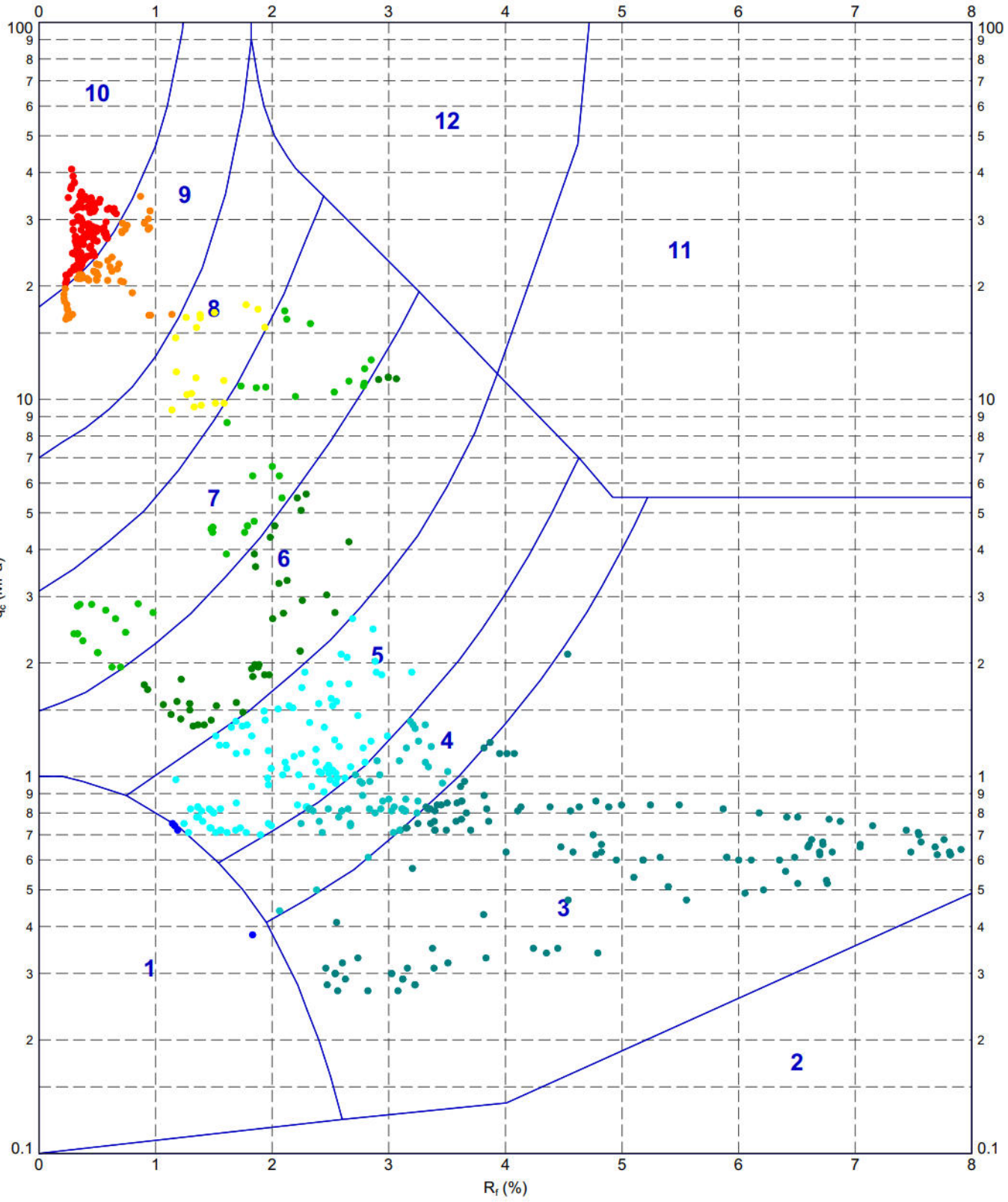
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	221 mV	213 mV	-0.088 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	218 mV	209 mV	-0.006 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	268 mV	244 mV	-0.007 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2355 mV	2355 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP144

DRAWN	DATE 12/04/2024	
CHECKED	DATE 12/04/2024	
SCALE Not To Scale		A4
PROJECT No 1240182	FIGURE No	

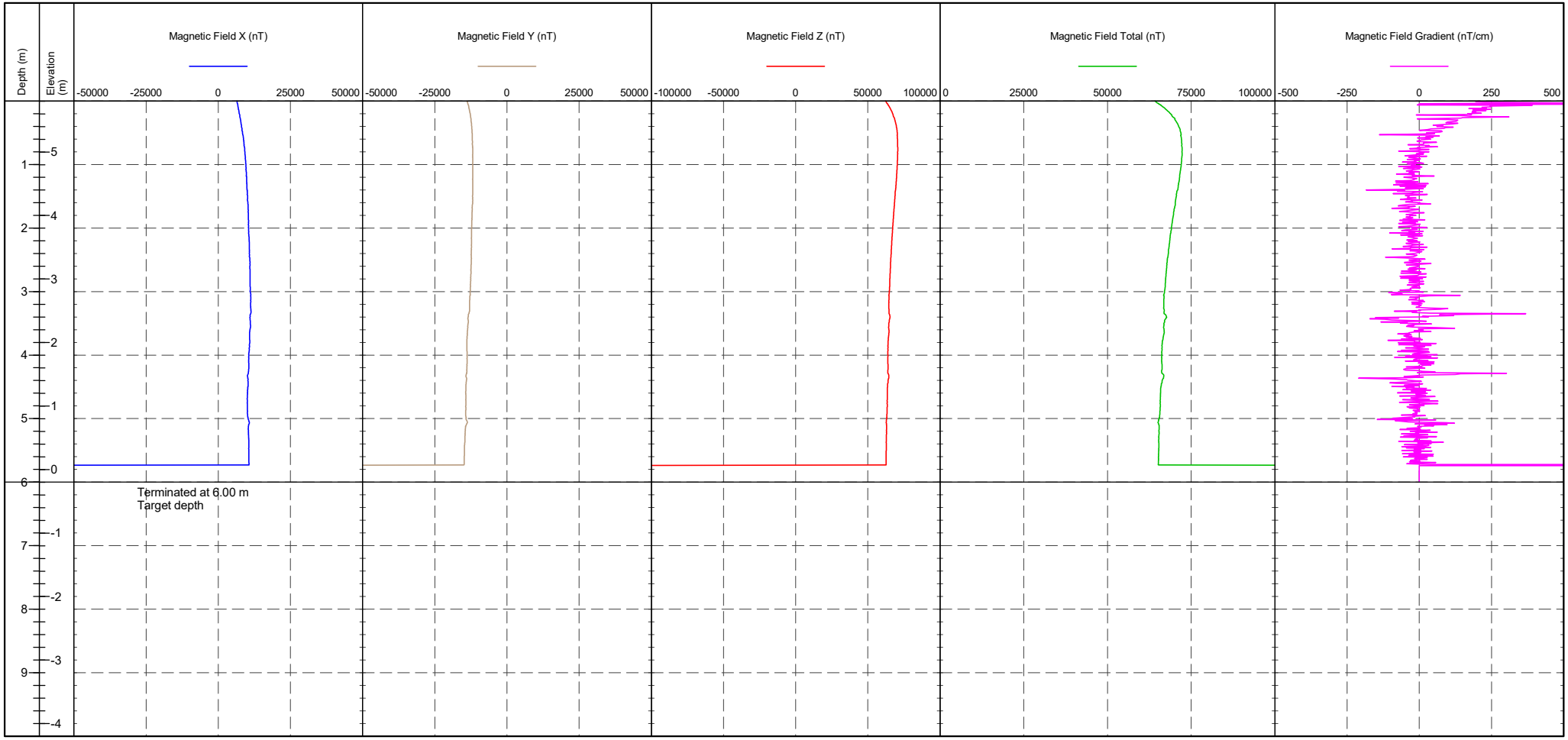
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:47 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP144**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500394.417 m NORTHING : 102005.626 m ELEVATION : 5.802 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



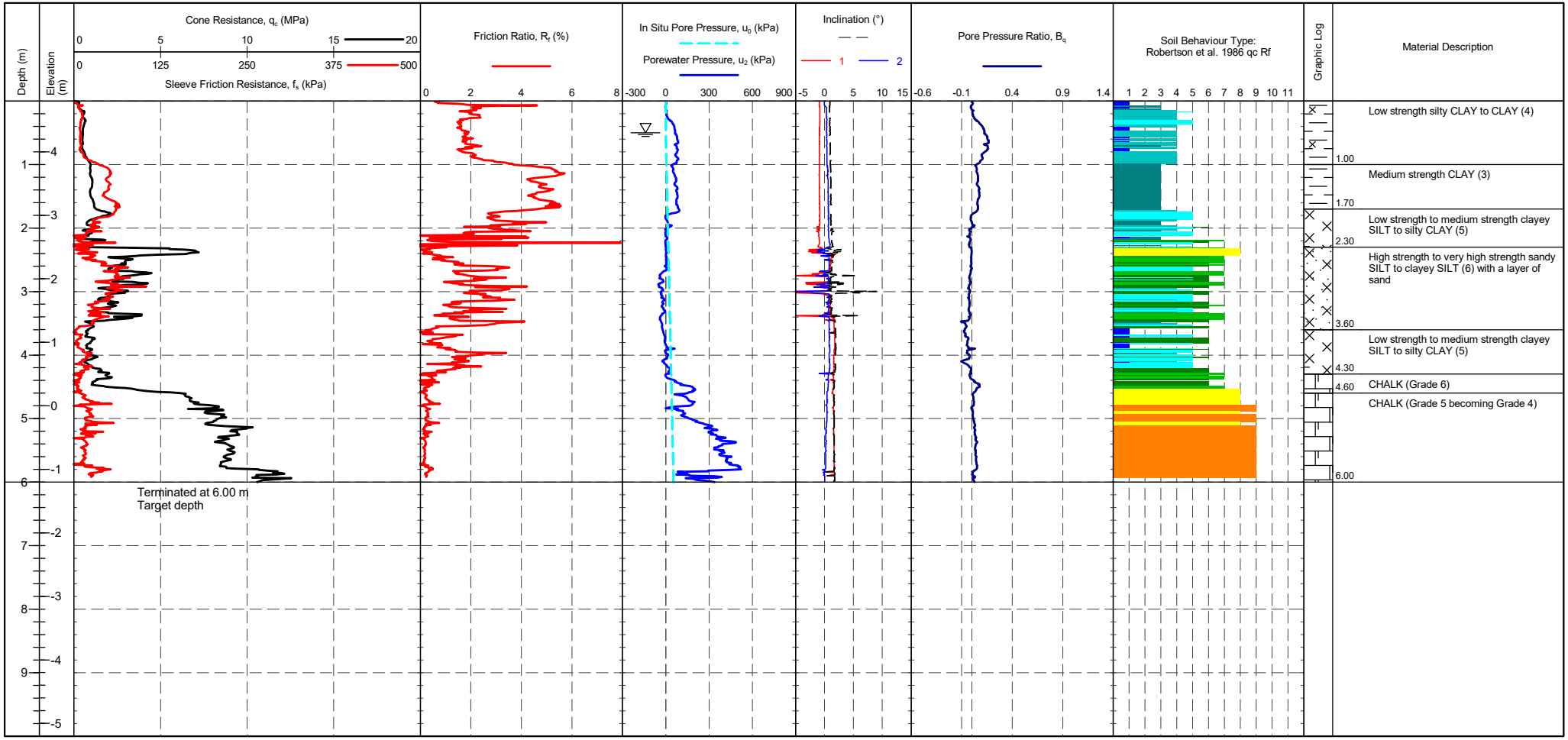
CONE ID : S15-CFIP.1186 CONE MODEL : Subtraction	RIG : CPT 017 - Griffen OPERATOR : DHo	CPTU ZERO VALUES		
		Transducer	Pre	Post	Difference
		Tip	221 mV	213 mV	-0.088 MPa
		Sleeve	218 mV	209 mV	-0.006 kPa
		Pore Pressure 2	268 mV	244 mV	-0.007 kPa
		X-Y Inclinometer	2355 mV	2355 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID **DP148**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500187.265 m NORTHING : 102241.311 m ELEVATION : 4.799 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	219 mV	-0.033 MPa
Sleeve	219 mV	216 mV	-0.002 kPa
Pore Pressure 2	264 mV	261 mV	-0.001 kPa
X-Y Inclinometer	2389 mV	2403 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

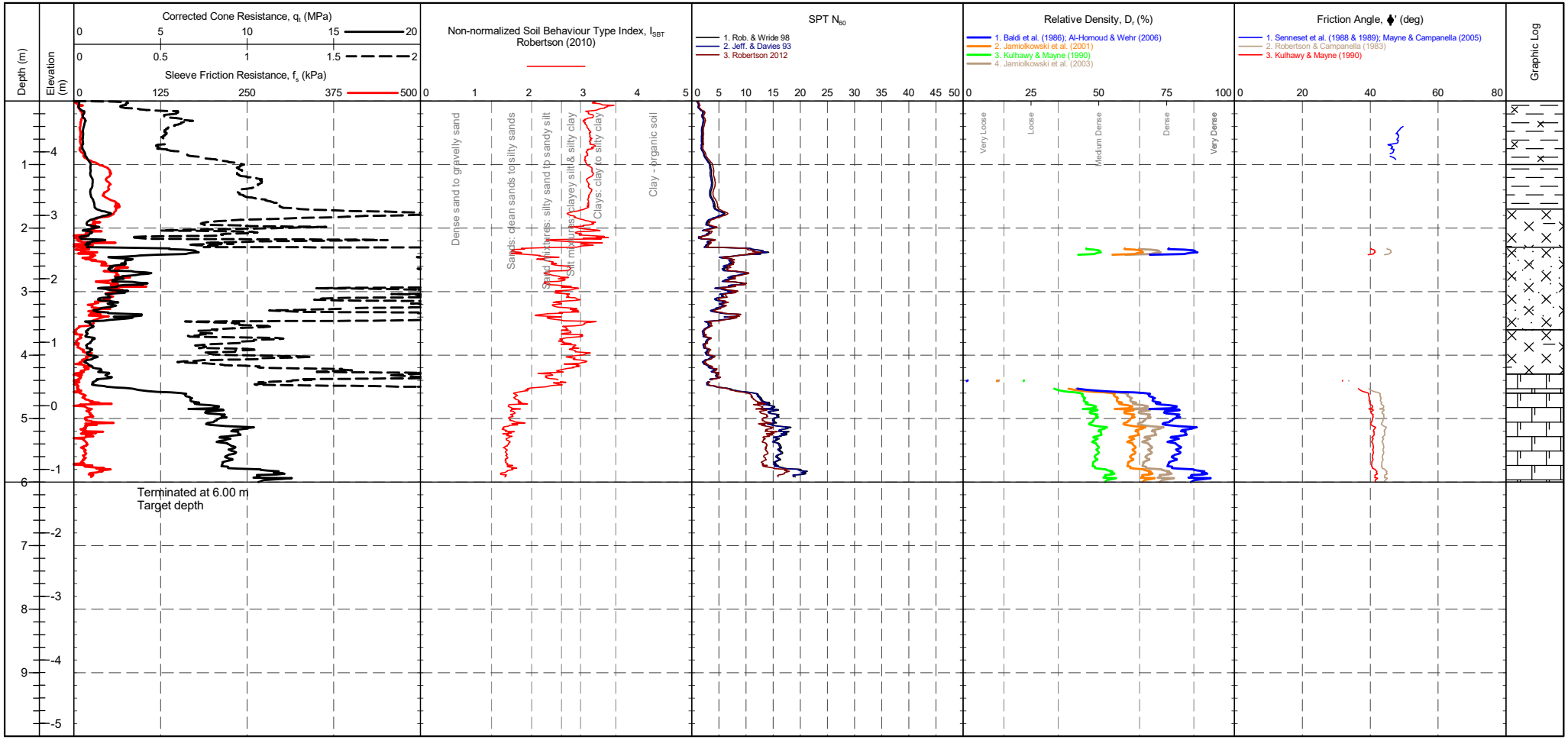
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP148**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500187.265 m NORTHING : 102241.311 m ELEVATION : 4.799 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	222 mV	219 mV
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	219 mV	216 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	264 mV	261 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2389 mV	2403 mV

Transducer	Difference
Tip	-0.033 MPa
Sleeve	-0.002 kPa
Pore Pressure 2	-0.001 kPa

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

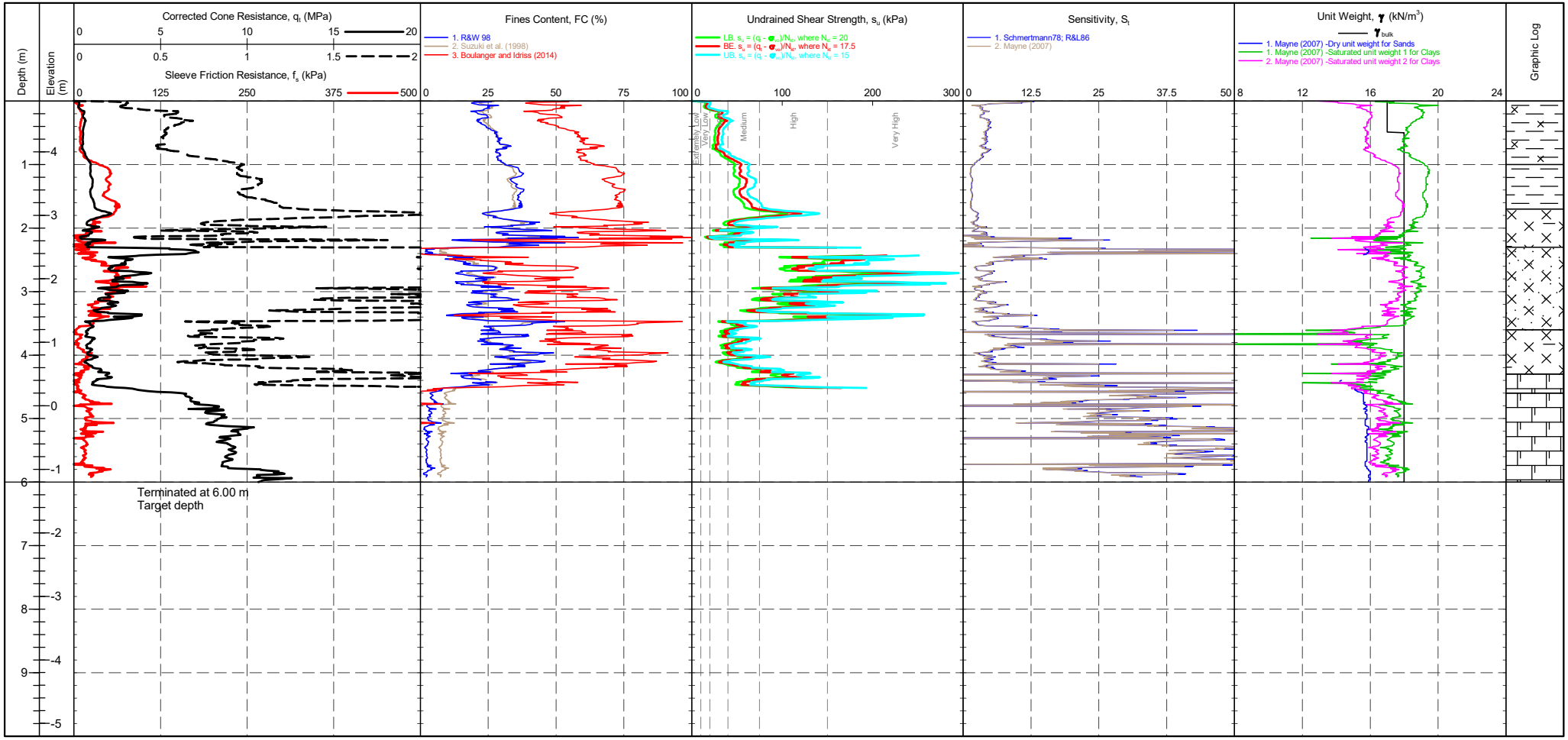
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP148**

CLIENT : Ground and Water	EASTING : 500187.265 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102241.311 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.799 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2				
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2				
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen				
CONE AREA RATIO	: 0.79	OPERATOR	: DHo				
FILTER POSITION	: u2	FRICTION REDUCER	: None				
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold				

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	219 mV	-0.033 MPa
Sleeve	219 mV	216 mV	-0.002 kPa
Pore Pressure 2	264 mV	261 mV	-0.001 kPa
X-Y Inclinometer	2389 mV	2403 mV	

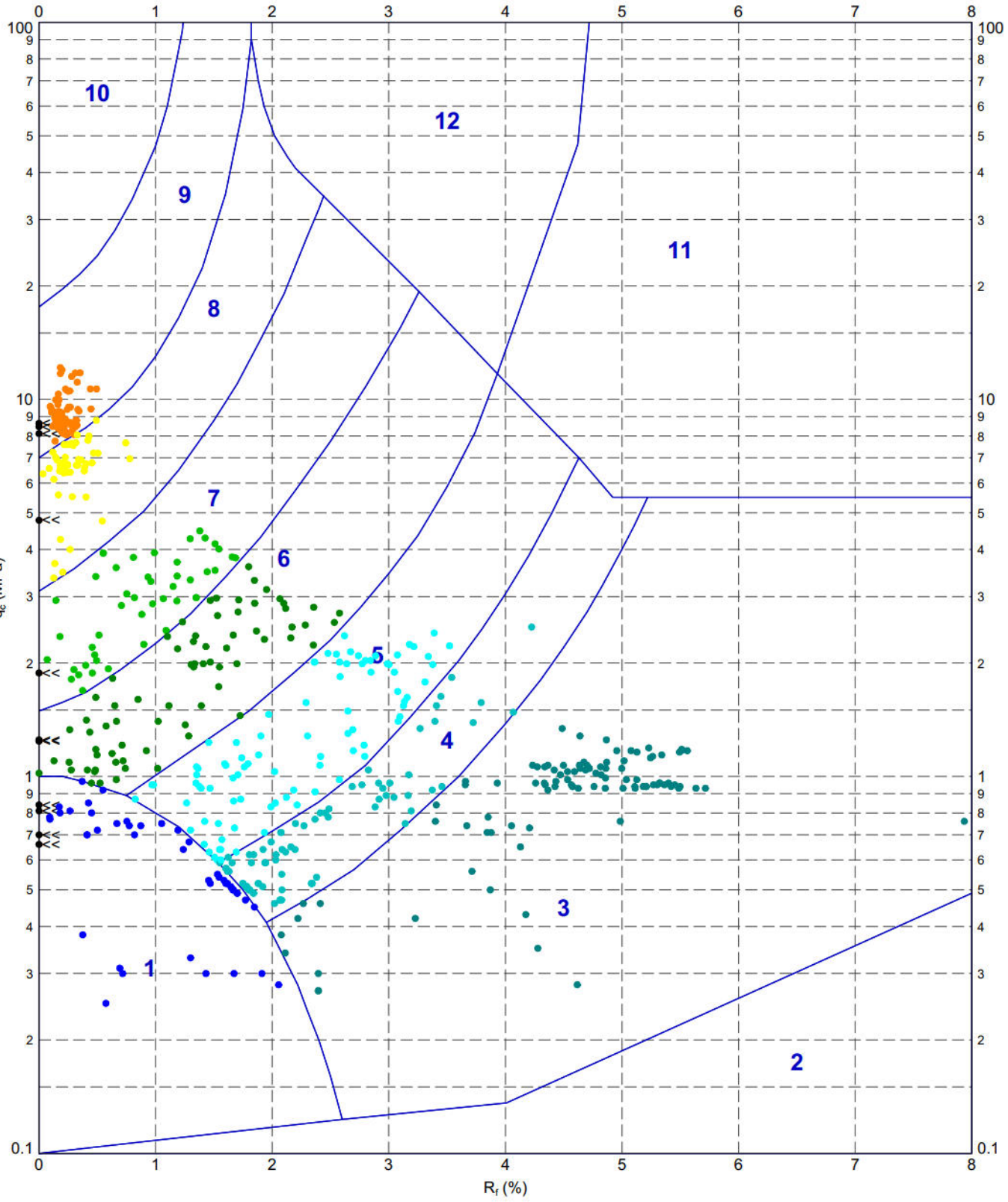
COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)
Extremely low strength	<10
Very low strength	10-20
Low strength	20-40

Term based on measurement	su (kPa)
Medium strength	40-75
High strength	75-150
Very high strength	150-300
Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP148

DRAWN		DATE	12/04/2024
CHECKED		DATE	12/04/2024
SCALE	Not To Scale		A4
PROJECT No	1240182	FIGURE No	

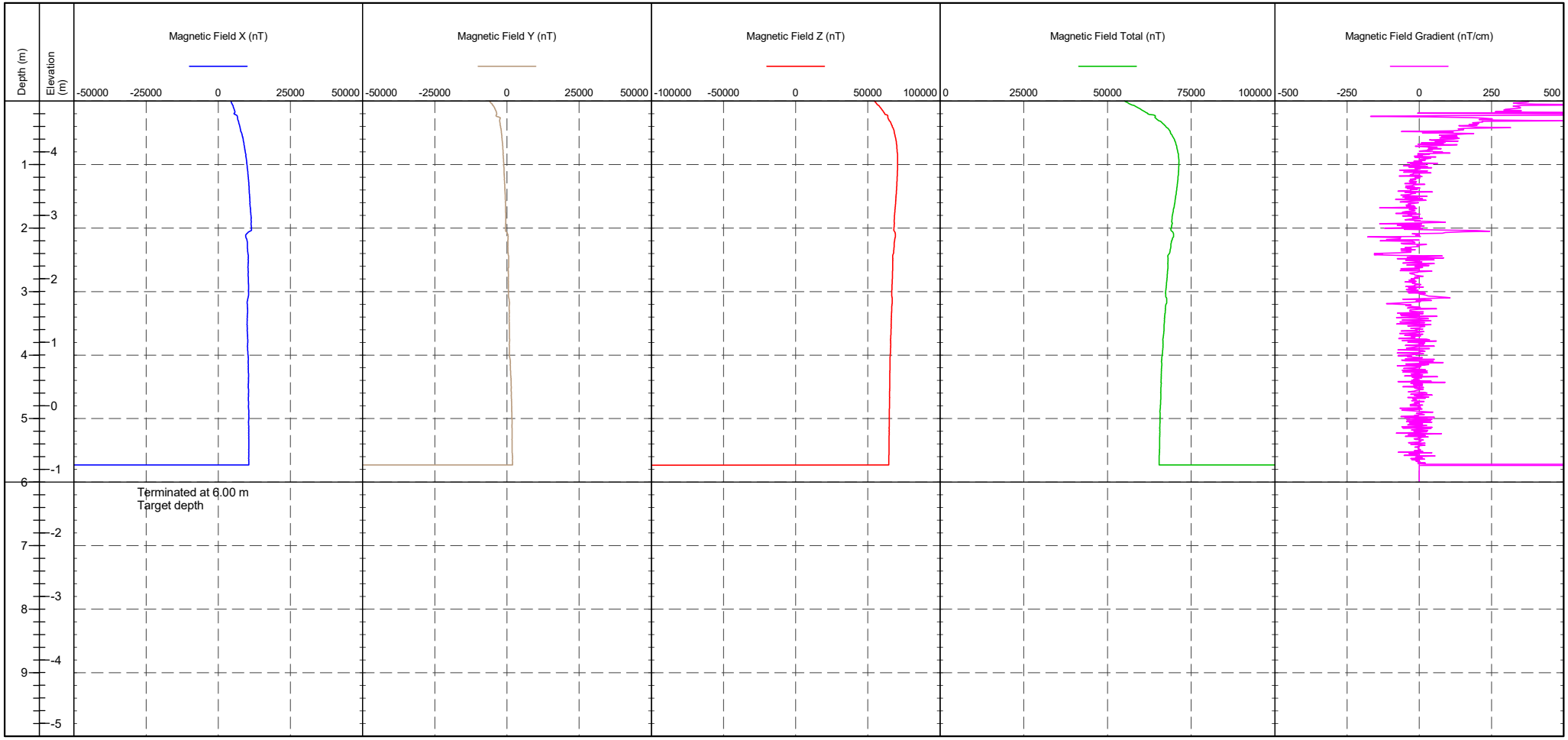
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:48 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prp: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP148**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500187.265 m NORTHING : 102241.311 m ELEVATION : 4.799 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



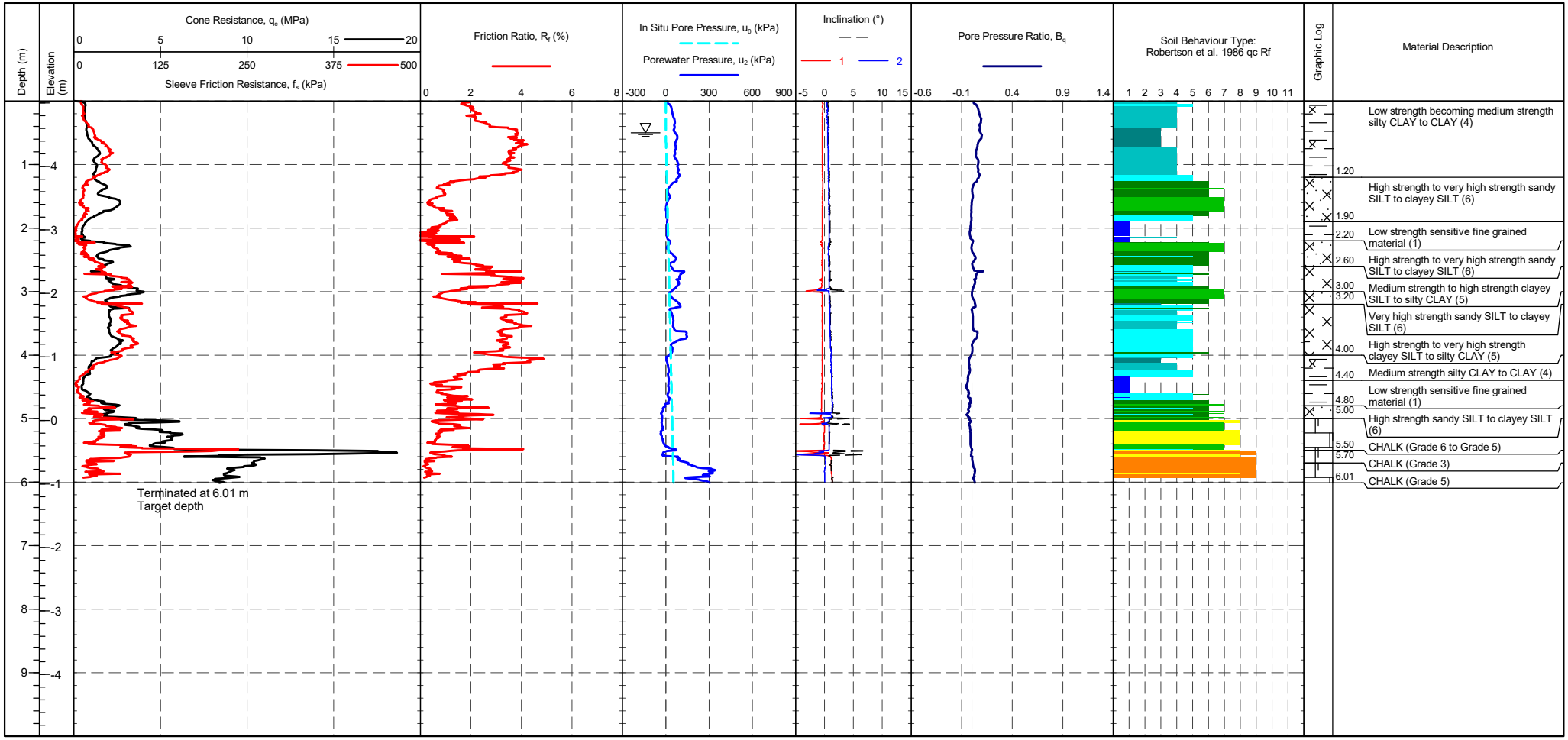
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	222 mV	219 mV	-0.033 MPa
				Sleeve	219 mV	216 mV	-0.002 kPa
				Pore Pressure 2	264 mV	261 mV	-0.001 kPa
				X-Y Inclinometer	2389 mV	2403 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP149**

CLIENT : Ground and Water	EASTING : 500244.256 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102263.602 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.029 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	220 mV	-0.011 MPa
Sleeve	218 mV	217 mV	-0.001 kPa
Pore Pressure 2	256 mV	268 mV	0.004 kPa
X-Y Inclinometer	2459 mV	2455 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

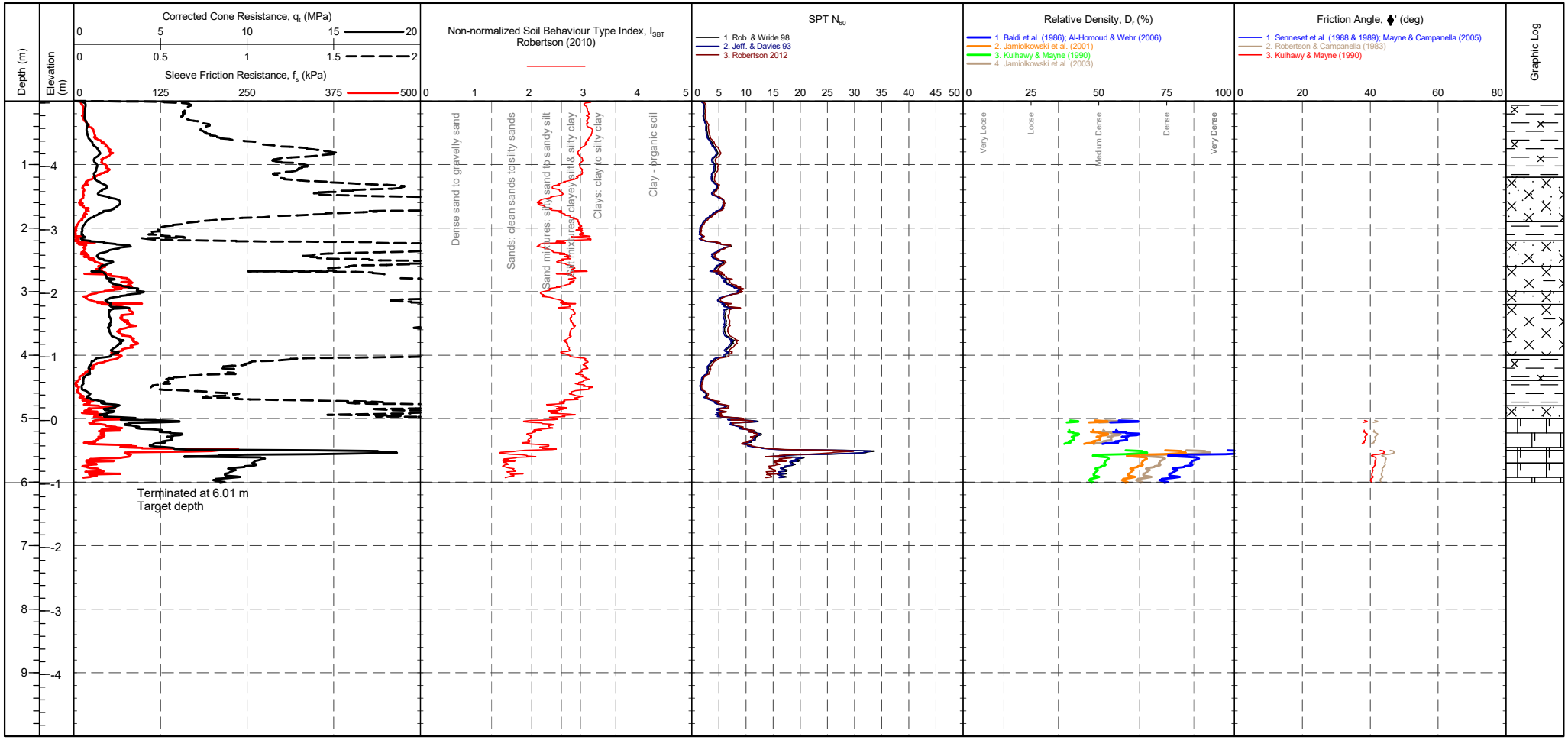
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP149**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500244.256 m NORTHING : 102263.602 m ELEVATION : 5.029 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2			
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen			
CONE AREA RATIO	: 0.79	OPERATOR	: DHo			
FILTER POSITION	: u2	FRICTION REDUCER	: None			
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold			

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	221 mV	220 mV	-0.011 MPa
Sleeve	218 mV	217 mV	-0.001 kPa
Pore Pressure 2	256 mV	268 mV	0.004 kPa
X-Y Inclinometer	2459 mV	2455 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

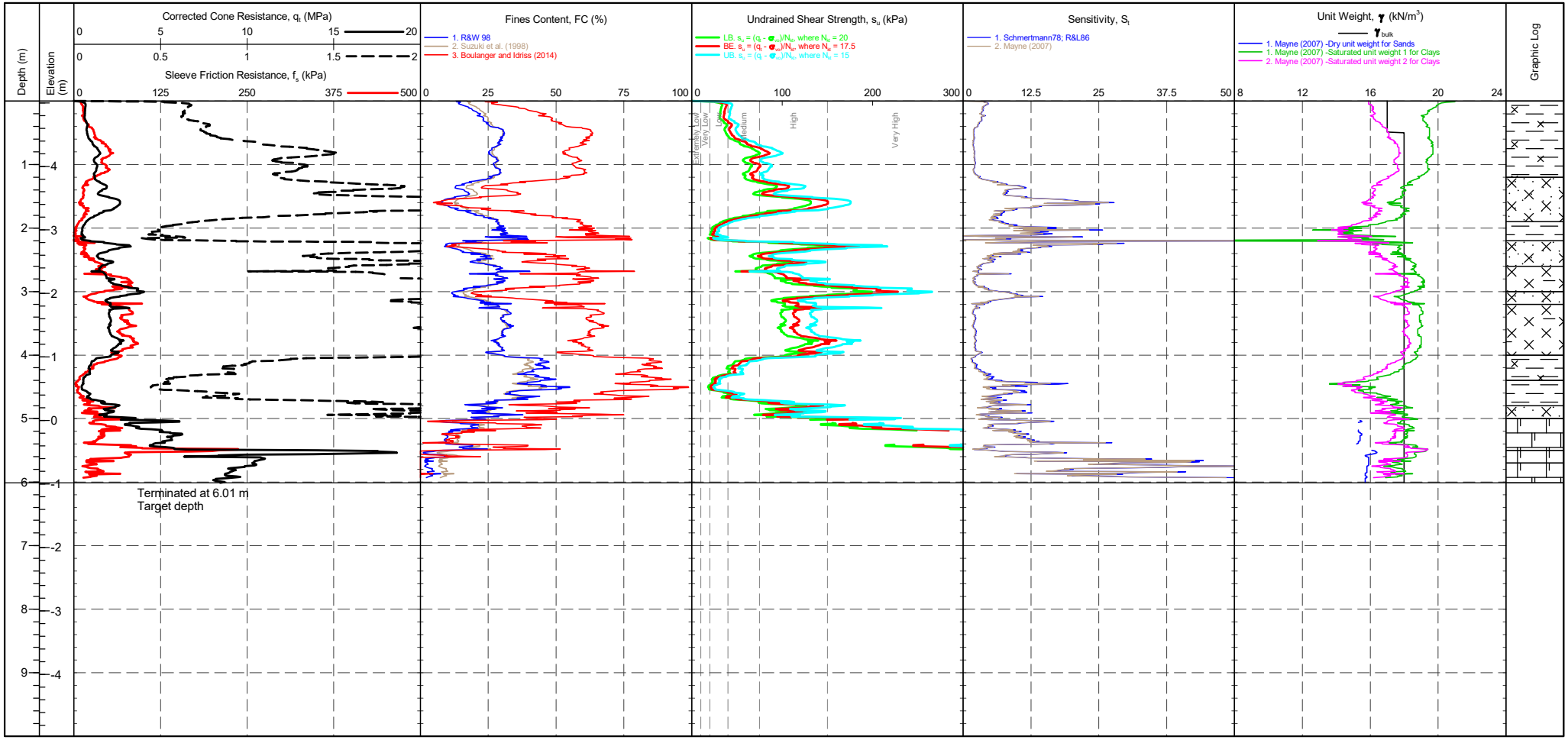
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP149**

CLIENT : Ground and Water	EASTING : 500244.256 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102263.602 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.029 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



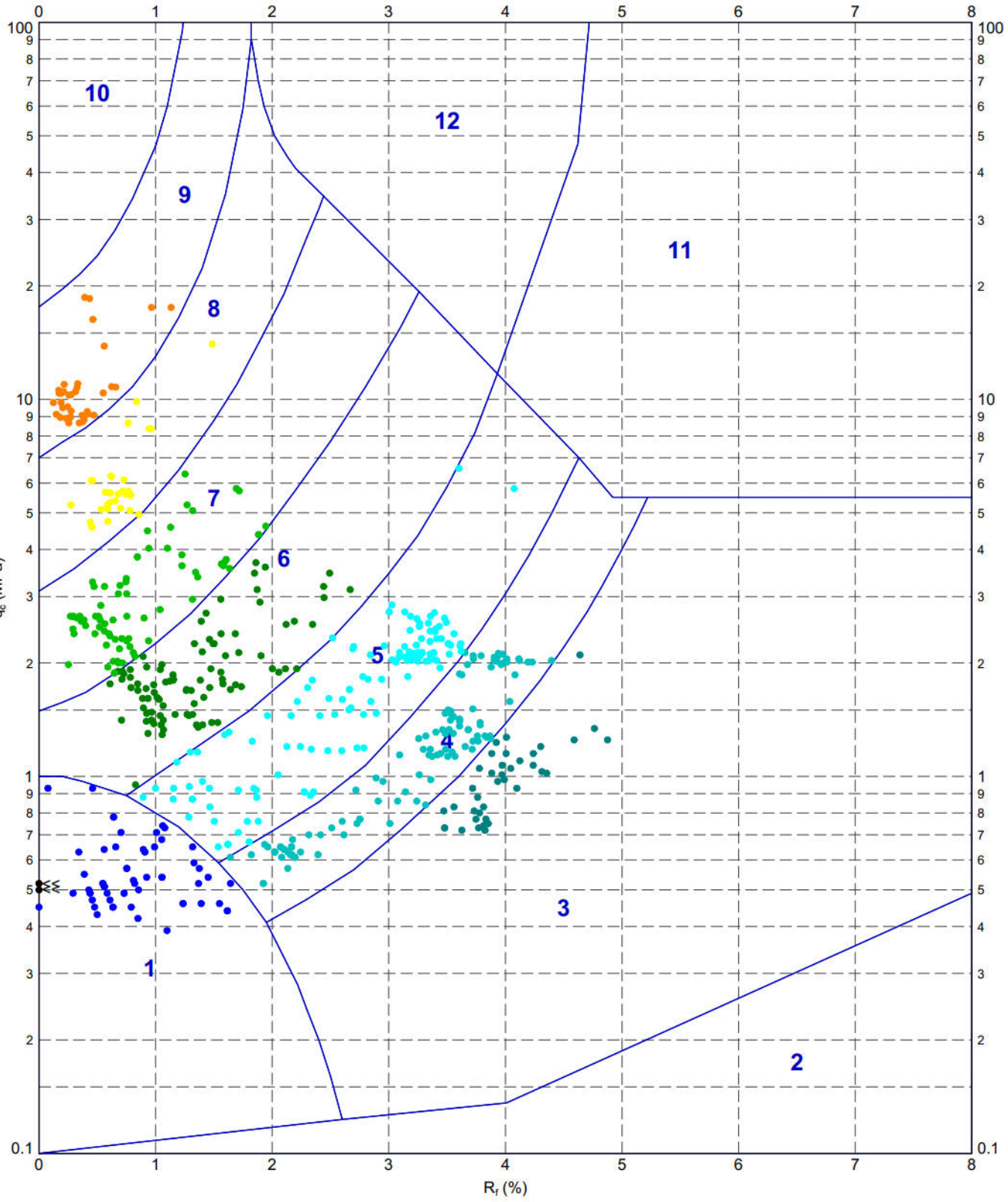
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	221 mV	220 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	218 mV	217 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	256 mV	268 mV	0.004 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2459 mV	2455 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE: Ground and Water Climping, West Sussex Church Lane Robertson et al. 1986 q_c vs. R_f - DP149	DRAWN	DATE 12/04/2024	
	CHECKED	DATE 12/04/2024	
	SCALE Not To Scale		A4
	PROJECT No 1240182	FIGURE No	

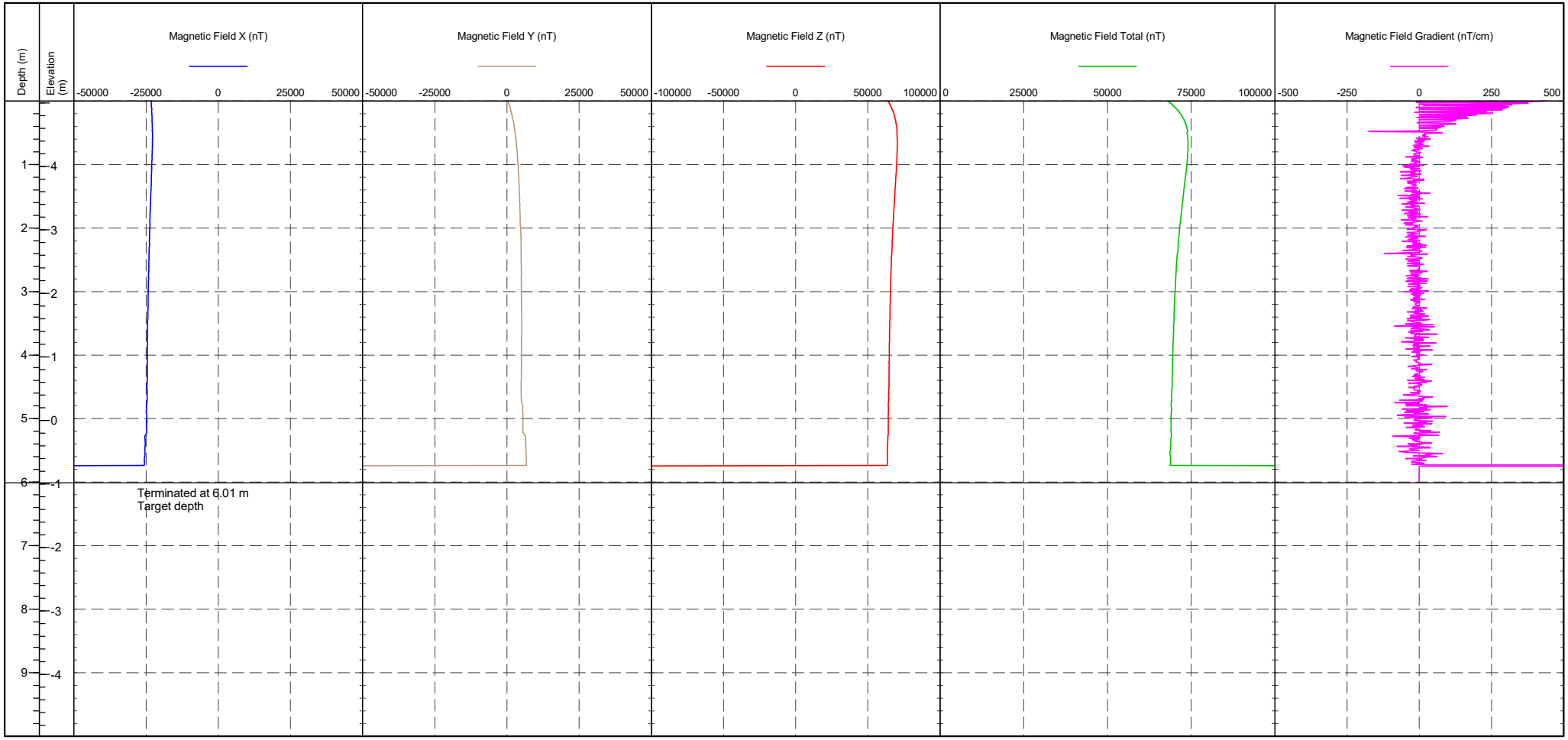
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:48 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prp: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP149**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500244.256 m NORTHING : 102263.602 m ELEVATION : 5.029 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



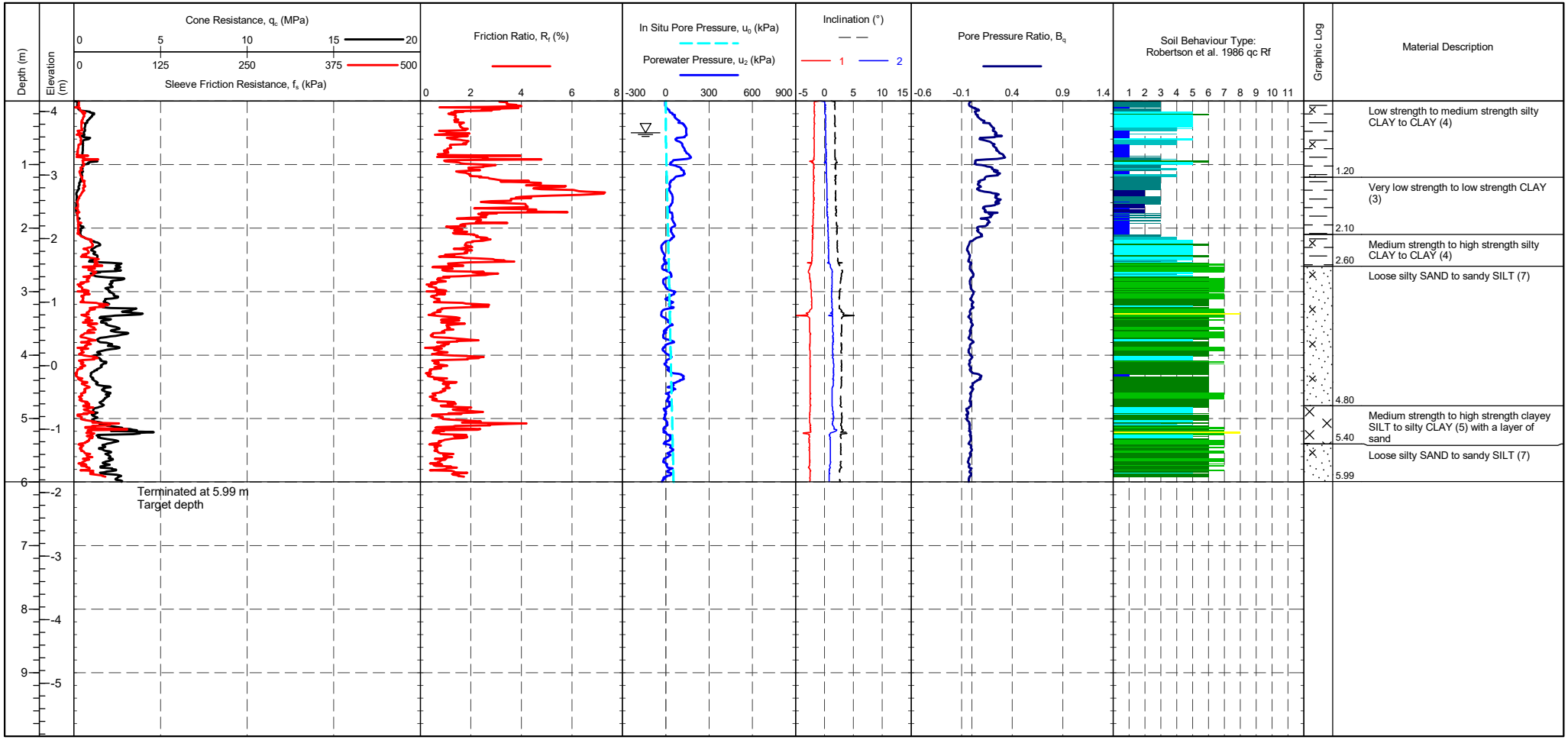
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	221 mV	220 mV	-0.011 MPa
				Sleeve	218 mV	217 mV	-0.001 kPa
				Pore Pressure 2	256 mV	268 mV	0.004 kPa
				X-Y Inclinometer	2459 mV	2455 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP150**

CLIENT : Ground and Water	EASTING : 500309.623 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102280.764 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.166 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	221 mV	-0.011 MPa
Sleeve	222 mV	221 mV	-0.001 kPa
Pore Pressure 2	273 mV	269 mV	-0.001 kPa
X-Y Inclinometer	2390 mV	2321 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

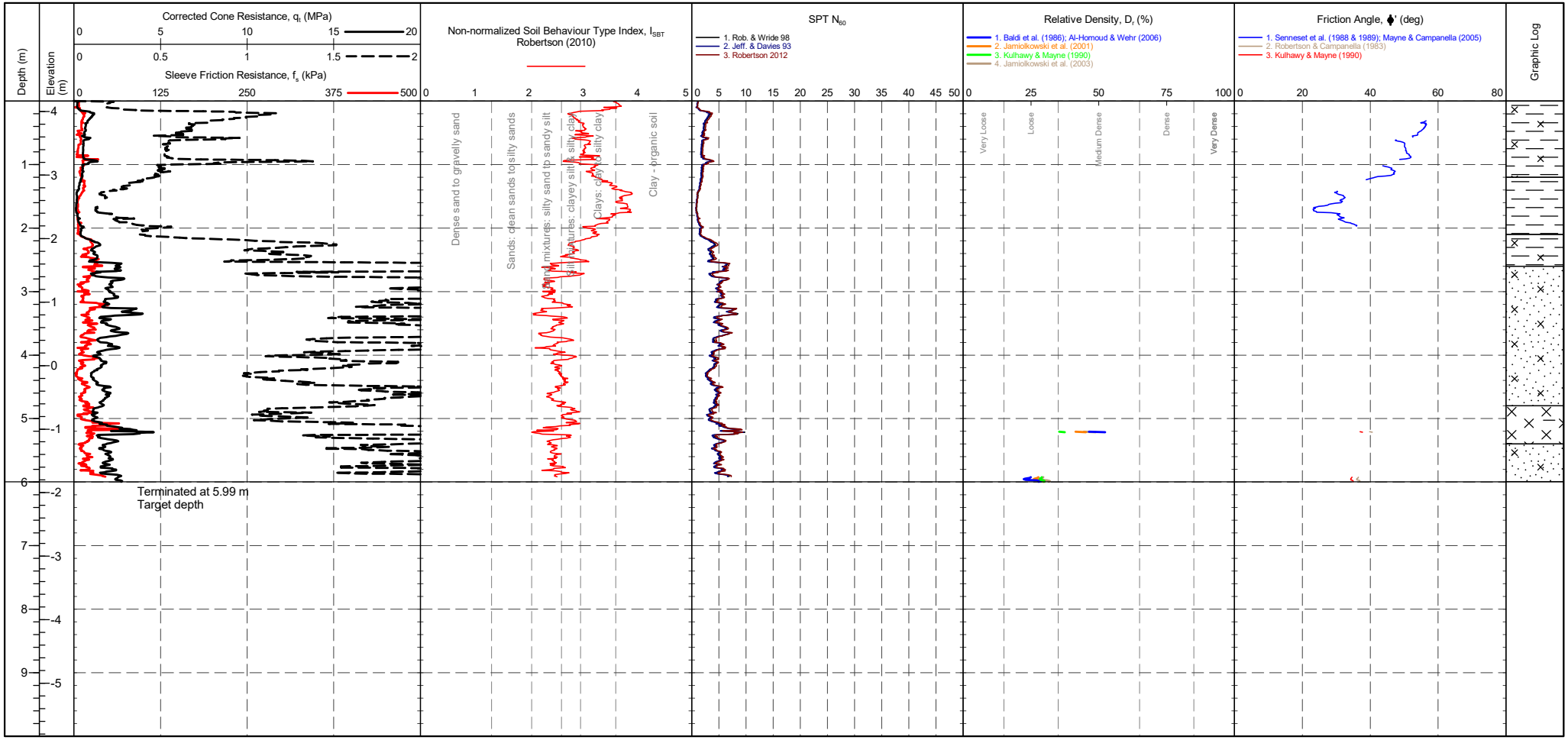
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP150**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500309.623 m NORTHING : 102280.764 m ELEVATION : 4.166 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2			
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen			
CONE AREA RATIO	: 0.79	OPERATOR	: DHo			
FILTER POSITION	: u2	FRICTION REDUCER	: None			
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold			

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	221 mV	-0.011 MPa
Sleeve	222 mV	221 mV	-0.001 kPa
Pore Pressure 2	273 mV	269 mV	-0.001 kPa
X-Y Inclinometer	2390 mV	2321 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

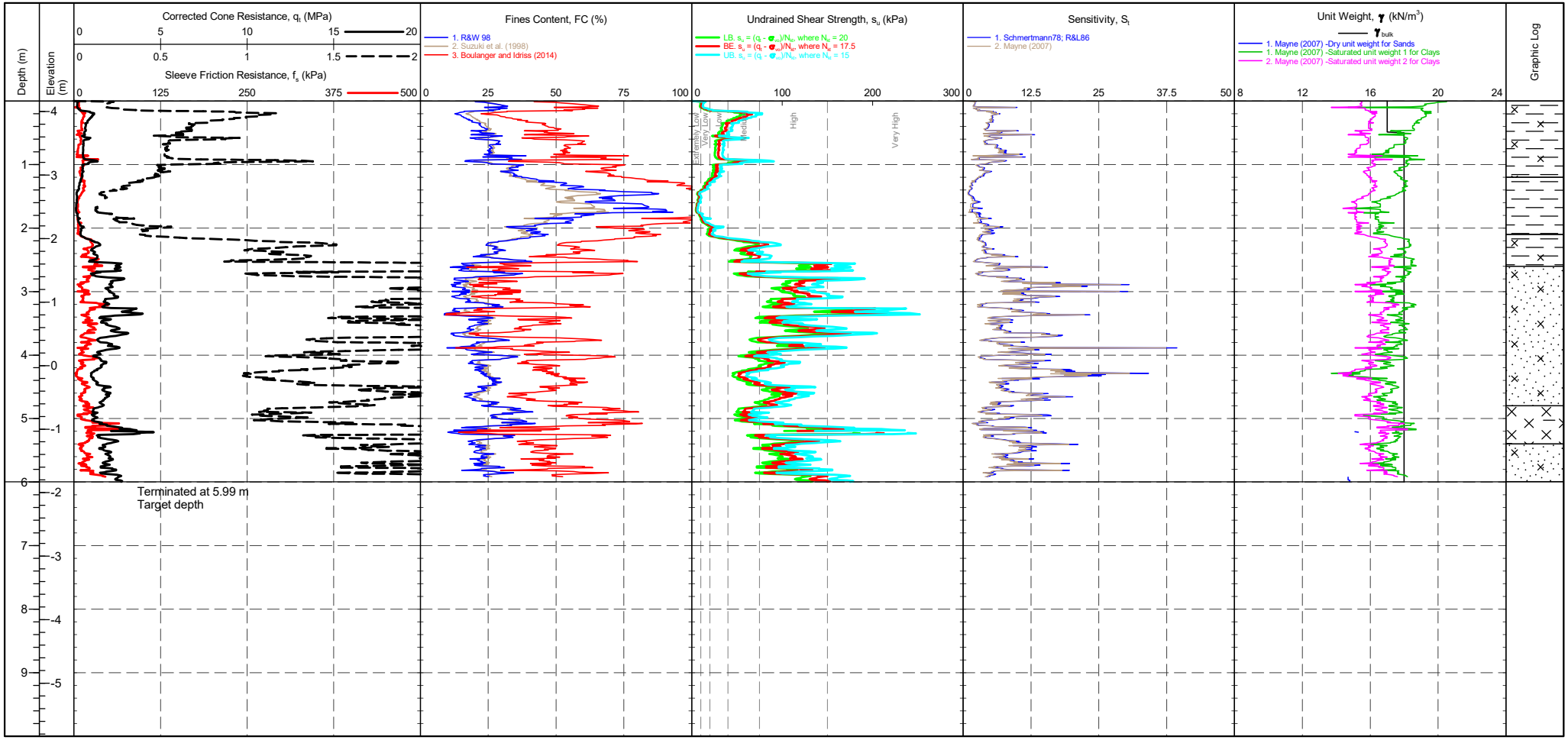
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP150**

CLIENT : Ground and Water	EASTING : 500309.623 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102280.764 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.166 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



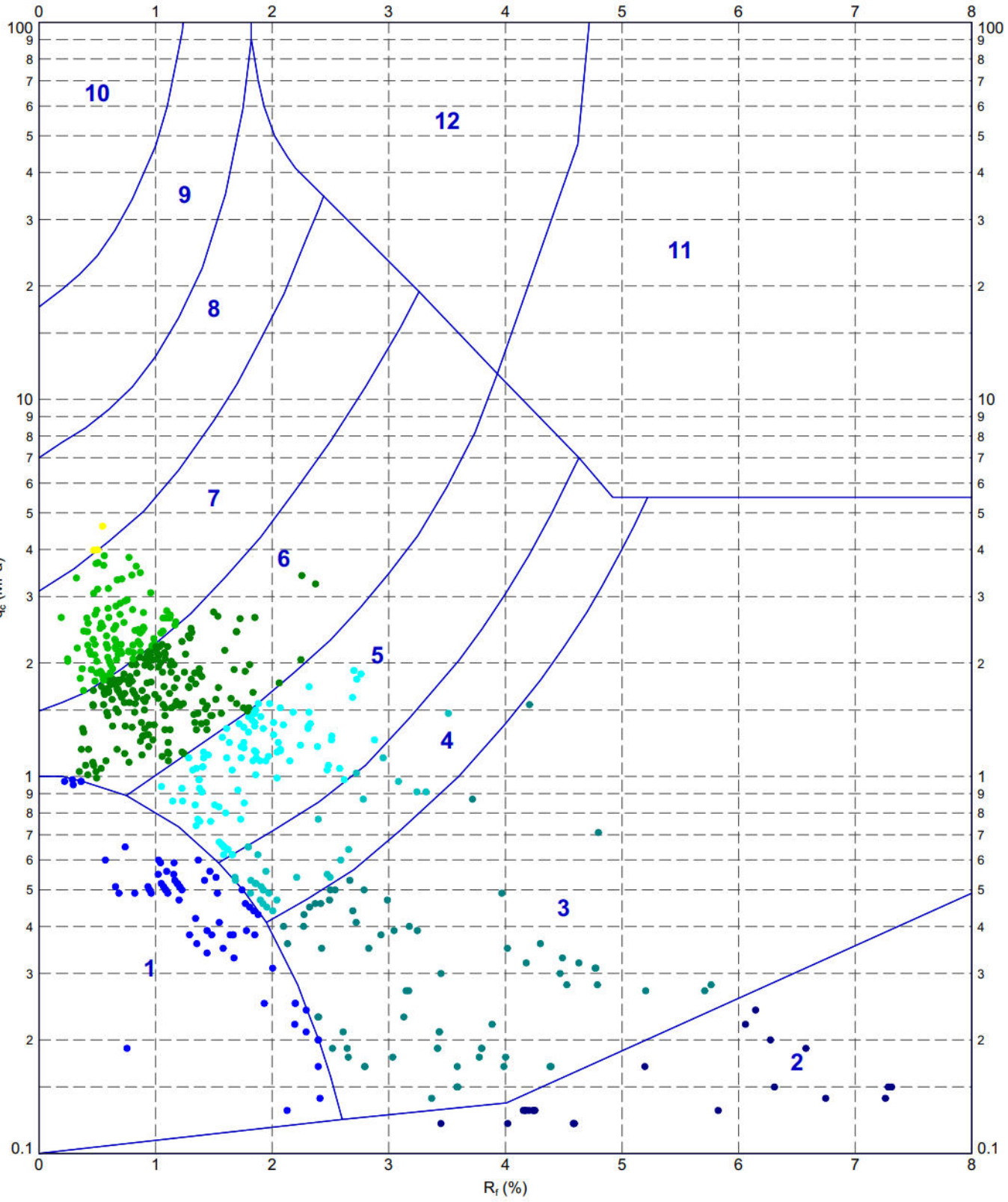
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	222 mV	221 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	222 mV	221 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	273 mV	269 mV	-0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2390 mV	2321 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP150

DRAWN		DATE	12/04/2024
CHECKED		DATE	12/04/2024
SCALE	Not To Scale		A4
PROJECT No	1240182	FIGURE No	

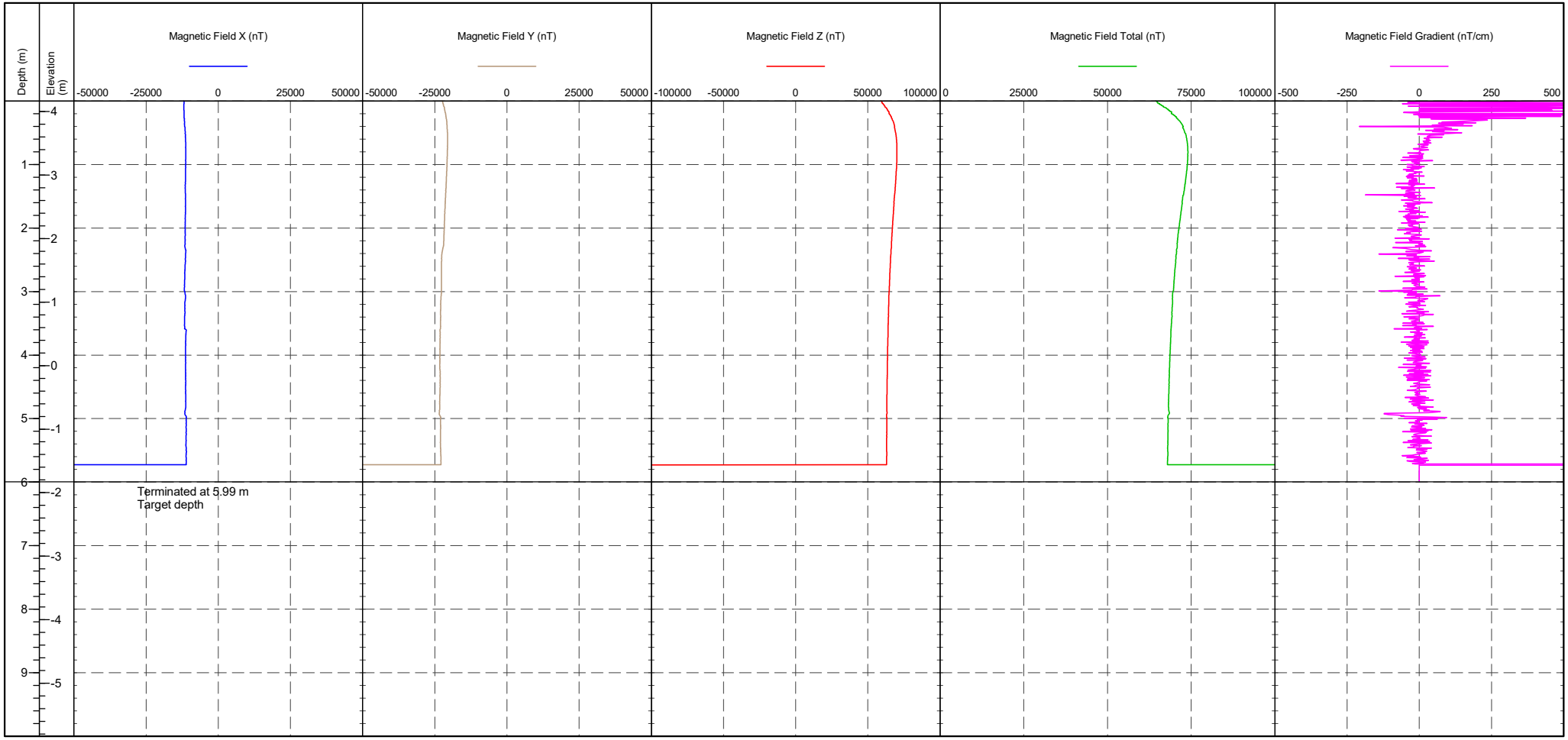
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:49 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID **DP150**

CLIENT : Ground and Water	EASTING : 500309.623 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102280.764 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.166 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



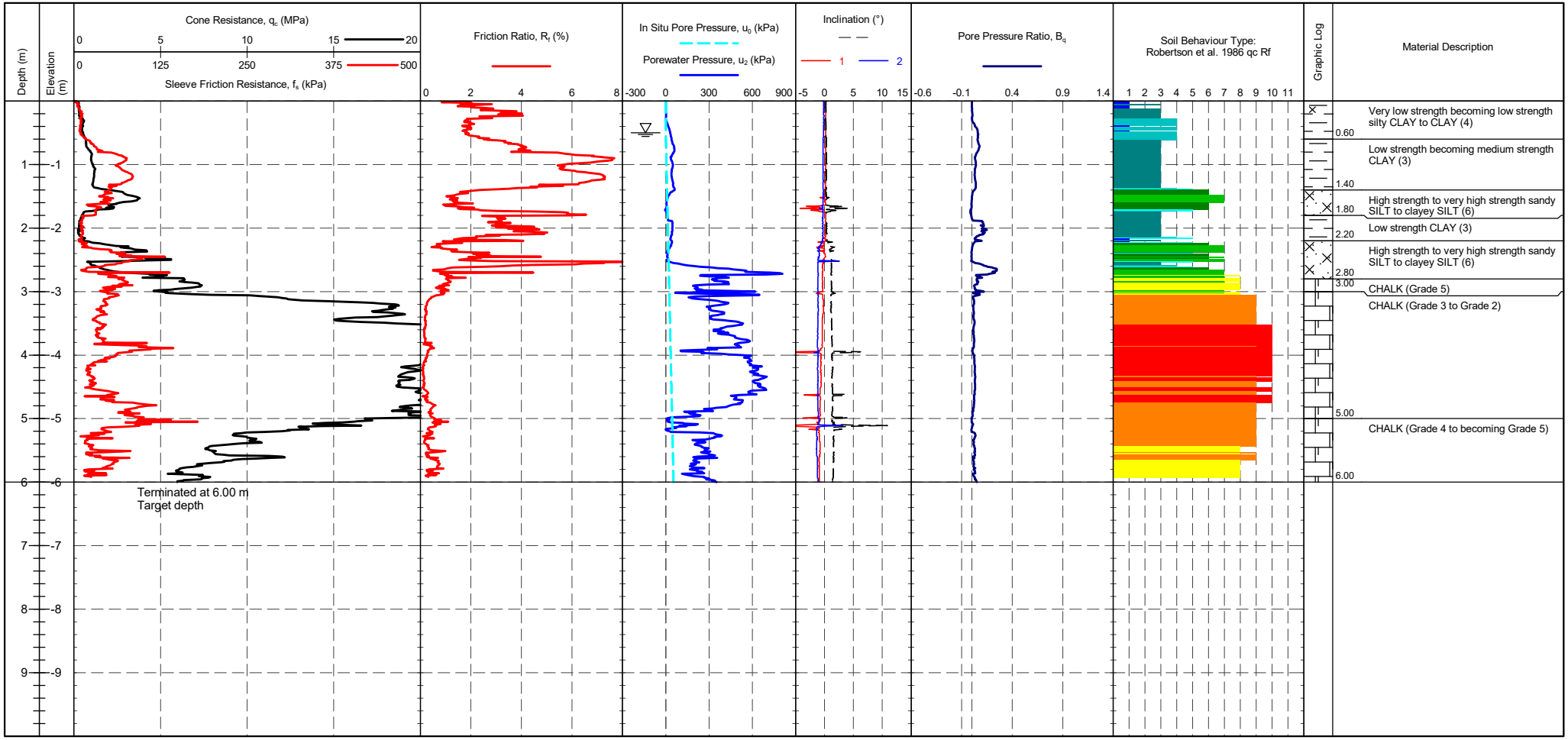
				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	Transducer	Pre	Post	Difference
CONE MODEL	: Subtraction	OPERATOR	: DHo	Tip	222 mV	221 mV	-0.011 MPa
				Sleeve	222 mV	221 mV	-0.001 kPa
				Pore Pressure 2	273 mV	269 mV	-0.001 kPa
				X-Y Inclinometer	2390 mV	2321 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP151**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2
CALIBRATION DATE	: 16/09/2022	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: DHo
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Cold
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	287 mV	283 mV	-0.046 MPa
Sleeve	257 mV	256 mV	-0.001 kPa
Pore Pressure 2	241 mV	239 mV	-0.001 kPa
X-Y Inclinometer	2416 mV	2398 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

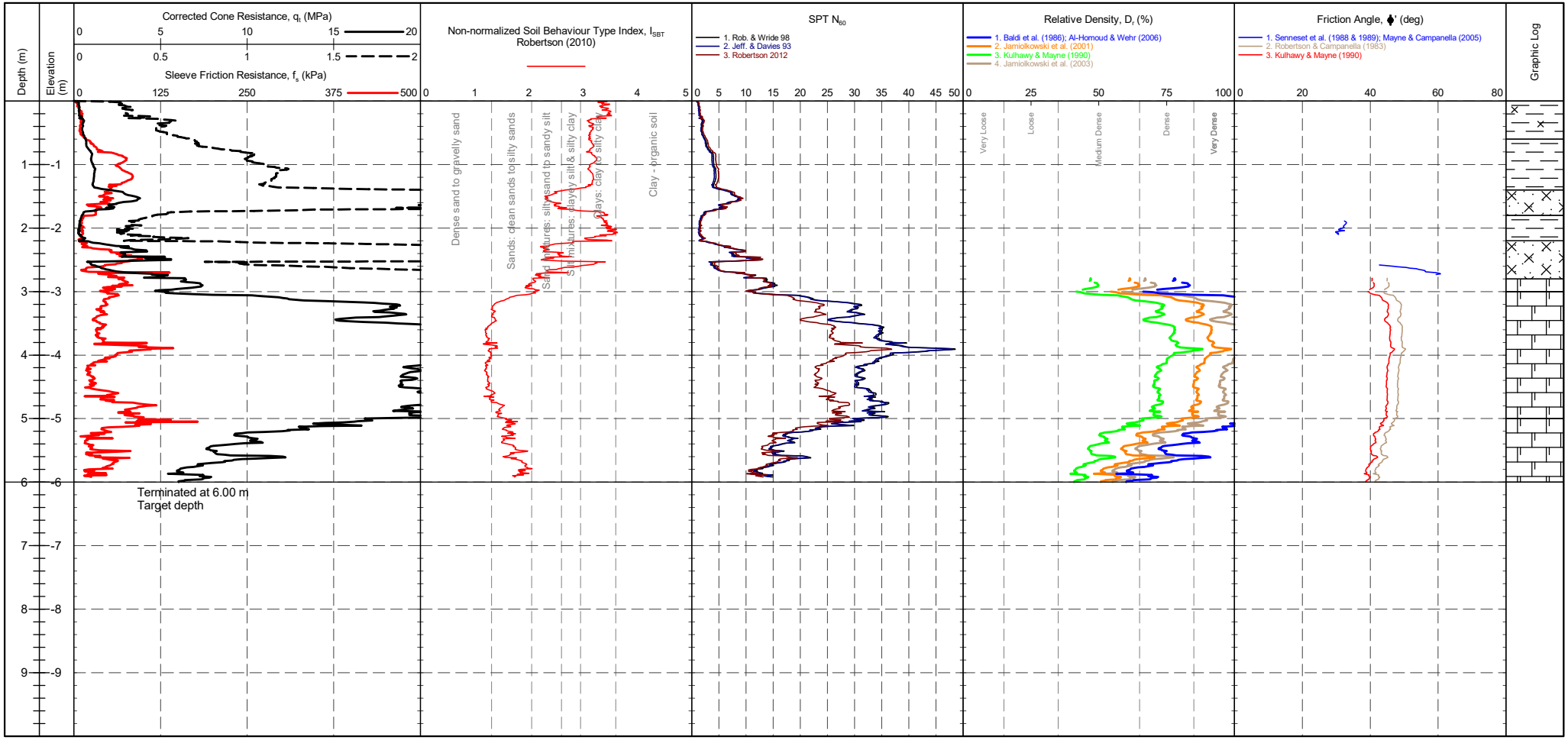
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP151**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	287 mV	283 mV	-0.046 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	257 mV	256 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	241 mV	239 mV	-0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2416 mV	2398 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

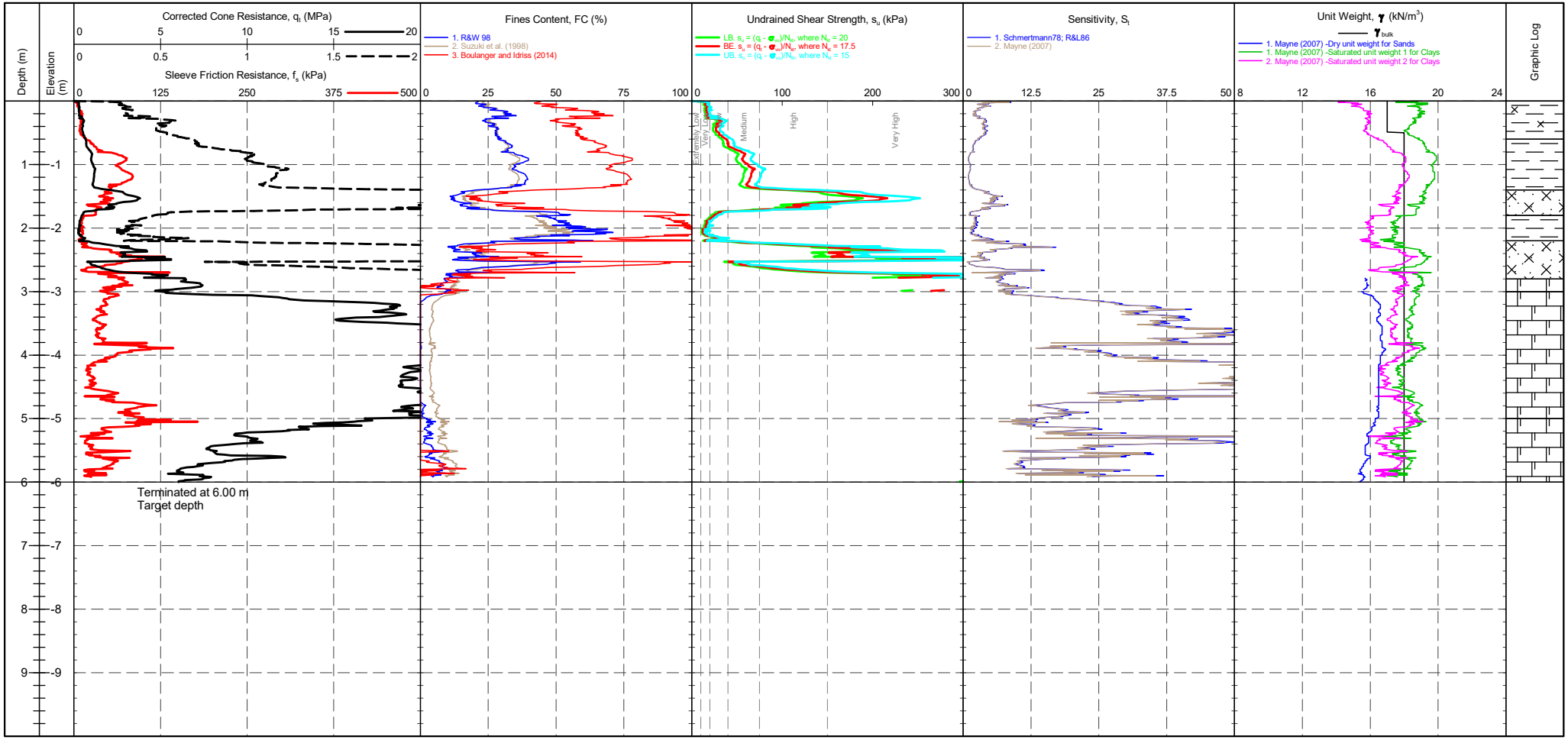
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP151**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



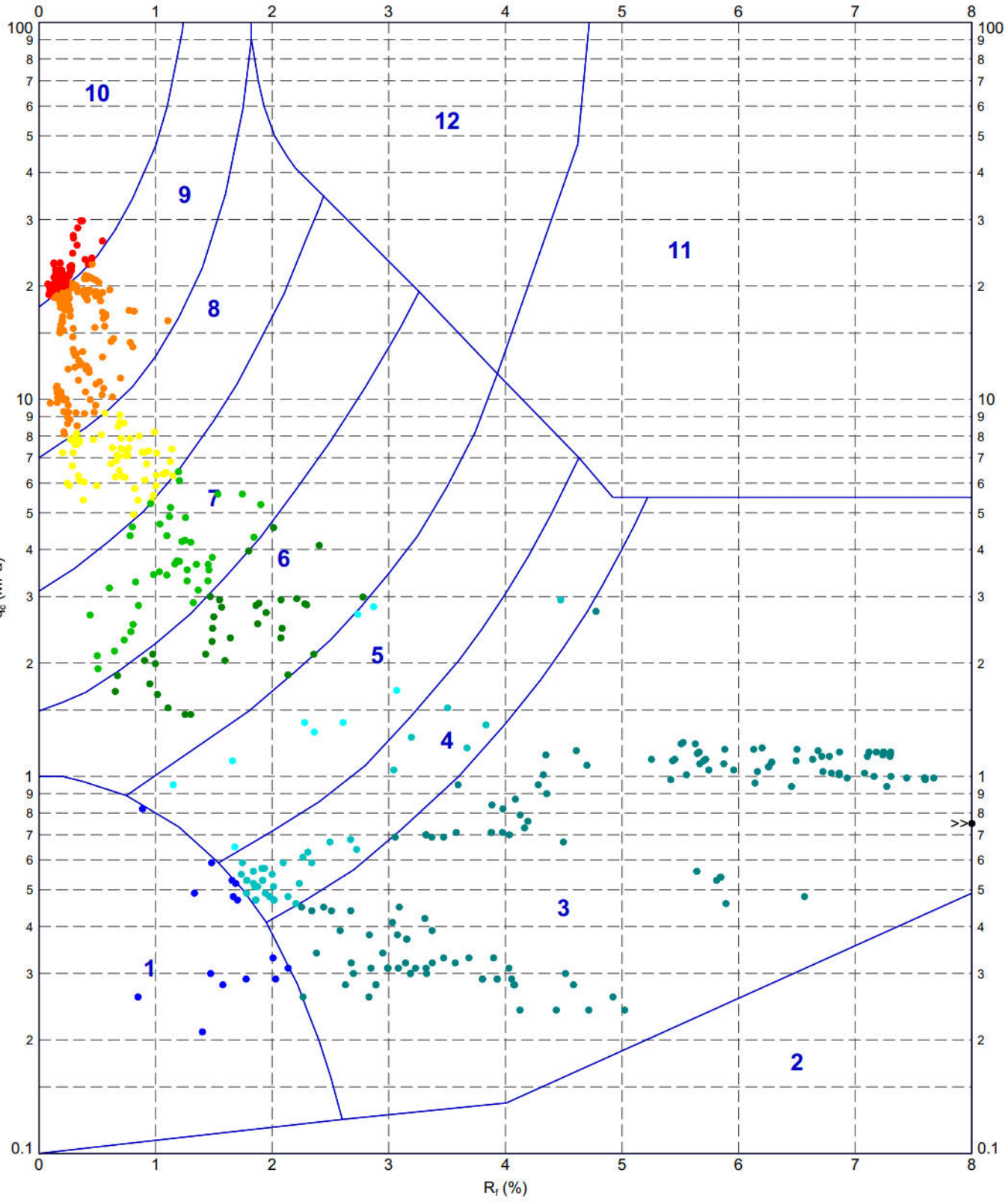
CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	287 mV	283 mV	-0.046 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	257 mV	256 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	241 mV	239 mV	-0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2416 mV	2398 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP151

DRAWN	DATE 12/04/2024	
CHECKED	DATE 12/04/2024	
SCALE Not To Scale		A4
PROJECT No 1240182	FIGURE No	

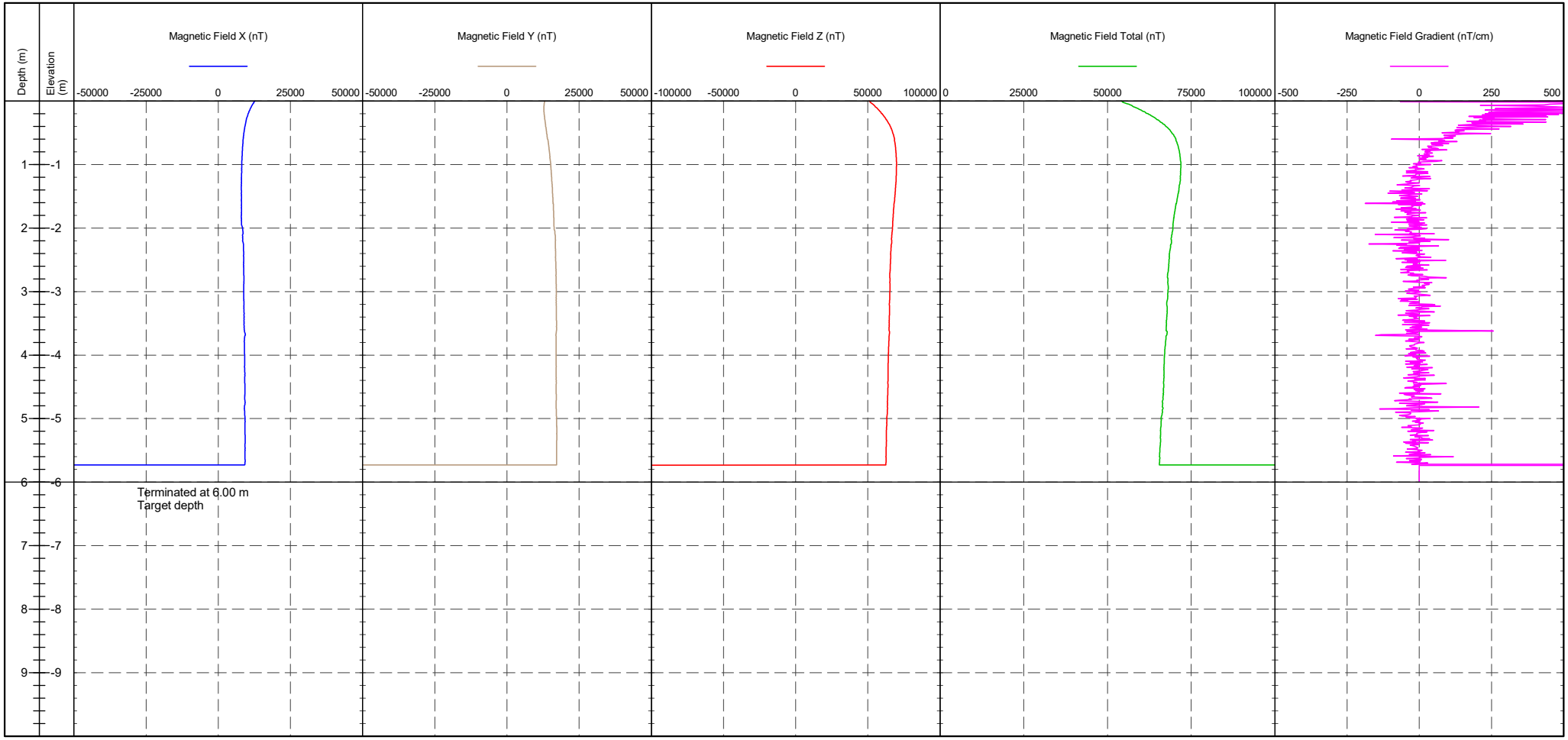
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:50 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP151**

CLIENT : Ground and Water	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 0.000 m OD		TEST DATE : 13/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



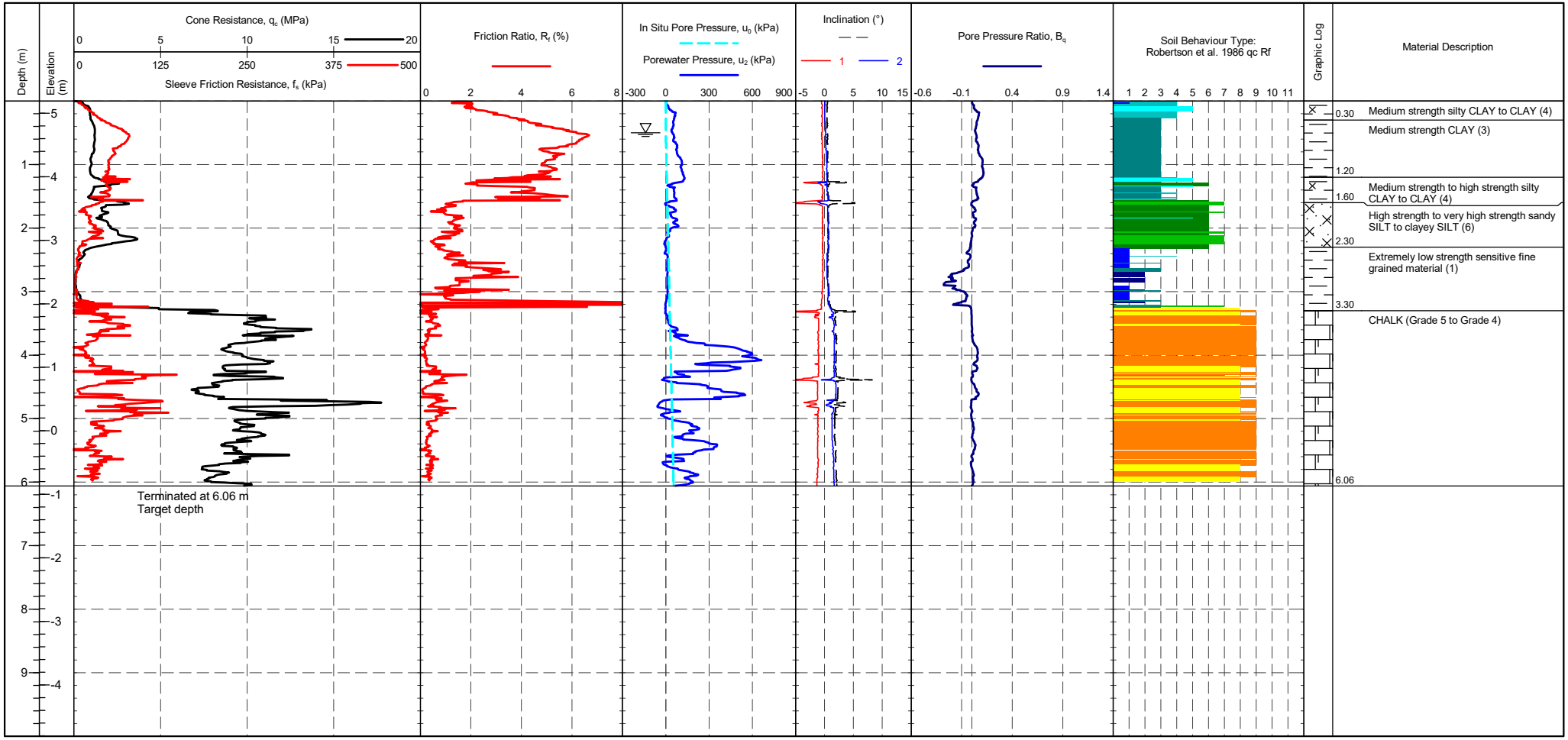
CONE ID	: S15-CFIP.1983	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	287 mV	283 mV	-0.046 MPa
				Sleeve	257 mV	256 mV	-0.001 kPa
				Pore Pressure 2	241 mV	239 mV	-0.001 kPa
				X-Y Inclinometer	2416 mV	2398 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP152**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500164.234 m NORTHING : 102301.405 m ELEVATION : 5.192 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2		
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen		
CONE AREA	: 15cm^2	OPERATOR	: DHo		
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None		
FILTER POSITION	: u2	WEATHER	: Overcast & Cold		
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	219 mV	-0.022 MPa
Sleeve	218 mV	216 mV	-0.001 kPa
Pore Pressure 2	261 mV	251 mV	-0.003 kPa
X-Y Inclinometer	2432 mV	2431 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

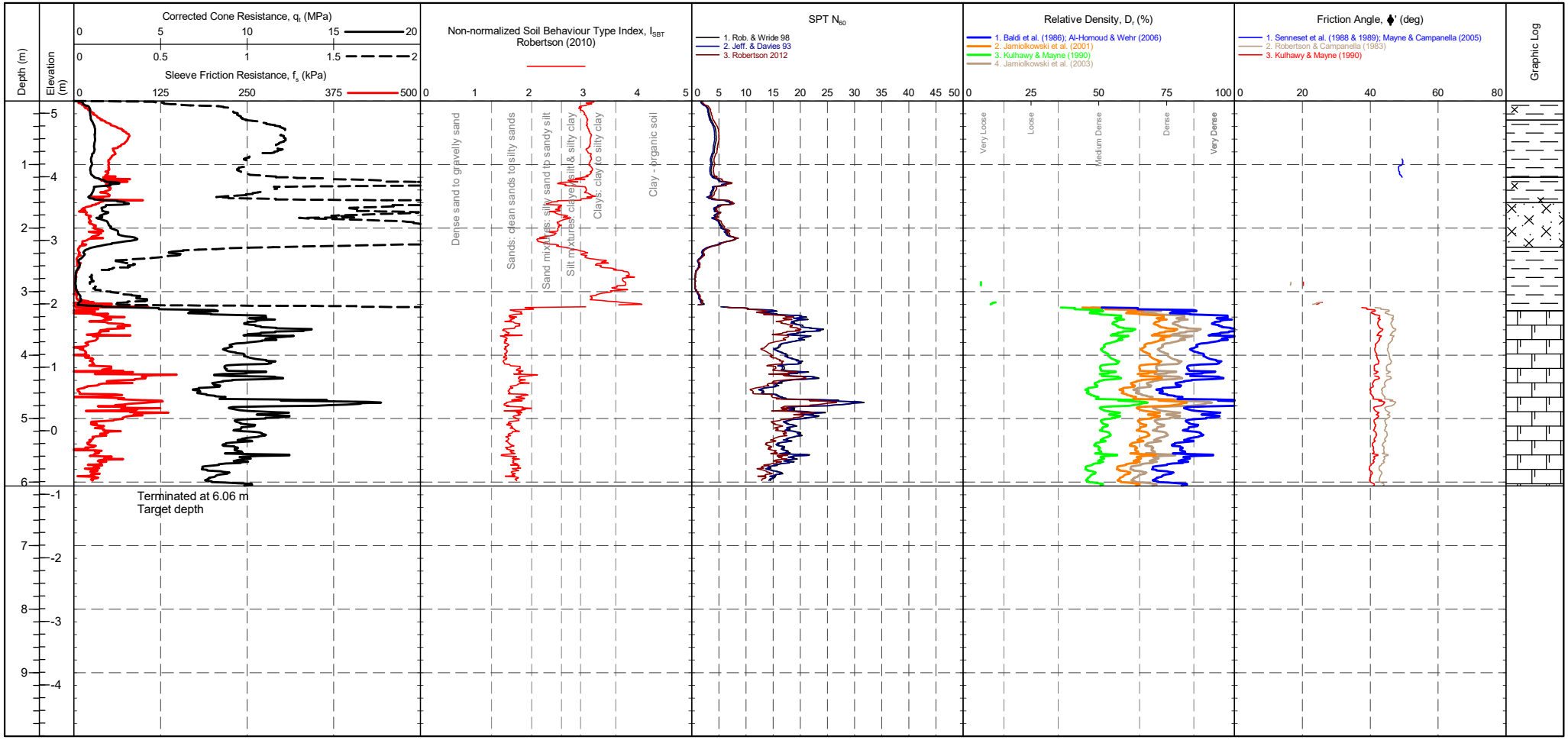
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP152**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500164.234 m NORTHING : 102301.405 m ELEVATION : 5.192 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: DHo		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	219 mV	-0.022 MPa
Sleeve	218 mV	216 mV	-0.001 kPa
Pore Pressure 2	261 mV	251 mV	-0.003 kPa
X-Y Inclinometer	2432 mV	2431 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

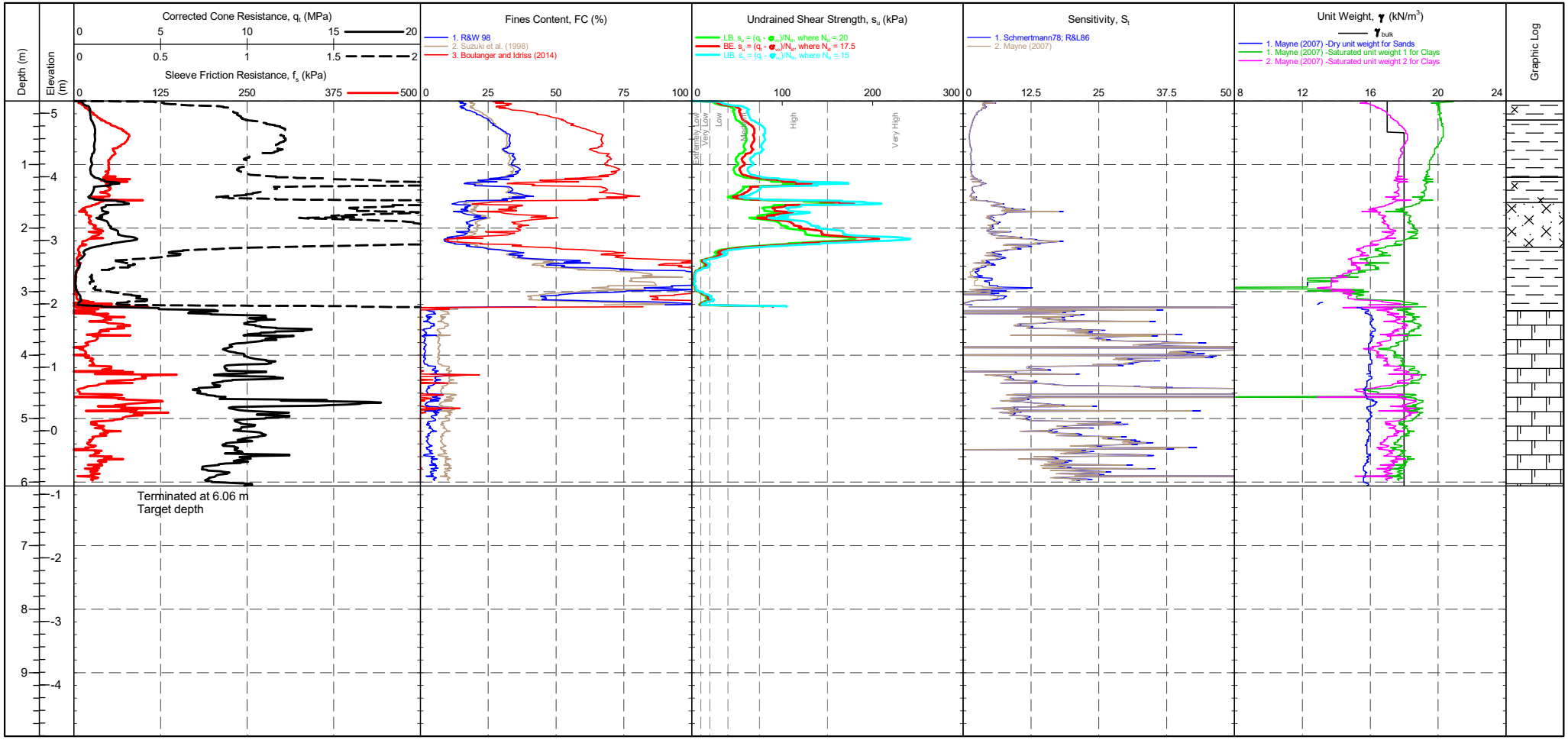
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP152**

CLIENT : Ground and Water	EASTING : 500164.234 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102301.405 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.192 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



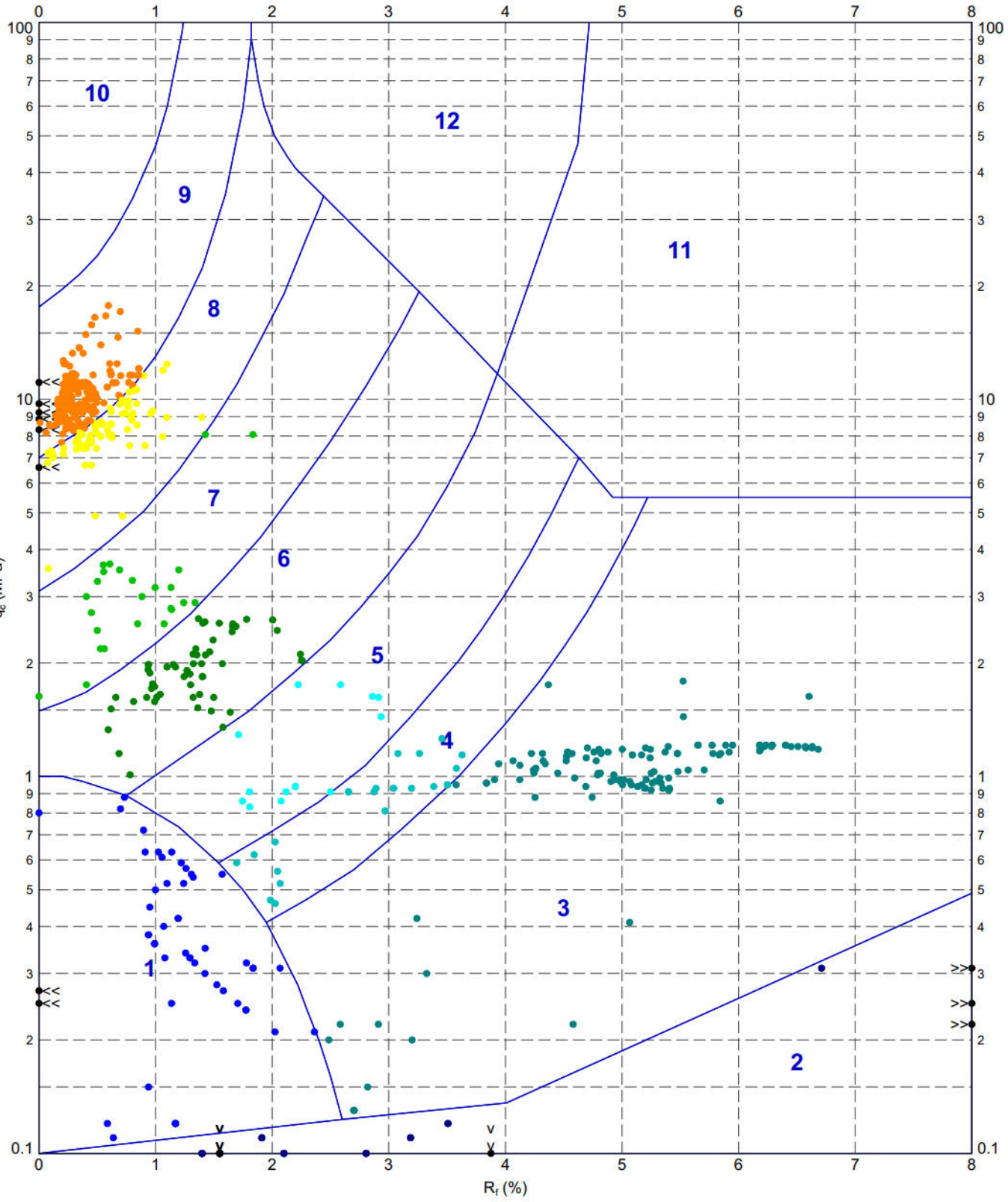
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	221 mV	219 mV	-0.022 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	218 mV	216 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	261 mV	251 mV	-0.003 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2432 mV	2431 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP152

DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE Not To Scale	A4
PROJECT No 1240182	FIGURE No

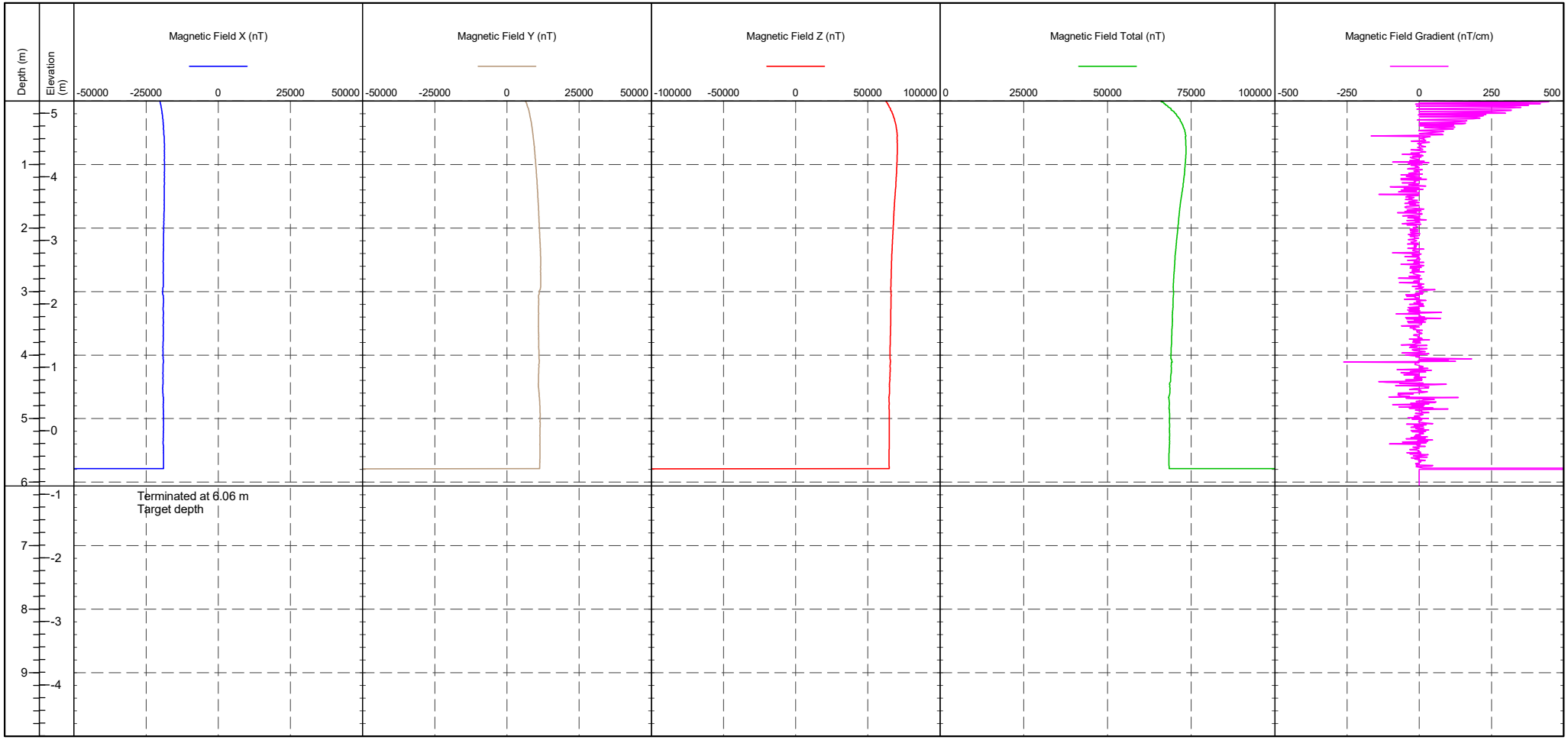
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:51 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP152**

CLIENT : Ground and Water	EASTING : 500164.234 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102301.405 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.192 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



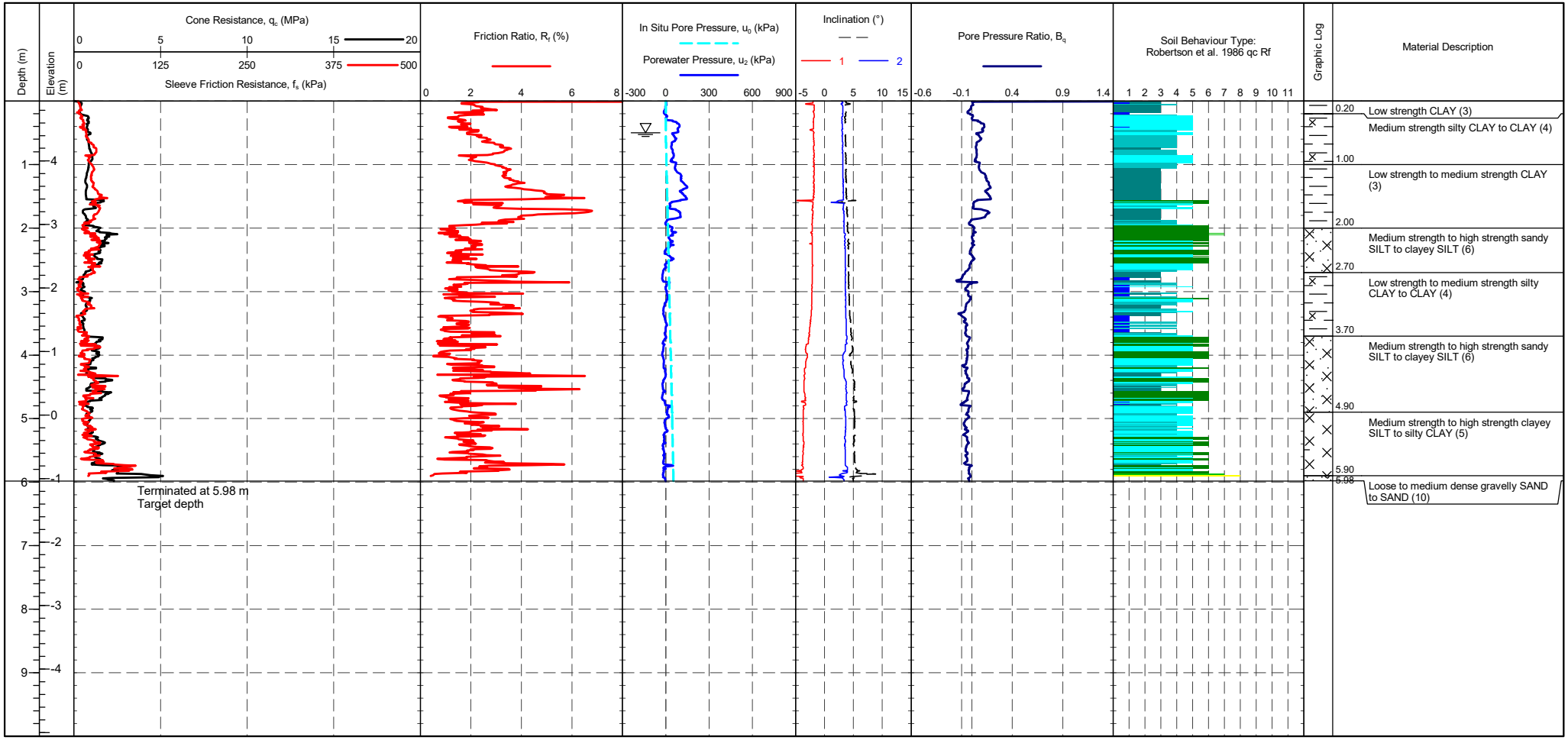
				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	Transducer	Pre	Post	Difference
CONE MODEL	: Subtraction	OPERATOR	: DHo	Tip	221 mV	219 mV	-0.022 MPa
				Sleeve	218 mV	216 mV	-0.001 kPa
				Pore Pressure 2	261 mV	251 mV	-0.003 kPa
				X-Y Inclinometer	2432 mV	2431 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP153**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500233.910 m NORTHING : 102304.408 m ELEVATION : 4.944 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	
CALIBRATION DATE	: 09/08/2021	APPLICATION CLASS	: 2	
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen	
CONE AREA	: 15cm^2	OPERATOR	: DHo	
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None	
FILTER POSITION	: u2	WEATHER	: Overcast & Cold	
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes.	

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	221 mV	221 mV	0 MPa
Sleeve	221 mV	221 mV	0 kPa
Pore Pressure 2	275 mV	272 mV	-0.001 kPa
X-Y Inclinometer	2282 mV	2282 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

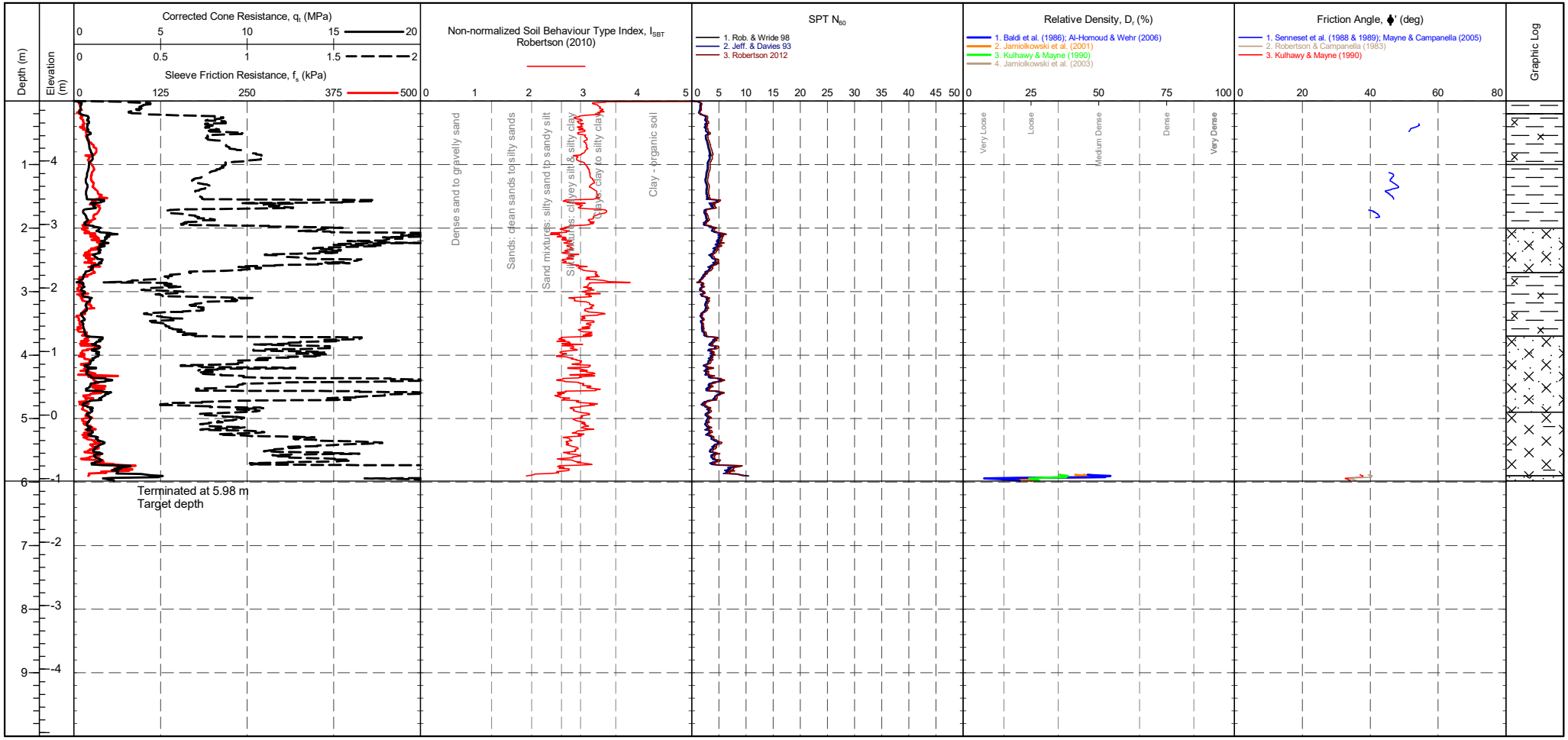
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID: **DP153**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500233.910 m NORTHING : 102304.408 m ELEVATION : 4.944 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	221 mV	221 mV
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	221 mV	221 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	275 mV	272 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2282 mV	2282 mV

Transducer	Difference
Tip	0 MPa
Sleeve	0 kPa
Pore Pressure 2	-0.001 kPa
X-Y Inclinometer	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

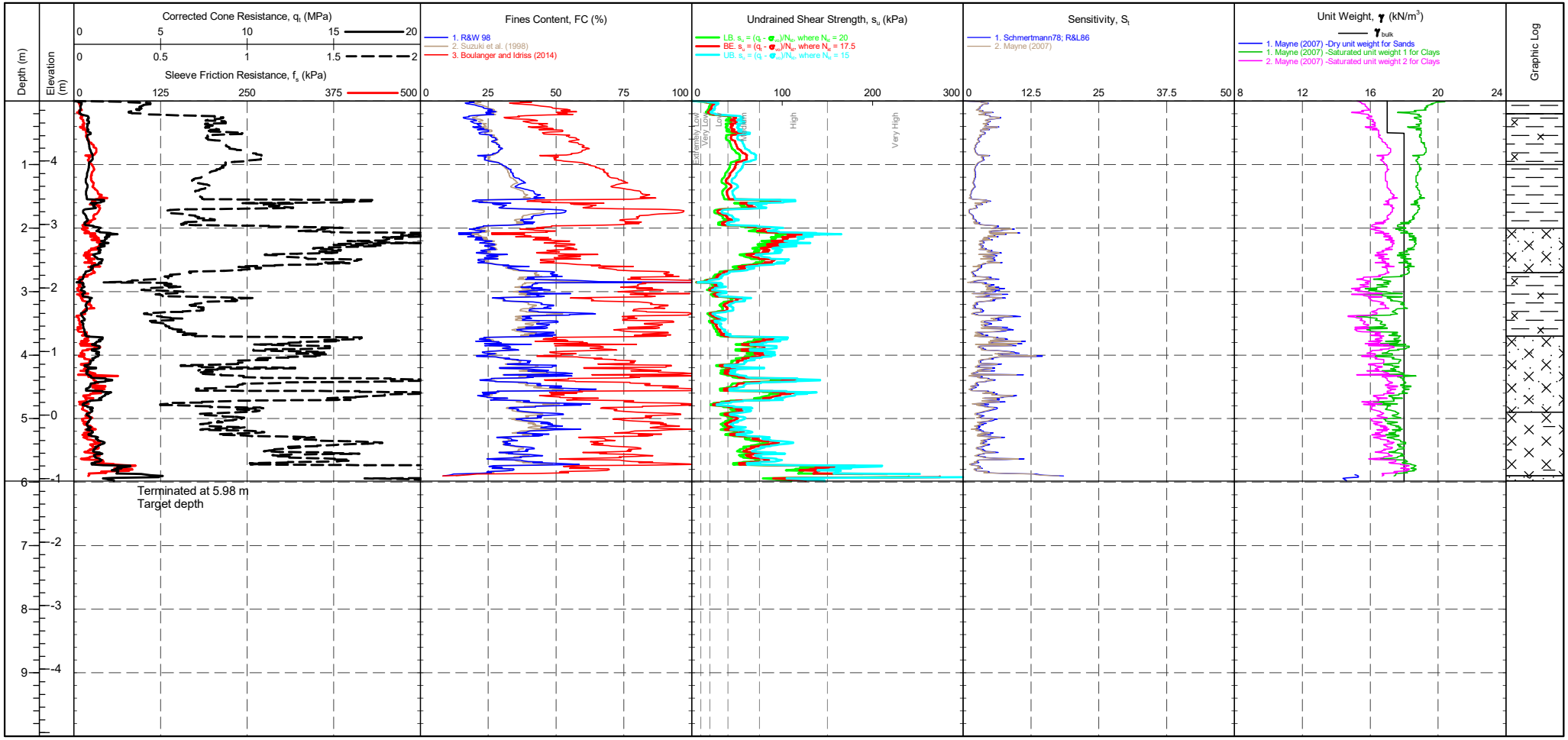
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP153**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500233.910 m NORTHING : 102304.408 m ELEVATION : 4.944 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 14/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



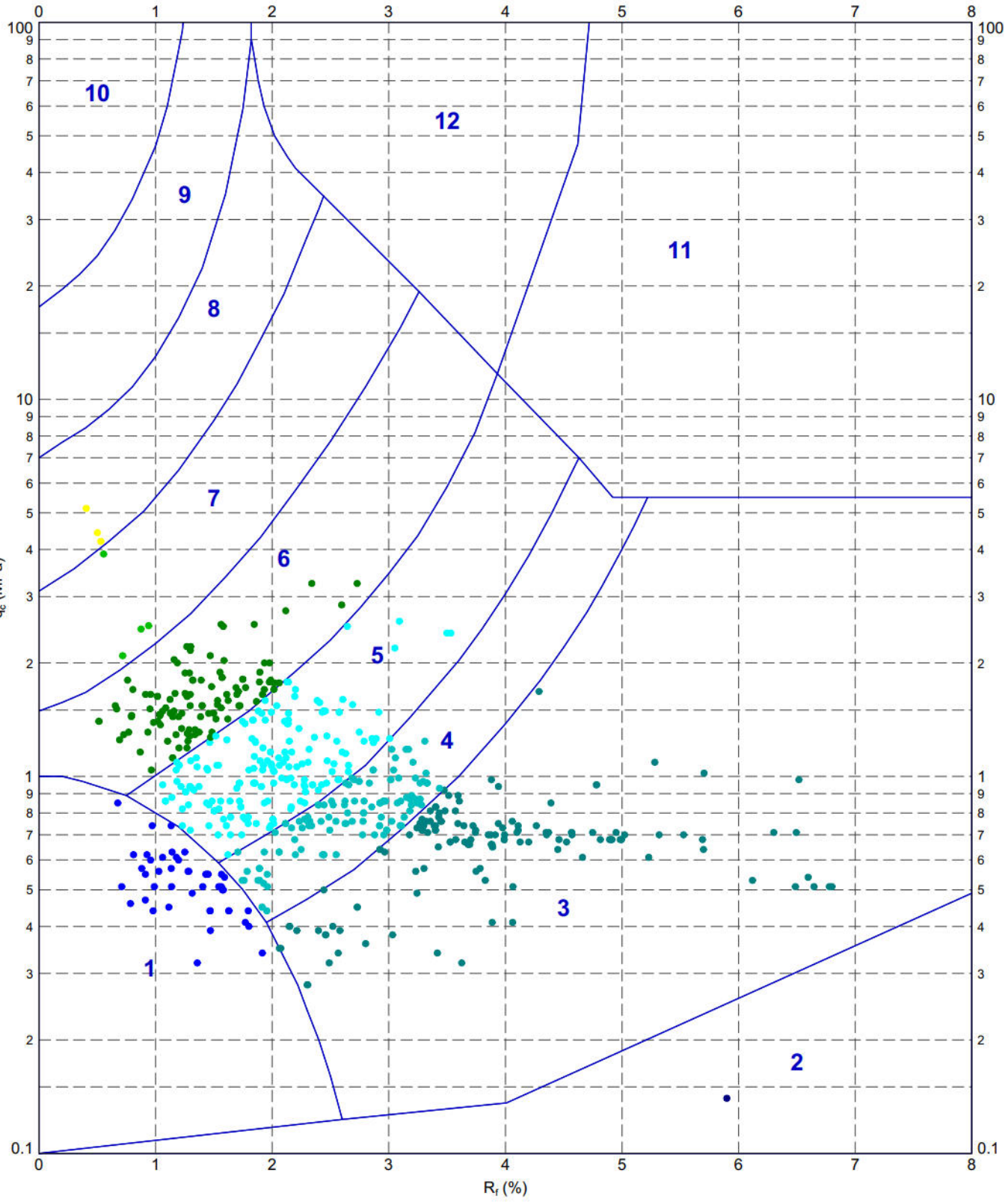
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	221 mV	221 mV	0 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	221 mV	221 mV	0 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	275 mV	272 mV	-0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2282 mV	2282 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP153

DRAWN	DATE 12/04/2024	
CHECKED	DATE 12/04/2024	
SCALE Not To Scale		A4
PROJECT No 1240182	FIGURE No	

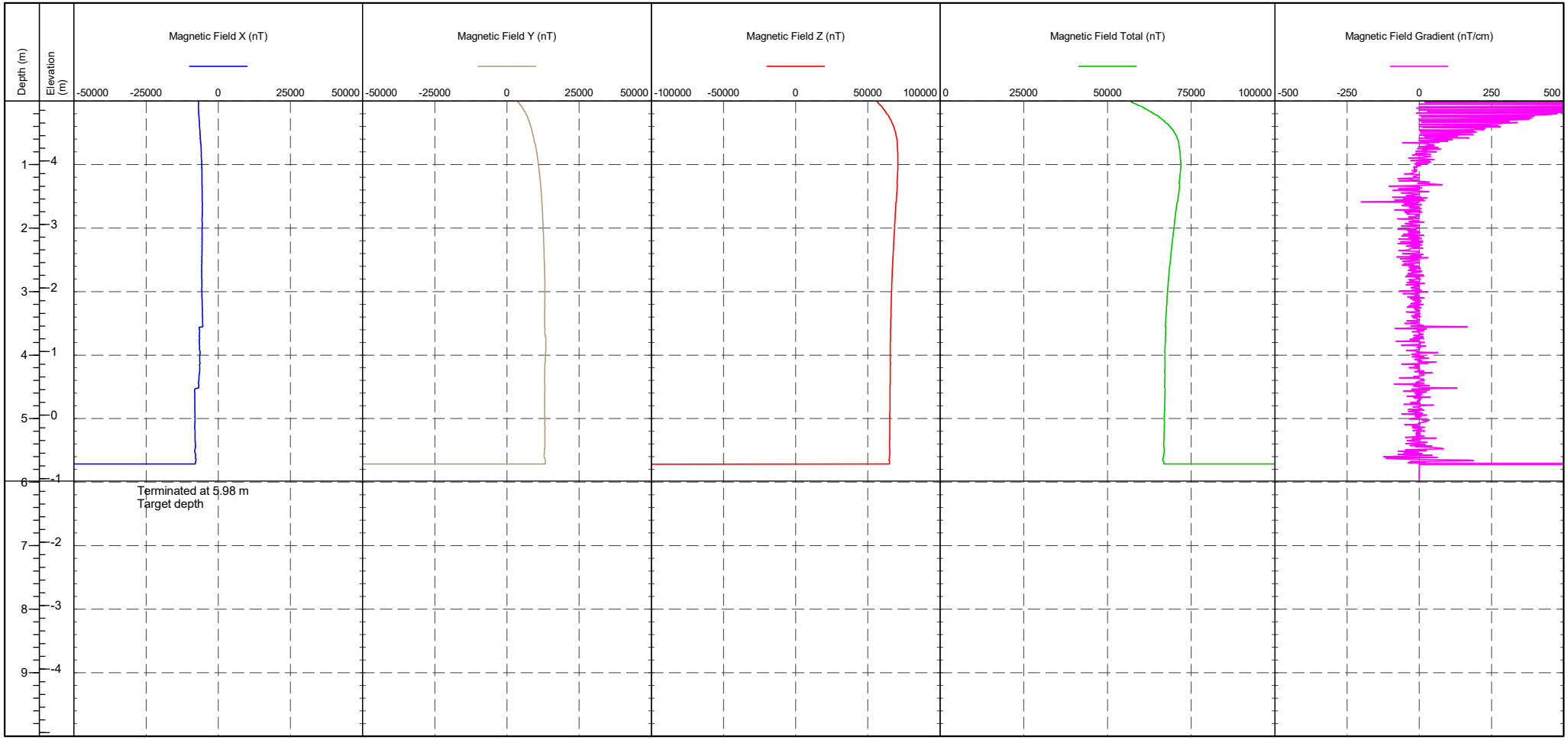
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:51 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prg: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP153**

CLIENT : Ground and Water	EASTING : 500233.910 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102304.408 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 4.944 m OD		TEST DATE : 14/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



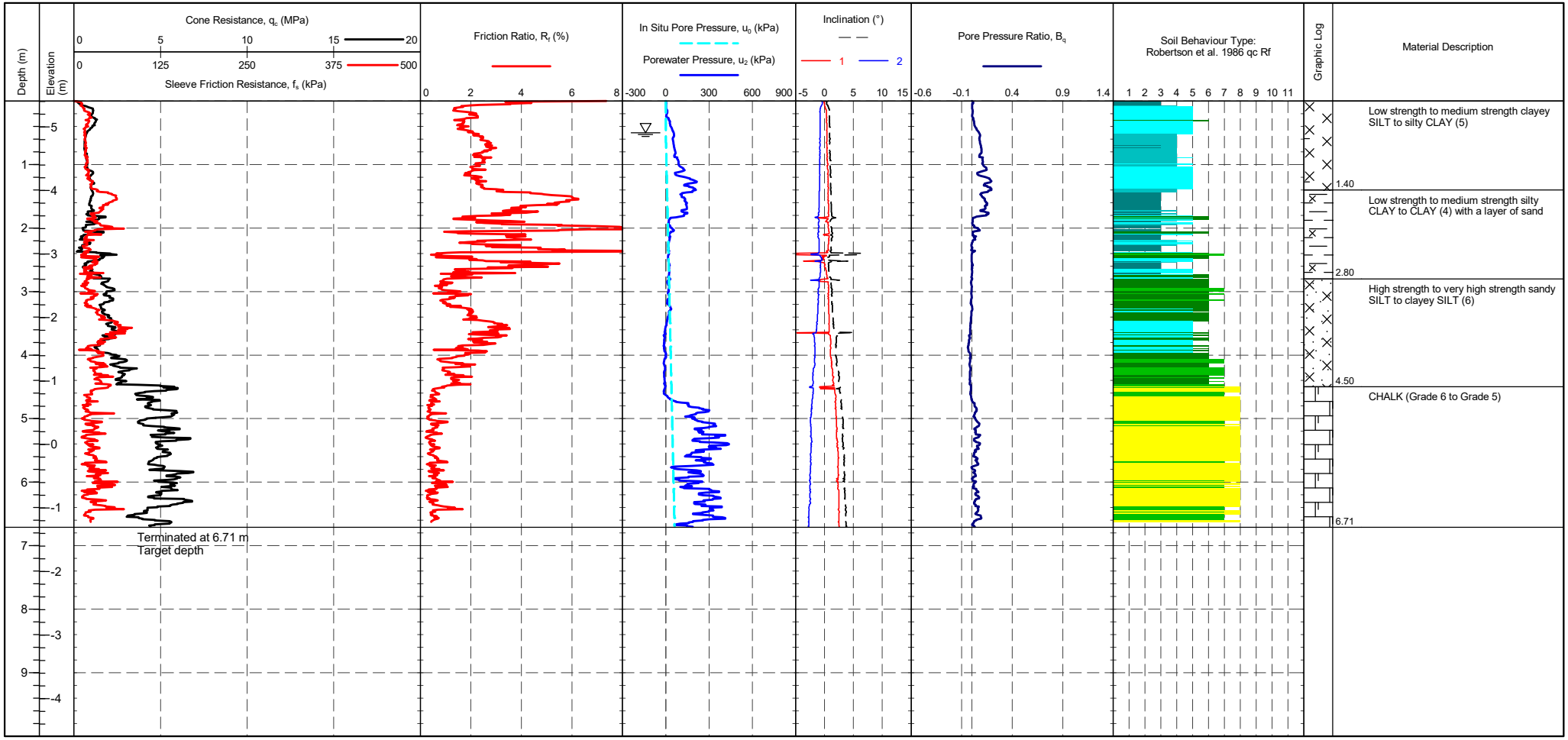
				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	RIG	: CPT 017 - Griffen	Transducer	Pre	Post	Difference
CONE MODEL	: Subtraction	OPERATOR	: DHo	Tip	221 mV	221 mV	0 MPa
				Sleeve	221 mV	221 mV	0 kPa
				Pore Pressure 2	275 mV	272 mV	-0.001 kPa
				X-Y Inclinometer	2282 mV	2282 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP154**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500119.880 m NORTHING : 102321.943 m ELEVATION : 5.408 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1983 CALIBRATION DATE : 16/09/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES	

Transducer	Pre	Post	Difference
Tip	288 mV	287 mV	-0.011 MPa
Sleeve	255 mV	257 mV	0.001 kPa
Pore Pressure 2	238 mV	249 mV	0.003 kPa
X-Y Inclinometer	2421 mV	2416 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

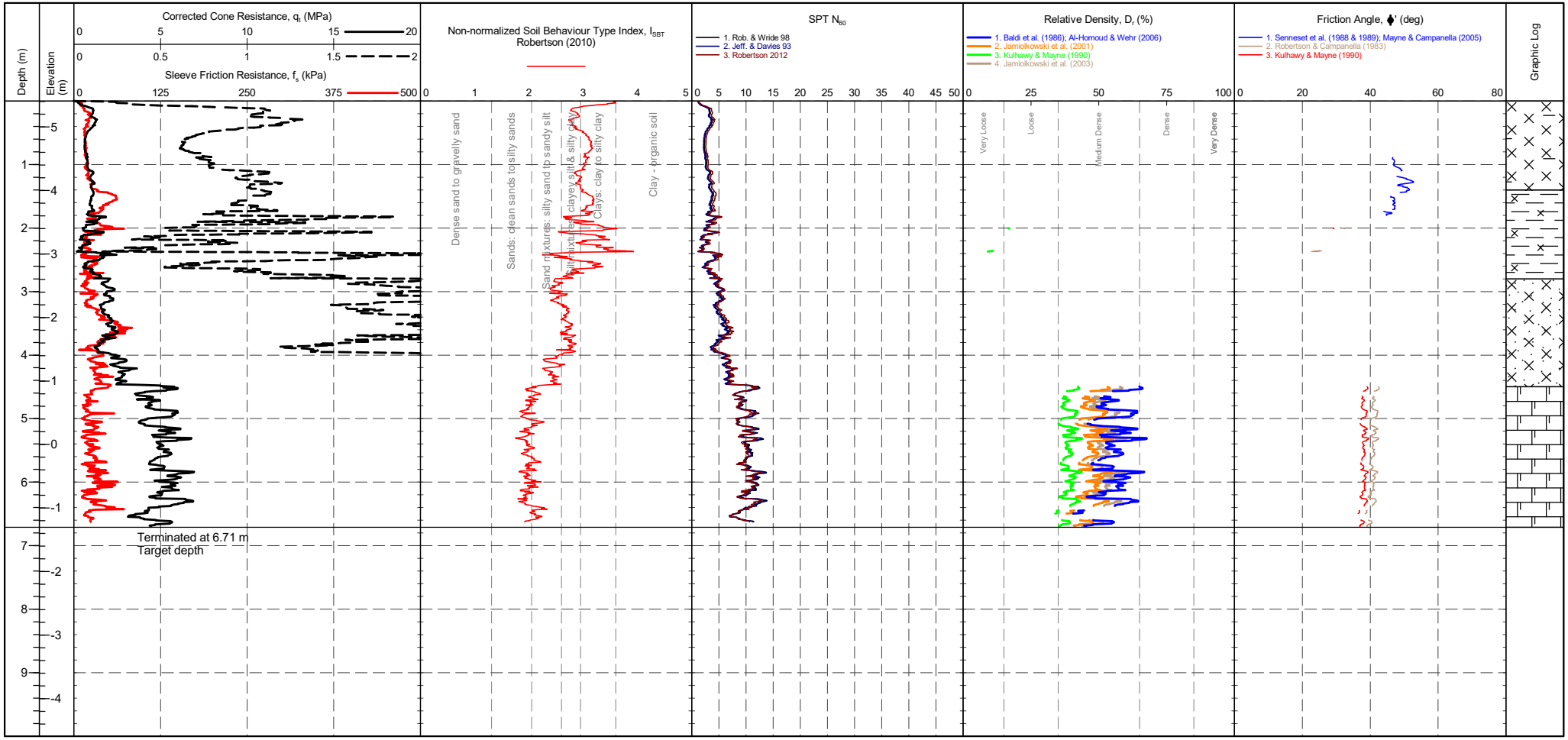
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID **DP154**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500119.880 m NORTHING : 102321.943 m ELEVATION : 5.408 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	288 mV	287 mV / -0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	255 mV	257 mV / 0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	238 mV	249 mV / 0.003 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2421 mV	2416 mV

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

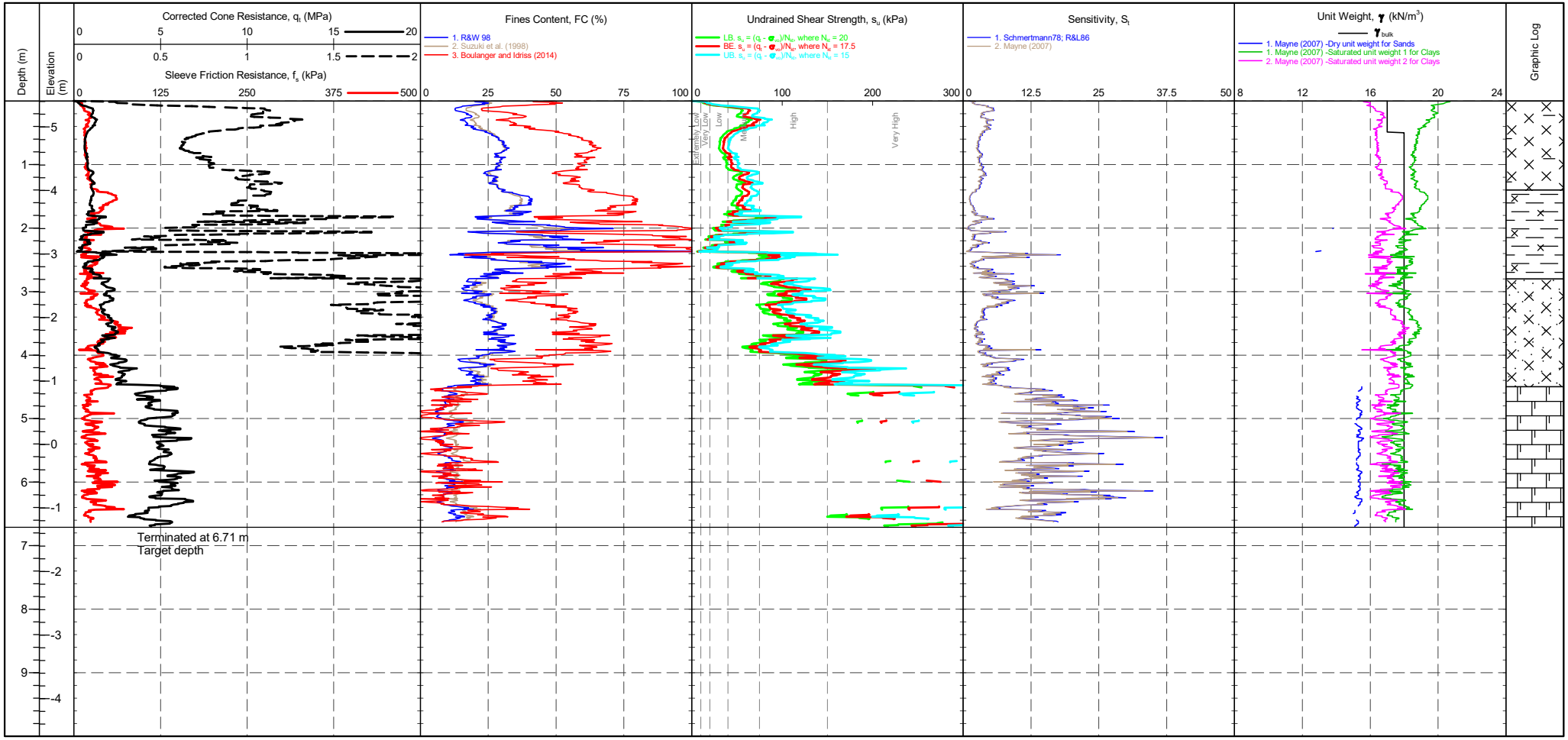
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP154**

CLIENT : Ground and Water	EASTING : 500119.880 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102321.943 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.408 m OD		TEST DATE : 13/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



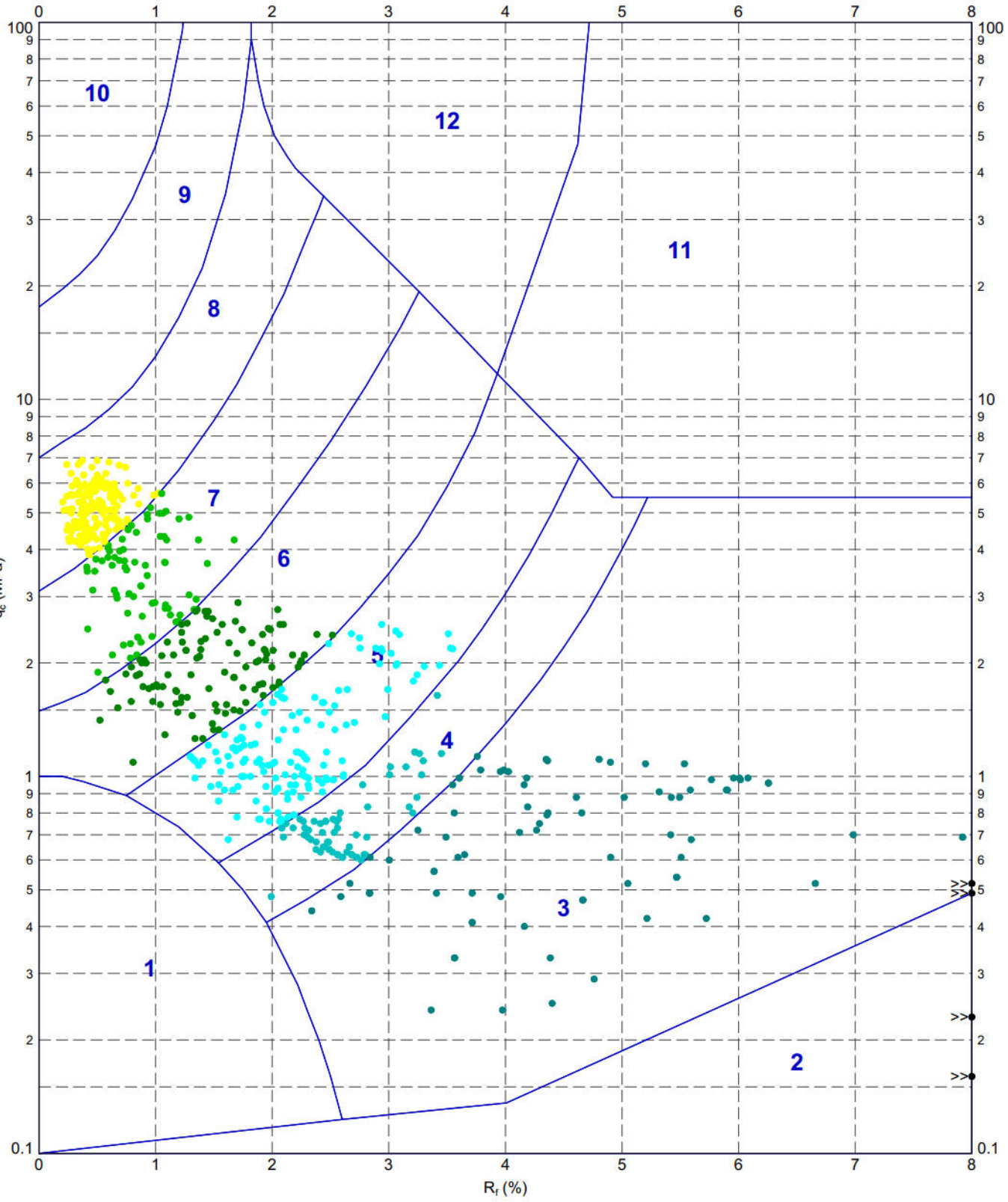
CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	288 mV	287 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	255 mV	257 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	238 mV	249 mV	0.003 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2421 mV	2416 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Ground and Water
Climping, West Sussex
Church Lane
Robertson et al. 1986 q_c vs. R_f - DP154

DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE Not To Scale	A4
PROJECT No 1240182	FIGURE No

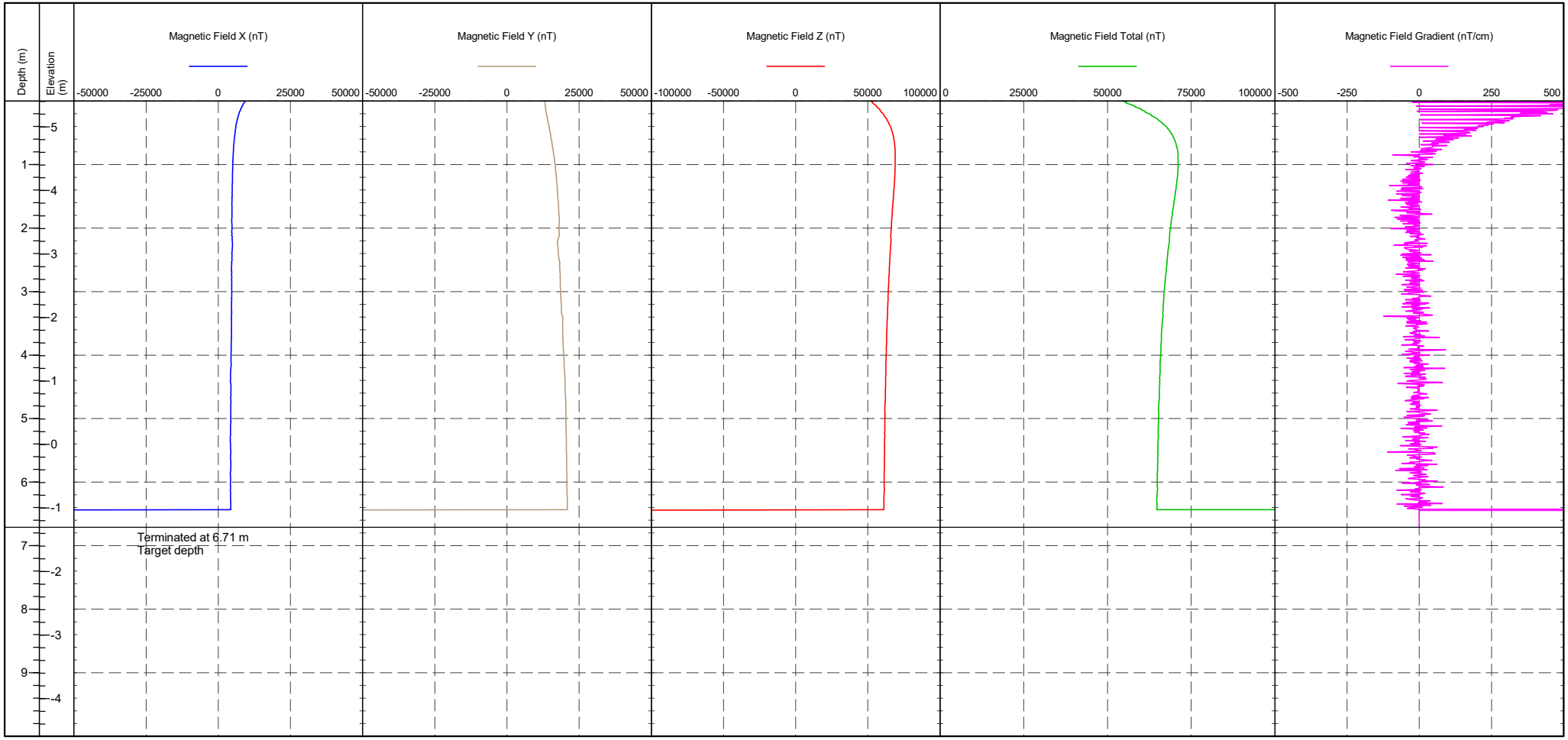
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:52 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prp: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP154**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500119.880 m NORTHING : 102321.943 m ELEVATION : 5.408 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



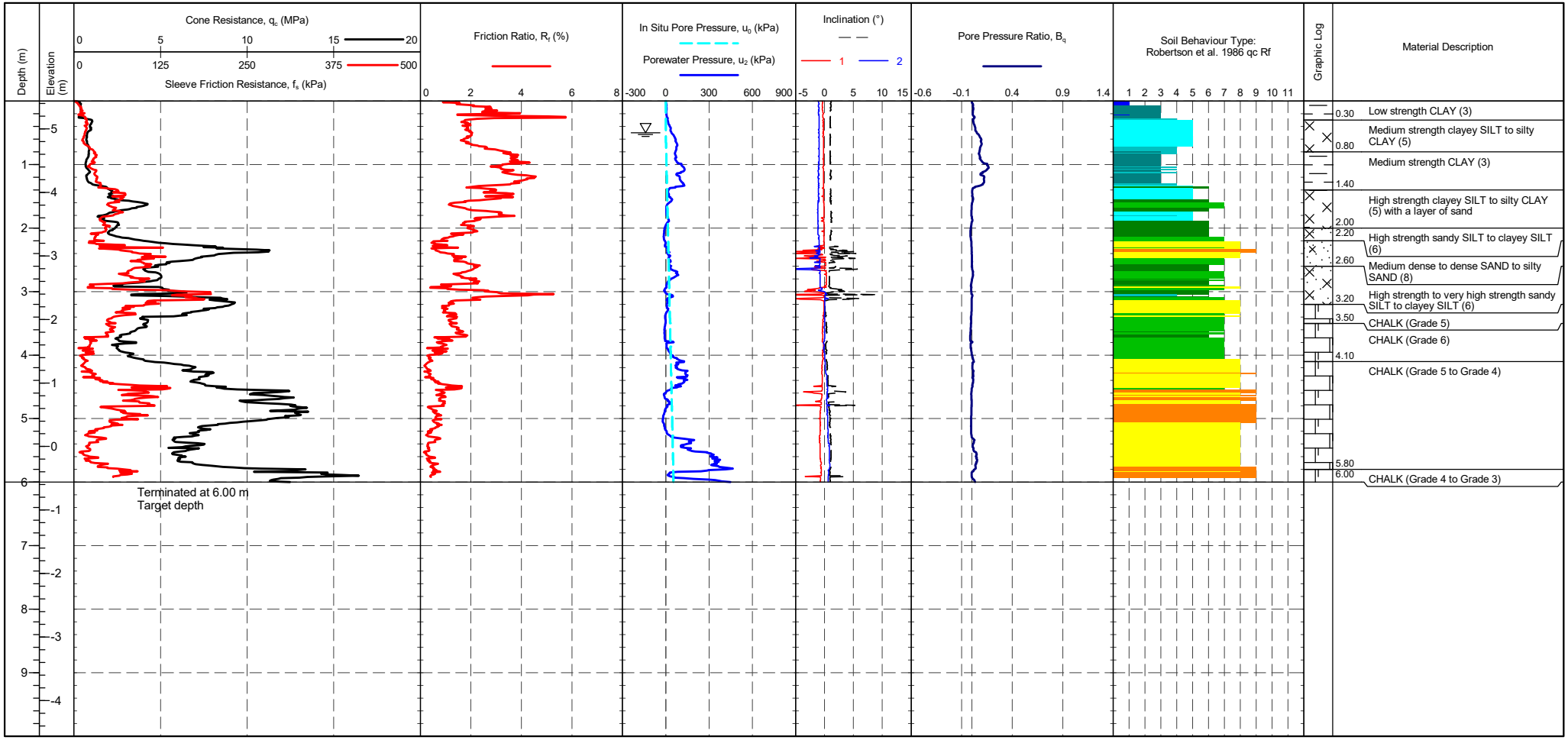
CONE ID	: S15-CFIP.1983	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	288 mV	287 mV	-0.011 MPa
				Sleeve	255 mV	257 mV	0.001 kPa
				Pore Pressure 2	238 mV	249 mV	0.003 kPa
				X-Y Inclinometer	2421 mV	2416 mV	

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 01

PointID: **DP155**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500132.622 m NORTHING : 102333.858 m ELEVATION : 5.439 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1983 CALIBRATION DATE : 16/09/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : DHo FRICTION REDUCER : None WEATHER : Overcast & Cold GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES	

Transducer	Pre	Post	Difference
Tip	288 mV	284 mV	-0.046 MPa
Sleeve	259 mV	255 mV	-0.003 kPa
Pore Pressure 2	240 mV	244 mV	0.001 kPa
X-Y Inclinometer	2354 mV	2363 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

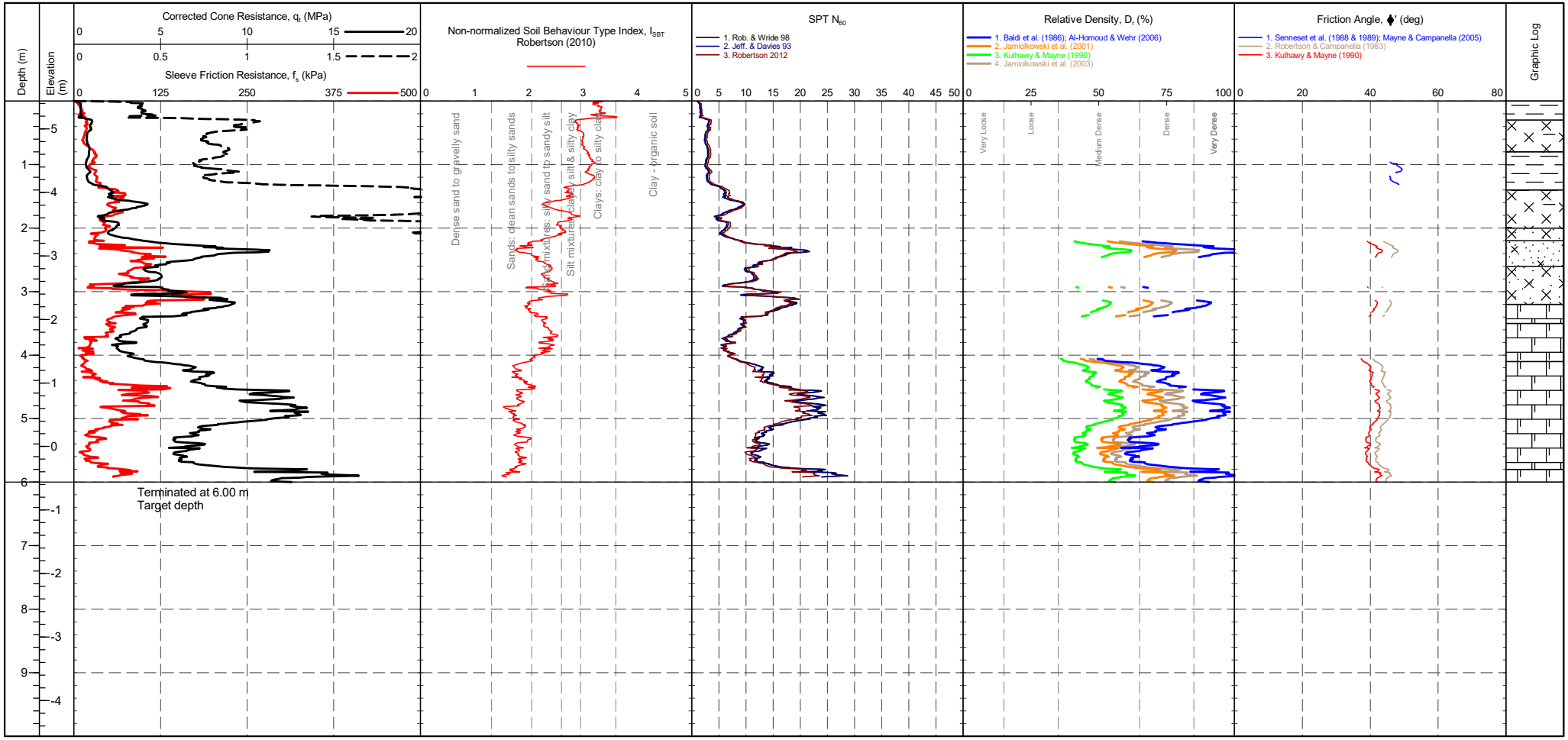
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 02

PointID **DP155**

CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500132.622 m NORTHING : 102333.858 m ELEVATION : 5.439 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen	Tip	288 mV	284 mV	-0.046 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	259 mV	255 mV	-0.003 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	240 mV	244 mV	0.001 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2354 mV	2363 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

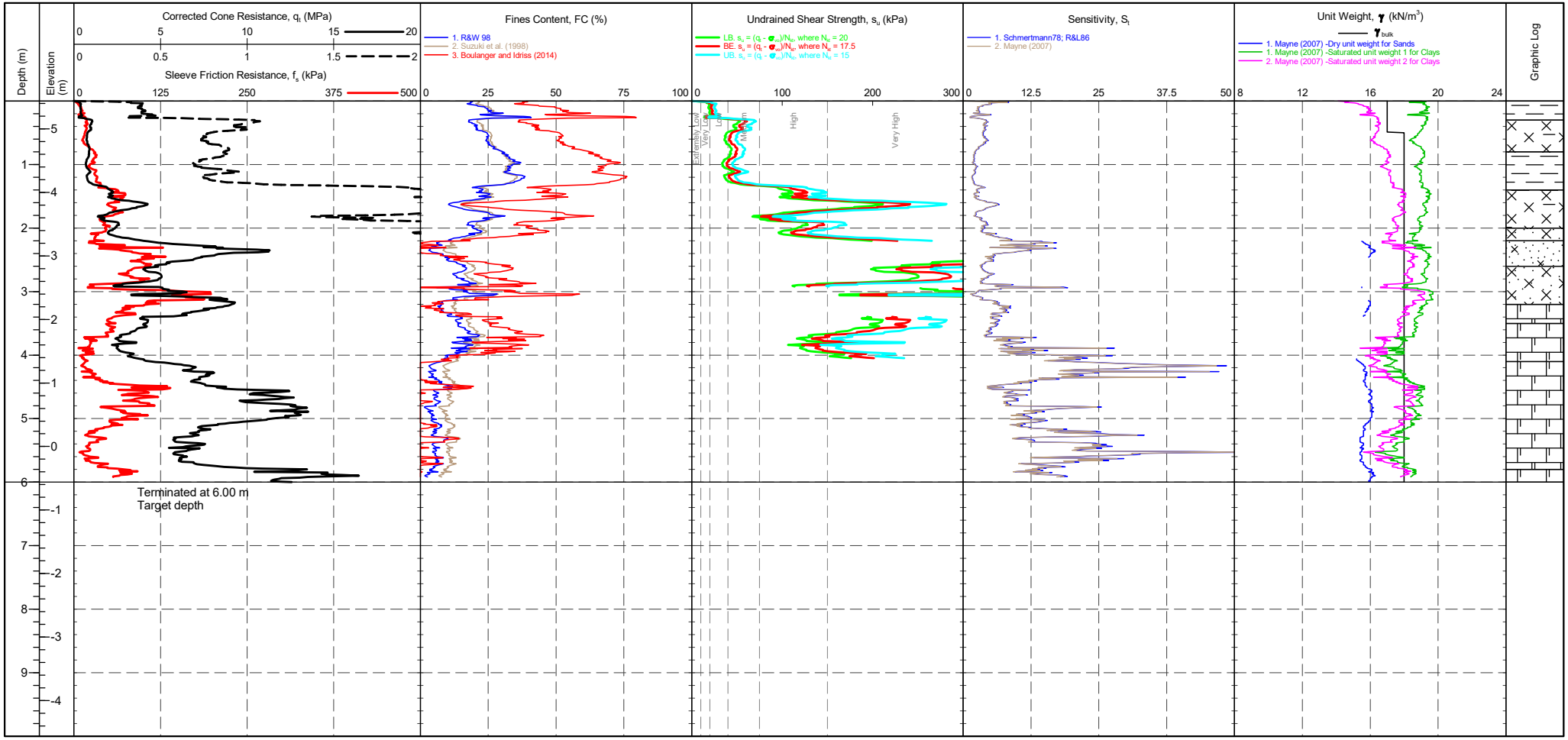
Dissipation Test

IN SITU SITE INVESTIGATION Working with: gw

CPT LOG 03

PointID: **DP155**

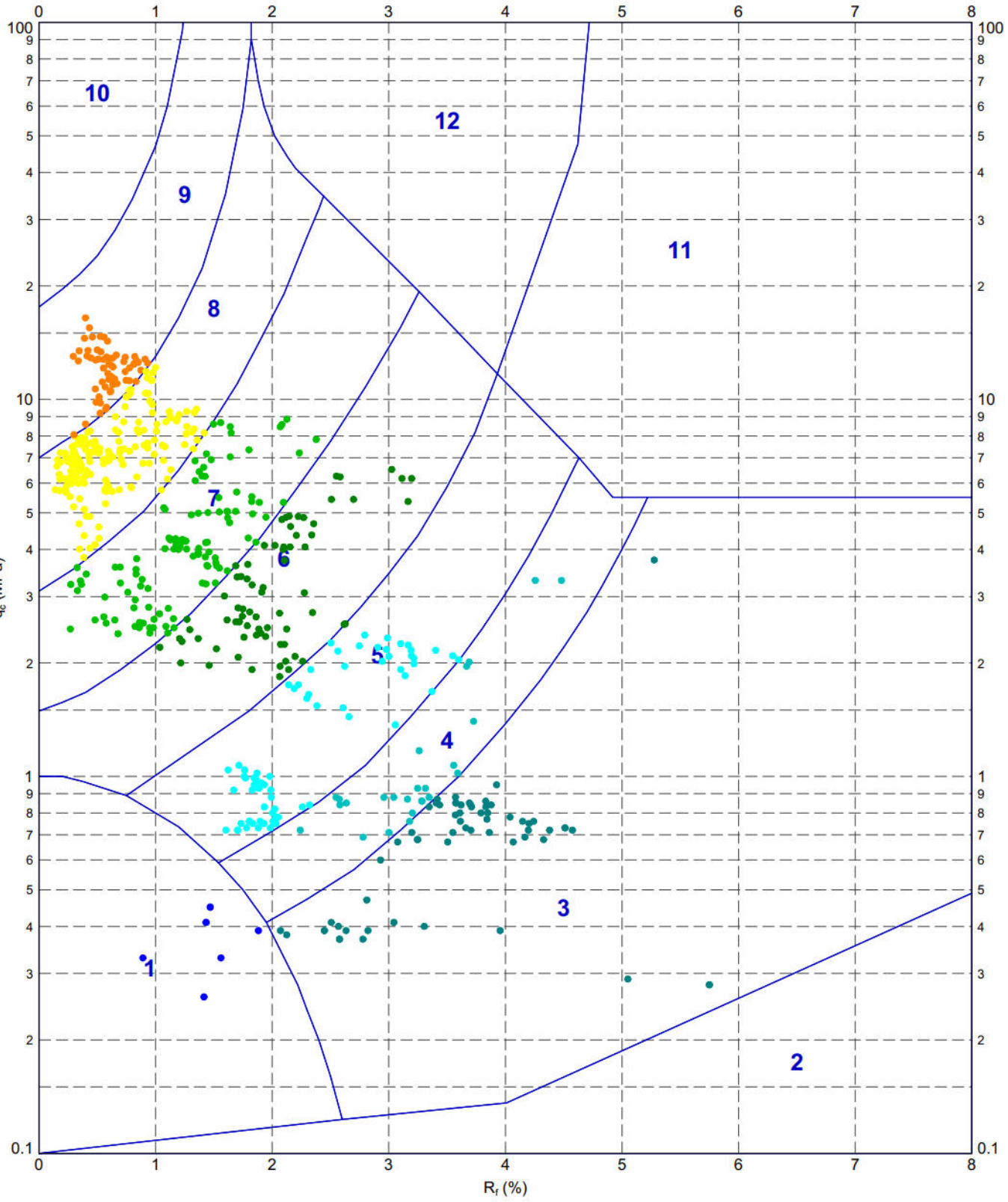
CLIENT : Ground and Water PROJECT : Church Lane LOCATION : Climping, West Sussex PROJECT No. : 1240182	EASTING : 500132.622 m NORTHING : 102333.858 m ELEVATION : 5.439 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 13/03/2024 PLOT DATE : 12/04/2024 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1983	TEST TYPE	: TE2	CPTU ZERO VALUES				COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference	Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen	Tip	288 mV	284 mV	-0.046 MPa	Extremely low strength	<10	Medium strength	40-75
CONE AREA RATIO	: 0.79	OPERATOR	: DHo	Sleeve	259 mV	255 mV	-0.003 kPa	Very low strength	10-20	High strength	75-150
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	240 mV	244 mV	0.001 kPa	Low strength	20-40	Very high strength	150-300
FILTER TYPE	: HDPE	WEATHER	: Overcast & Cold	X-Y Inclinometer	2354 mV	2363 mV				Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	Ground and Water Climping, West Sussex Church Lane Robertson et al. 1986 q_c vs. R_f - DP155
DRAWN	DATE 12/04/2024
CHECKED	DATE 12/04/2024
SCALE	Not To Scale A4
PROJECT No	1240182
FIGURE No	

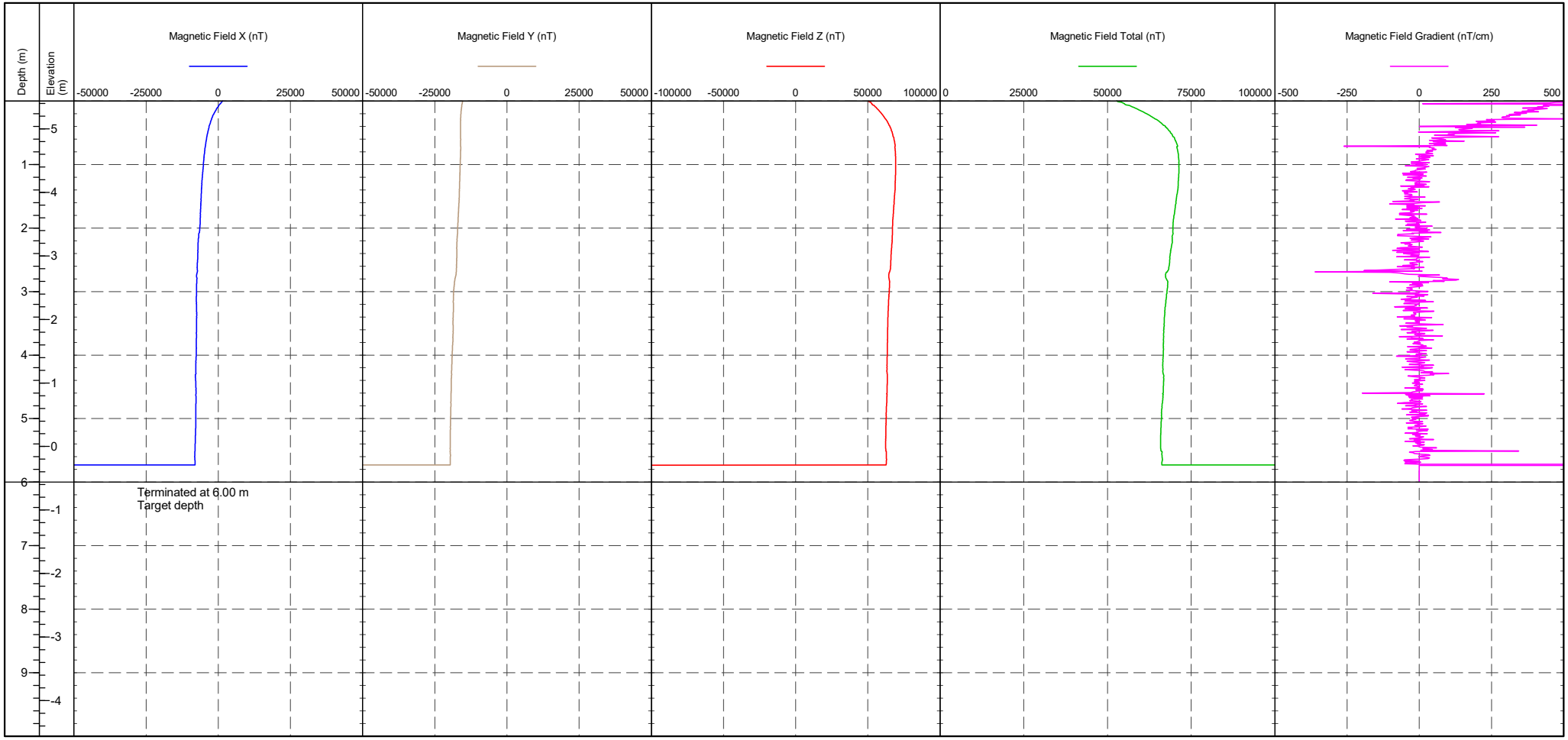
220629-ADVANCED REPORT INSITUSI 2.02.1 UB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF AMP 1240182 CHURCH LANE CLIMPING WEST SUSSEX GROUND AND WATER.GPJ <<DrawingFile>> 12/04/2024 09:53 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ S12.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: gw

MAG LOG

PointID: **DP155**

CLIENT : Ground and Water	EASTING : 500132.622 m	Remark:	SHEET : 1 OF 1
PROJECT : Church Lane	NORTHING : 102333.858 m	Test completed at target depth.	STATUS : Final
LOCATION : Climping, West Sussex	ELEVATION : 5.439 m OD		TEST DATE : 13/03/2024
PROJECT No. : 1240182	CHECKED BY : DW		PLOT DATE : 12/04/2024
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1983	RIG	: CPT 017 - Griffen	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	OPERATOR	: DHo	Transducer	Pre	Post	Difference
				Tip	288 mV	284 mV	-0.046 MPa
				Sleeve	259 mV	255 mV	-0.003 kPa
				Pore Pressure 2	240 mV	244 mV	0.001 kPa
				X-Y Inclinometer	2354 mV	2363 mV	



IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

APPENDIX F: Geotechnical Laboratory Testing

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	72006	
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG	
Date Tested	24.04.2024	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
CBR8			1.50	-		Brown fine to medium gravelly silty sandy CLAY
CBR20			0.80	-		Brown fine to medium gravelly silty CLAY
CBR22			1.00	-		Brown fine to medium gravelly silty CLAY
CBR14			1.00	-		Brown fine to medium gravelly silty CLAY
CBR12			0.80	-		Brown fine to medium gravelly silty sandy CLAY
CBR18			1.00	-		Brown fine to medium gravelly silty CLAY
CBR15			1.50	-		Brown fine to medium gravelly silty CLAY
CBR2			0.80	-		Brown fine to medium gravelly silty sandy CLAY
CBR16			1.00	-		Orange brown fine to medium gravelly silty sandy CLAY
CBR9			0.50	-		Brown fine to medium gravelly silty CLAY
CBR17			0.50	-		Brown fine to medium gravelly silty CLAY
CBR7			0.50	-		Brown fine to medium gravelly silty sandy CLAY
CBR5			0.50	-		Brown fine to medium gravelly silty CLAY
				-		
				-		
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				-		
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				-		

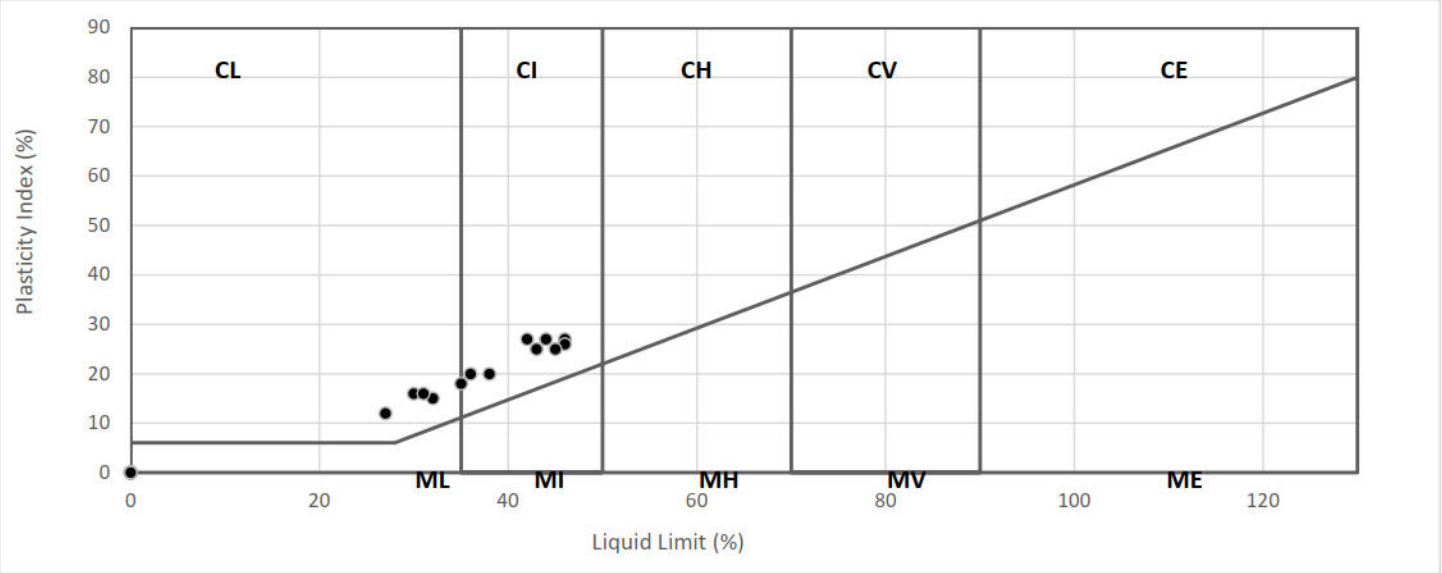
Operator
Jason Smith

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	72006	
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG	
Date Tested	24.04.2024	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
CBR8			1.50	-		21	32	17	15	94	CL Low Plasticity
CBR20			0.80	-		22	42	15	27	96	CI Intermediate Plasticity
CBR22			1.00	-		22	46	19	27	96	CI Intermediate Plasticity
CBR14			1.00	-		20	38	18	20	95	CI Intermediate Plasticity
CBR12			0.80	-		16	30	14	16	96	CL Low Plasticity
CBR18			1.00	-		24	46	20	26	94	CI Intermediate Plasticity
CBR15			1.50	-		22	44	17	27	96	CI Intermediate Plasticity
CBR2			0.80	-		18	35	17	18	93	CL/I Low/Inter. Plasticity
CBR16			1.00	-		20	27	15	12	94	CL Low Plasticity
CBR9			0.50	-		22	43	18	25	94	CI Intermediate Plasticity
CBR17			0.50	-		21	45	20	25	93	CI Intermediate Plasticity
CBR7			0.50	-		21	31	15	16	94	CL Low Plasticity
CBR5			0.50	-		18	36	16	20	94	CI Intermediate Plasticity
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				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Jason Smith

UKAS TESTING
2788

Laboratory Report

UKAS TESTING 2788

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES
A PHENNA GROUP COMPANY

Contract Number: 72173

Client Ref: **GWPR5921**
Client PO: **GWPR5921**

Date Received: **08-04-2024**
Date Completed: **17-04-2024**
Report Date: **17-04-2024**

Client: **Ground and Water Limited**

This report has been checked and approved by:

Contract Title: **Land adj. to Church Lane Climping, West sussex BN17 5GG**
For the attention of: **Alex Stratford**

[redacted]

Brendan Evans
Office Administrator

Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	1
1 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.4 & 5.3 - * UKAS	1
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	2
Saturated Moisture Content of chalk (SMC) BS 1377:1990 - Part 2 : 3.3 - * UKAS	2
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (HR & HSE Manager)

GEO Site & Testing Services Ltd
Unit 3-4 Heol Aur, Dafen Ind Est, Llanelli, Carmarthenshire SA14 8QN
[redacted]

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.4 & 5.3)	
Contract Number	72173	
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG	
Date Tested	12/04/2024	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
WS1		D	1.50	-		Brown fine to medium gravelly silty sandy CLAY
				-		
				-		
				-		
				-		
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Operator
Clayton Jenkins

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

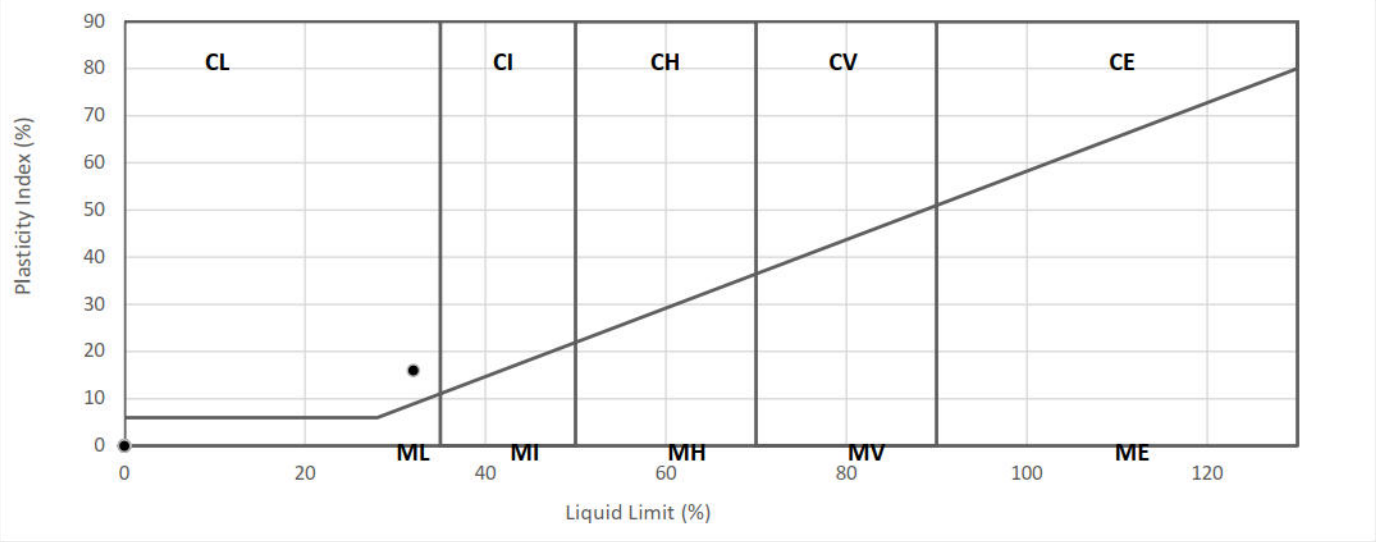
NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377:1990 - Part 2 : 4.4 & 5.3)

Contract Number	72173
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG
Date Tested	12/04/2024

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
WS1		D	1.50	-		20	32	16	16	93	CL Low Plasticity
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

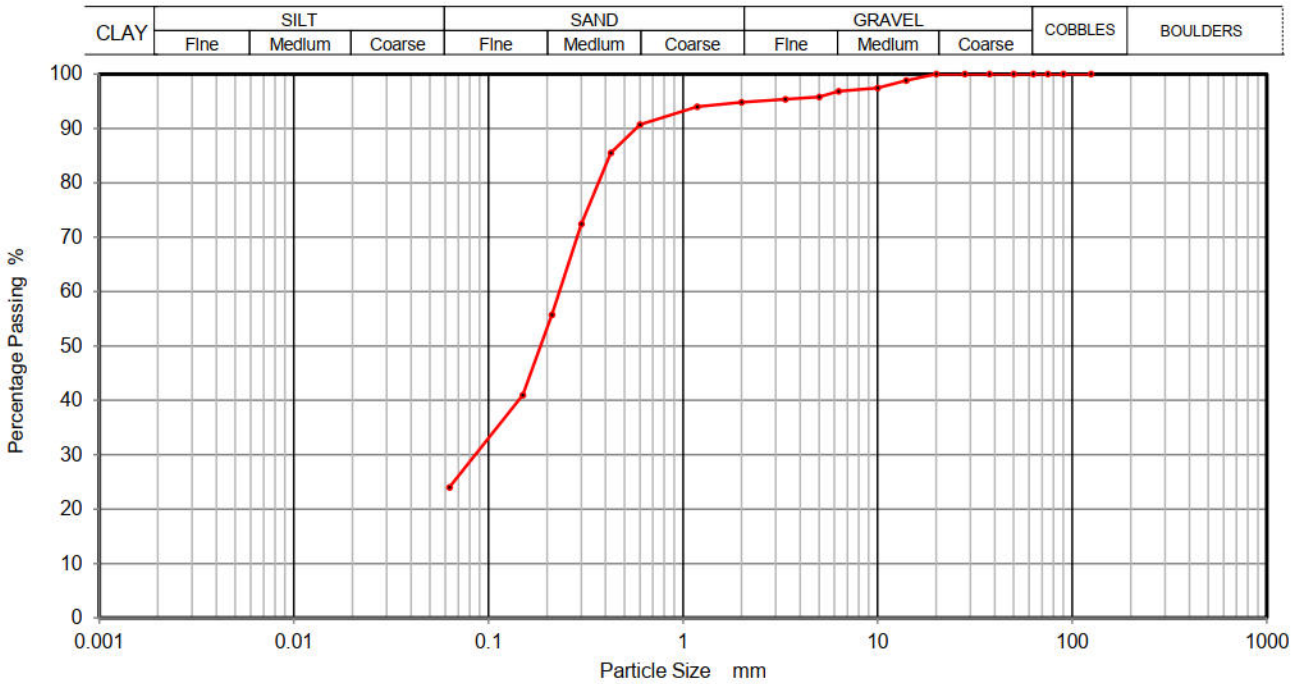
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Clayton Jenkins

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	72173
		Borehole/Pit No.	WS4
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG	Sample No.	
Soil Description	Brown slightly fine to medium gravelly silty/clayey fine to coarse SAND	Depth Top	2.50
		Depth Base	
Date Tested	12/04/2024	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	97		
6.3	97		
5	96		
3.35	95		
2	95		
1.18	94		
0.6	91		
0.425	86		
0.3	72		
0.212	56		
0.15	41		
0.063	24		

Sample Proportions	% dry mass
Cobbles	0
Gravel	5
Sand	71
Silt and Clay	24

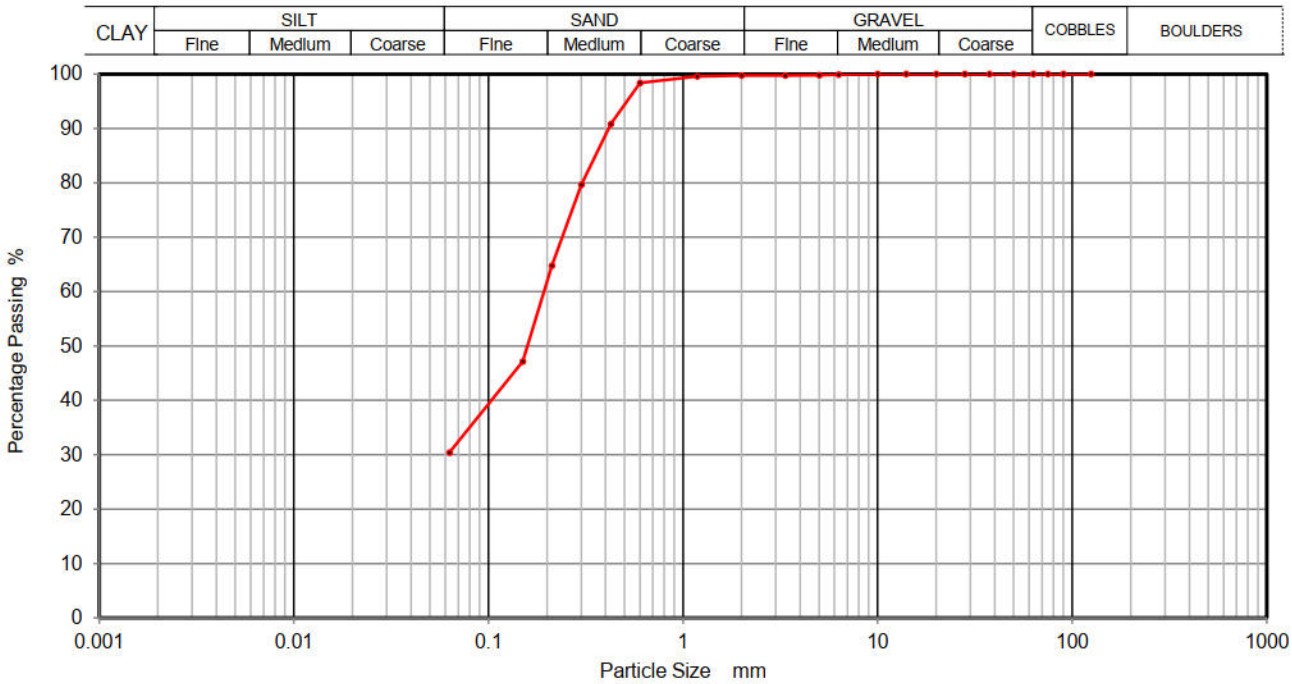
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
Cameron Thomas

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	72173
		Borehole/Pit No.	WS7
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG	Sample No.	
Soil Description	Brown silty/clayey fine to coarse SAND	Depth Top	4.00
		Depth Base	
Date Tested	12/04/2024	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	91		
0.3	80		
0.212	65		
0.15	47		
0.063	30		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	70
Silt and Clay	30

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
Cameron Thomas

UKAS TESTING
2788

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Saturation Moisture Content of Chalk
BS 1377 : Part 2 : 1990 Section 3.3

Contract Number	72173
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG
Date Tested	08/04/2024

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content	Bulk Density	Dry Density	Saturated Moisture Content	Remarks
WS2		D	5.00	-		26	2.00	1.60	26	NON-STANDARD
WS5		D	2.50	-		19	2.10	1.77	20	NON-STANDARD
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Key	Reported As	Clause
Moisture Content	%	3.2
Bulk Density	Mg/m^3	7.2
Dry Density	Mg/m^3	7.2
SMC	%	3.3.6

If there is a NON-STANDARD in the remarks next to the reported SMC result this means there was no lump of chalk of sufficient volume (300mL-500mL) present in the samples received to meet the testing requirements of the stated standard.

Operator
Julian Jones

UKAS TESTING
2788

Laboratory Report

UKAS TESTING 2788

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES
A PHENNA GROUP COMPANY

Contract Number: 73370

Client Ref: **GWPR6003**
Client PO: **GWPR6003**

Date Received: **19-06-2024**
Date Completed: **09-07-2024**
Report Date: **09-07-2024**

Client: **Ground and Water Limited**

This report has been checked and approved by:

Contract Title: **Land adj. to Church Lane Climping, West Sus[redacted]7 5GG**
For the attention of: **Alex Stratford**

[redacted]

Brendan Evans
Office Administrator

Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	12
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	12
Soil Suction - Filter Paper Method of determining the state of desiccation in clay soils BRE Information Paper 4/93 Crilly, M. S. and Chandler, R. J. - * UKAS	12
BRE Suite B Greenfield Site (pyrite present) **includes pH, water & acid soluble sulphate and total sulphur** Sub-contracted Test	20
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
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@ - denotes non accredited tests

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Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (HR & HSE Manager)

GEO Site & Testing Services Ltd
Unit 3-4 Heol Aur, Dafen Ind Est, Llanelli, Carmarthenshire SA14 8QN
[redacted]

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377:1990 - Part 2 : 4.3 & 5.3)

Contract Number	73370
Project Name	Land adj. to Church Lane Climping, West Sussex, BN17 5GG
Date Tested	27/06/2024

DESCRIPTIONS

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH2		B	1.00	-		Brown fine to medium gravelly silty sandy CLAY
BH2		B	2.70	-		Brown silty sandy CLAY
BH4		B	0.80	-		Brown silty sandy CLAY
BH4		B	2.70	-		Off white/ brown fine to medium gravelly silty chalky CLAY
BH5		B	1.00	-		Brown fine to medium gravelly silty CLAY
BH5		B	1.70	-		Brown fine to medium gravelly sandy silty CLAY
BH6		B	1.00	-		Brown fine to medium gravelly silty CLAY
BH6		B	3.70	-		Brown fine to medium gravelly silty sandy CLAY
BH6		B	5.90	-		Brown fine to medium gravelly silty sandy CLAY
BH7		B	0.80	-		Brown fine to medium gravelly sandy silty CLAY
BH7		B	2.70	-		Grey/ brown fine to medium gravelly silty sandy CLAY
BH7		B	4.70	-		Brown fine to medium gravelly silty sandy CLAY
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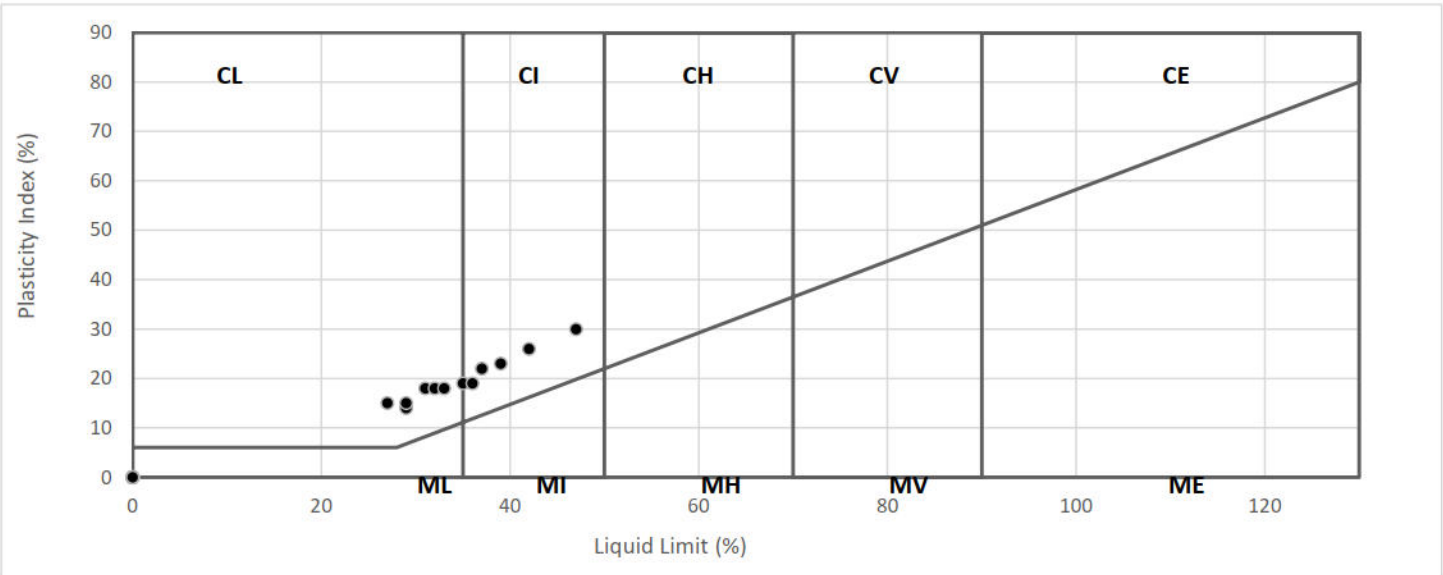
Operator
Owain Davies

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	73370	
Project Name	Land adj. to Church Lane Climping, West Sussex, BN17 5GG	
Date Tested	27/06/2024	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH2		B	1.00	-		16	31	13	18	94	CL Low Plasticity
BH2		B	2.70	-		17	32	14	18	96	CL Low Plasticity
BH4		B	0.80	-		21	35	16	19	96	CL/I Low/Inter. Plasticity
BH4		B	2.70	-		23	36	17	19	91	CI Intermediate Plasticity
BH5		B	1.00	-		22	47	17	30	96	CI Intermediate Plasticity
BH5		B	1.70	-		20	37	15	22	96	CI Intermediate Plasticity
BH6		B	1.00	-		20	42	16	26	93	CI Intermediate Plasticity
BH6		B	3.70	-		18	33	15	18	96	CL Low Plasticity
BH6		B	5.90	-		15	27	12	15	94	CL Low Plasticity
BH7		B	0.80	-		18	39	16	23	90	CI Intermediate Plasticity
BH7		B	2.70	-		17	29	15	14	96	CL Low Plasticity
BH7		B	4.70	-		17	29	14	15	94	CL Low Plasticity
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				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Owain Davies

UKAS TESTING
2788

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

SUMMARY OF SOIL CLASSIFICATION TESTS
BRE Information Paper IP 4/93 February 1993 (CI/SfB p1)

Date Tested

Contract Number	73370
Project Name	Land adj. to Church Lane Climping, West Sussex, BN17 5GG
Test Performed by	Jason Smith
Remarks	D - Disturbed (Recompacted 2.5kg Rammer), U - Undisturbed Sample

BH Trial Hole	Depth (m)	Filter Paper Location	Filter Paper	Sample Prep Method	Test Duration (Days)	Water Content (%)	Soil Suction Pk (kPa)	Average Soil Suction Pk (kPa)	Remarks
BH2	1.00	Top	I	D	5	90.0	16	16.8	
BH2	1.00	Middle	II	D	5	84.4	19		
BH2	1.00	Bottom	III	D	5	90.7	16		
BH2	2.70	Top	I	D	5	101.0	12	11.8	
BH2	2.70	Middle	II	D	5	102.0	12		
BH2	2.70	Bottom	III	D	5	102.0	12		
BH4	0.80	Top	I	D	5	104.0	11	11.1	
BH4	0.80	Middle	II	D	5	104.0	11		
BH4	0.80	Bottom	III	D	5	105.0	11		
BH4	2.70	Top	I	D	5	99.9	12	12.3	
BH4	2.70	Middle	II	D	5	100.0	12		
BH4	2.70	Bottom	III	D	5	100.0	12		
BH5	1.00	Top	I	D	5	71.7	28	27.8	
BH5	1.00	Middle	II	D	5	71.9	28		
BH5	1.00	Bottom	III	D	5	72.2	28		
BH5	1.70	Top	I	D	5	77.5	23	22.9	
BH5	1.70	Middle	II	D	5	77.8	23		
BH5	1.70	Bottom	III	D	5	78.1	23		
BH6	1.00	Top	I	D	5	65.5	35	34.7	
BH6	1.00	Middle	II	D	5	66.0	35		
BH6	1.00	Bottom	III	D	5	66.0	35		
BH6	3.70	Top	I	D	5	83.7	19	18.9	
BH6	3.70	Middle	II	D	5	84.1	19		
BH6	3.70	Bottom	III	D	5	84.5	19		
BH6	5.90	Top	I	D	5	118.0	8	8.14	
BH6	5.90	Middle	II	D	5	118.0	8		
BH6	5.90	Bottom	III	D	5	119.0	8		
BH7	0.80	Top	I	D	5	110.0	10	9.7	
BH7	0.80	Middle	II	D	5	110.0	10		
BH7	0.80	Bottom	III	D	5	111.0	10		
BH7	2.70	Top	I	D	5	60.7	43	42.1	
BH7	2.70	Middle	II	D	5	60.9	42		
BH7	2.70	Bottom	III	D	5	61.1	42		
BH7	4.70	Top	I	D	5	128.0	7	7.89	
BH7	4.70	Middle	II	D	5	129.0	7		
BH7	4.70	Bottom	III	D	5	107.0	10		

Test Operator				
Jason Smith				

UKAS TESTING
2788

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

GSTL
Unit 3-4 Heol Aur
Dafen Ind Estate
Dafen
SA14 8QN

Analytical Test Report: L24/05841/GSL - 24-46860

Your Project Reference:	**Land adj. to Church Lane Climping West Sussex BN17 5GG**		
Your Order Number:	73370	Samples Received / Instructed:	28/06/2024 / 28/06/2024
Report Issue Number:	1	Sample Tested:	28/06 to 09/07/2024
Samples Analysed:	20 soil samples	Report issued:	09/07/2024

Sig [redacted]

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited, subUKAS - Subcontracted to a laboratory UKAS accredited for this test, subMCERTS - Subcontracted to a laboratory MCERTS accredited for this test

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 29.05.2024

Issued by: J. Gane

Issue No: 4

Rev No: 10

7 - 11 Harding Street
Leicester
LE1 4DH

L24/05841/GSL - 24-46860

Project Reference - Land adj. to Church Lane Climping
West Sussex BN17 5GG

Analytical Test Results - Chemical Analysis

Lab Reference			377169	377170	377171	377172	377173	377174
Client Sample ID			-	-	-	-	-	-
Client Sample Location			BH02	BH02	BH02	BH02	BH04	BH04
Client Sample Type			-	-	-	-	-	-
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			1.70	4.70	8.90	13.40	1.00	3.70
Depth - Bottom (m)			1.70	4.70	8.90	13.40	1.00	3.70
Date of Sampling			-	-	-	-	-	-
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay
Determinant	**Units**	**Accreditation**						
Water soluble sulphate (as SO_4)	(mg/l)	u	< 10	< 10	14	95	11	20
Acid Soluble Sulphate	(%)	u	< 0.01	< 0.01	0.04	0.05	0.01	0.03
Total Sulphur	(%)	UKAS	< 0.01	< 0.01	0.01	0.06	< 0.01	0.01
pH Value	pH Units	MCERTS	8.5	8.4	9.0	8.8	8.6	9.0

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L24/05841/GSL - 24-46860

Project Reference - Land adj. to Church Lane Climping
West Sussex BN17 5GG

Analytical Test Results - Chemical Analysis

Lab Reference			377175	377176	377177	377178	377179	377180
Client Sample ID			-	-	-	-	-	-
Client Sample Location			BH04	BH04	BH05	BH05	BH05	BH05
Client Sample Type			-	-	-	-	-	-
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			5.90	8.70	0.80	3.70	7.40	11.90
Depth - Bottom (m)			5.90	8.70	0.80	3.70	7.40	11.90
Date of Sampling			-	-	-	-	-	-
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay
Determinant	**Units**	**Accreditation**						
Water soluble sulphate (as SO_4)	(mg/l)	u	33	13	< 10	12	< 10	14
Acid Soluble Sulphate	(%)	u	0.05	0.05	0.01	0.04	0.04	0.05
Total Sulphur	(%)	UKAS	0.01	0.02	< 0.01	0.02	0.02	0.02
pH Value	pH Units	MCERTS	9.0	9.0	8.5	9.0	9.0	9.0

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Project Reference - Land adj. to Church Lane Climping
West Sussex BN17 5GG

Analytical Test Results - Chemical Analysis

Lab Reference			377181	377182	377183	377184	377185	377186
Client Sample ID			-	-	-	-	-	-
Client Sample Location			BH06	BH06	BH06	BH06	BH07	BH07
Client Sample Type			-	-	-	-	-	-
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			0.80	2.70	7.20	10.20	1.70	3.70
Depth - Bottom (m)			0.80	2.70	7.20	10.20	1.70	3.70
Date of Sampling			-	-	-	-	-	-
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Other	Clay	Clay
Determinant	**Units**	**Accreditation**						
Water soluble sulphate (as SO_4)	(mg/l)	u	< 10	< 10	14	21	< 10	< 10
Acid Soluble Sulphate	(%)	u	0.01	< 0.01	0.05	0.02	< 0.01	0.02
Total Sulphur	(%)	UKAS	< 0.01	< 0.01	0.02	0.02	< 0.01	0.01
pH Value	pH Units	MCERTS	8.3	8.6	9.1	9.1	8.7	8.7

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L24/05841/GSL - 24-46860

Project Reference - Land adj. to Church Lane Climping
West Sussex BN17 5GG

Analytical Test Results - Chemical Analysis

Lab Reference			377187	377188
Client Sample ID			-	-
Client Sample Location			BH07	BH07
Client Sample Type			-	-
Client Sample Number			-	-
Depth - Top (m)			7.20	11.70
Depth - Bottom (m)			7.20	11.70
Date of Sampling			-	-
Time of Sampling			-	-
Sample Matrix			Clay	Other
Determinant	**Units**	**Accreditation**		
Water soluble sulphate (as SO_4)	(mg/l)	u	69	49
Acid Soluble Sulphate	(%)	u	0.05	0.03
Total Sulphur	(%)	UKAS	0.03	0.04
pH Value	pH Units	MCERTS	8.8	8.9

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Project Reference - Land adj. to Church Lane Climping West Sussex BN17 5GG

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
377169	-	BH02	-	-	Brown slightly gravelly sandy silty clay	-	-	100
377170	-	BH02	-	-	Brown slightly gravelly sandy silty clay	-	-	100
377171	-	BH02	-	-	Light brownish white slightly gravelly silty clay	-	-	100
377172	-	BH02	-	-	Mottled white grey clayey gravel	-	-	22
377173	-	BH04	-	-	Brown sandy silty clay	-	-	100
377174	-	BH04	-	-	Light brownish white slightly gravelly silty clay	-	-	100
377175	-	BH04	-	-	Light brownish white slightly gravelly silty clay	-	-	100
377176	-	BH04	-	-	Light brownish white slightly gravelly silty clay	-	-	100
377177	-	BH05	-	-	Brown slightly gravelly silty clay	-	-	100
377178	-	BH05	-	-	Light brownish white gravelly silty clay	-	-	96
377179	-	BH05	-	-	Light brownish white gravelly silty clay	-	-	100
377180	-	BH05	-	-	Light brownish white gravelly silty clay	-	-	100
377181	-	BH06	-	-	Brown slightly gravelly silty clay	-	-	100
377182	-	BH06	-	-	Brown slightly gravelly silty clay	-	-	100
377183	-	BH06	-	-	Light brownish white gravelly silty clay	-	-	100
377184	-	BH06	-	-	Mottled white grey clayey gravel	-	-	13
377185	-	BH07	-	-	Brown slightly gravelly sandy silty clay	-	-	100
377186	-	BH07	-	-	Brown sandy silty clay	-	-	100
377187	-	BH07	-	-	Light brownish grey very gravelly silty clay	-	-	100
377188	-	BH07	-	-	Mottled white grey clayey gravel	-	-	36

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L24/05841/GSL - 24-46860

Project Reference - Land adj. to Church Lane Climping West Sussex BN17 5GG

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
377169	-	BH02	-	-	
377170	-	BH02	-	-	
377171	-	BH02	-	-	
377172	-	BH02	-	-	
377173	-	BH04	-	-	
377174	-	BH04	-	-	
377175	-	BH04	-	-	
377176	-	BH04	-	-	
377177	-	BH05	-	-	
377178	-	BH05	-	-	
377179	-	BH05	-	-	
377180	-	BH05	-	-	
377181	-	BH06	-	-	
377182	-	BH06	-	-	
377183	-	BH06	-	-	
377184	-	BH06	-	-	
377185	-	BH07	-	-	
377186	-	BH07	-	-	
377187	-	BH07	-	-	
377188	-	BH07	-	-	

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L24/05841/GSL - 24-46860

Project Reference - Land adj. to Church Lane Climping West Sussex BN17 5GG

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

L24/05841/GSL - 24-46860

Project Reference - Land adj. to Church Lane Climping West Sussex BN17 5GG

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Sample(s) received with less than 96 hours for testing to commence/complete, any result formally classed as deviating will be marked with an X against the applicable test (i.e. RX)

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
377169	-	BH02	-	-		A
377170	-	BH02	-	-		A
377171	-	BH02	-	-		A
377172	-	BH02	-	-		A
377173	-	BH04	-	-		A
377174	-	BH04	-	-		A
377175	-	BH04	-	-		A
377176	-	BH04	-	-		A
377177	-	BH05	-	-		A
377178	-	BH05	-	-		A
377179	-	BH05	-	-		A
377180	-	BH05	-	-		A
377181	-	BH06	-	-		A
377182	-	BH06	-	-		A
377183	-	BH06	-	-		A
377184	-	BH06	-	-		A
377185	-	BH07	-	-		A
377186	-	BH07	-	-		A
377187	-	BH07	-	-		A
377188	-	BH07	-	-		A

Laboratory Report

UKAS TESTING 2788

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES
A PHENNA GROUP COMPANY

Contract Number: 73375

Client Ref: **GWPR6003**
Client PO: **GWPR6003**

Date Received: **21-06-2024**
Date Completed: **03-07-2024**
Report Date: **03-07-2024**

Client: **Ground and Water Limited**

This report has been checked and approved by:

Contract Title: **Land adj. to Church Lane Climping, West sussex BN17 5GG**
For the attention of: **Alex Stratford**

[redacted]

Brendan Evans
Office Administrator

Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	6
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	6
Soil Suction - Filter Paper Method of determining the state of desiccation in clay soils BRE Information Paper 4/93 Crilly, M. S. and Chandler, R. J. - * UKAS	6
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (HR & HSE Manager)

GEO Site & Testing Services Ltd
Unit 3-4 Heol Aur, Dafen Ind Est, Llanelli, Carmarthenshire SA14 8QN
[redacted]

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377:1990 - Part 2 : 4.3 & 5.3)

Contract Number	73375
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG
Date Tested	27/06/2024

DESCRIPTIONS

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH1		B	1.70	-		Brown fine to medium gravelly silty CLAY
BH1		B	2.70	-		Brown fine to medium gravelly silty CLAY
BH1		B	4.70	-		Brown silty sandy fine to medium gravelly CLAY
BH3		B	0.80	-		Brown fine to medium gravelly sandy silty CLAY
BH3		B	2.70	-		Brown fine to medium gravelly sandy silty CLAY
BH3		B	3.70	-		Brown silty fine to medium gravelly sandy CLAY
				-		
				-		
				-		
				-		
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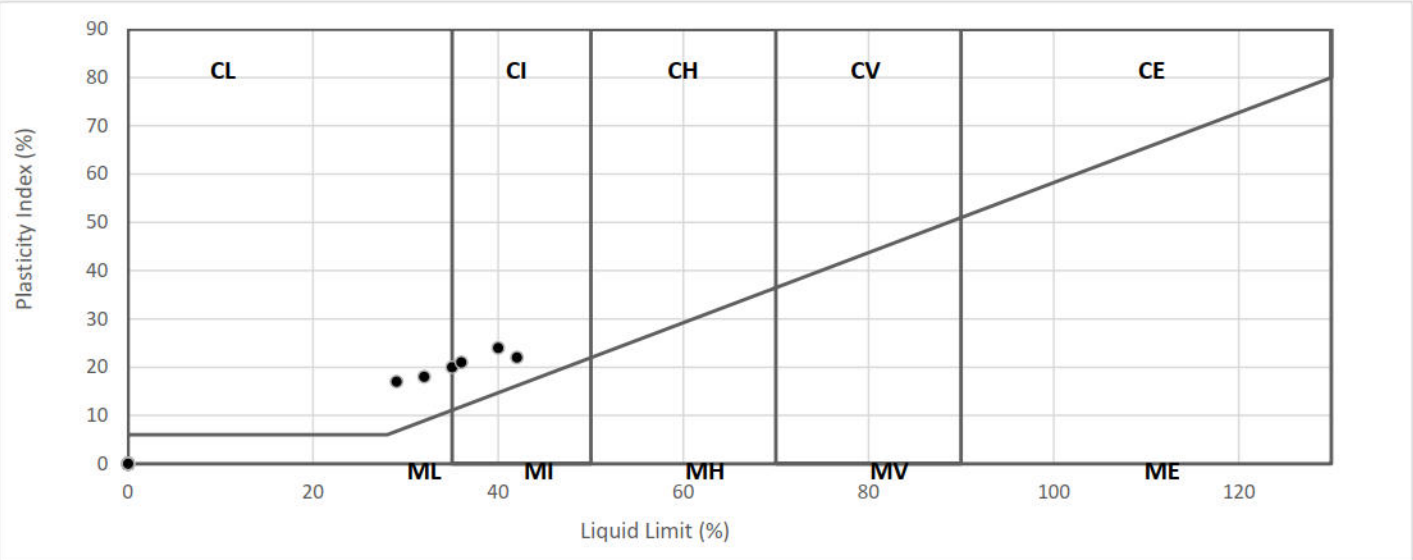
Operator
Owain Davies

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	73375	
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG	
Date Tested	27/06/2024	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH1		B	1.70	-		22	40	16	24	92	CI Intermediate Plasticity
BH1		B	2.70	-		26	42	20	22	96	CI Intermediate Plasticity
BH1		B	4.70	-		16	32	14	18	84	CL Low Plasticity
BH3		B	0.80	-		20	35	15	20	94	CL/I Low/Inter. Plasticity
BH3		B	2.70	-		21	36	15	21	94	CI Intermediate Plasticity
BH3		B	3.70	-		13	29	12	17	85	CL Low Plasticity
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Owain Davies

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GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

SUMMARY OF SOIL CLASSIFICATION TESTS
BRE Information Paper IP 4/93 February 1993 (CI/SfB p1)

Date Tested

Contract Number	73375
Project Name	Land adj. to Church Lane Climping, West sussex BN17 5GG
Test Performed by	Jason Smith
Remarks	D - Disturbed (Recompacted 2.5kg Rammer), U - Undisturbed Sample

Trial Hole	Depth (m)	Filter Paper Location	Filter Paper	Sample Prep Method	Test Duration (Days)	Water Content (%)	Soil Suction Pk (kPa)	Average Soil Suction Pk (kPa)	Remarks
BH01	1.70	Top	I	B	5	115.0	9	8.64	
BH01	1.70	Middle	II	B	5	115.0	9		
BH01	1.70	Bottom	III	B	5	116.0	9		
BH01	2.70	Top	I	B	5	89.2	16	16.2	
BH01	2.70	Middle	II	B	5	89.6	16		
BH01	2.70	Bottom	III	B	5	89.9	16		
BH01	4.70	Top	I	B	5	135.0	6	5.79	
BH01	4.70	Middle	II	B	5	136.0	6		
BH01	4.70	Bottom	III	B	5	136.0	6		
BH03	0.80	Top	I	B	5	94.7	14	13.9	
BH03	0.80	Middle	II	B	5	95.1	14		
BH03	0.80	Bottom	III	B	5	95.5	14		
BH03	2.70	Top	I	B	5	126.0	7	6.88	
BH03	2.70	Middle	II	B	5	126.0	7		
BH03	2.70	Bottom	III	B	5	127.0	7		
BH03	3.70	Top	I	B	5	127.0	7	6.75	
BH03	3.70	Middle	II	B	5	127.0	7		
BH03	3.70	Bottom	III	B	5	128.0	7		

Test Operator				
Jason Smith				

UKAS TESTING
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APPENDIX G: Chemical Laboratory Testing

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

Ground and Water Ltd
2 The Long Barn
Norton Farm
Selbourne Road
Alton
Hampshire
GU34 3NB

e: [redacted]

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

[redacted]

Analytical Report Number : 24-012660

Project / Site name:	Land Adj. To Church Lane Climping West Sussex BN17 5GG	**Samples received on:**	04/04/2024
Your job number:	GWPR5921	**Samples instructed on/ Analysis started on:**	08/04/2024
Your order number:	GWPR5921	**Analysis completed by:**	12/04/2024
Report Issue Number:	1	**Report issued on:**	12/04/2024
Samples Analysed:	5 soil samples		

Signed: [redacted]

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 24-012660
Project / Site name: Land Adj. To Church Lane Climping West Sussex BN17 5GG
Your Order No: GWPR5921

Lab Sample Number				163296	163297	163298	163299	163300
Sample Reference				WS2	WS3	WS4	WS5	WS7
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	2.50	4.50	3.00	5.00
Date Sampled				27/03/2024	27/03/2024	27/03/2024	27/03/2024	27/03/2024
Time Taken				1200	1200	1200	1200	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	13	18	11	12
Total mass of sample received	kg	0.1	NONE	0.5	0.5	0.5	0.5	0.5
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.6	8.4	8.9	8.3	9.1
Total Sulphate as SO_4	%	0.005	MCERTS	0.039	-	0.044	-	0.019
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	33	20	28	680	100
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	16.4	9.83	13.8	339	52.1
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.6	-	5.4	-	2.7
Total Sulphur	mg/kg	50	MCERTS	160	-	160	-	56
Total Sulphur	%	0.005	MCERTS	0.016	-	0.016	-	0.006
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	< 0.5	-	< 0.5	-	< 0.5
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	2.6	-	< 2.0	-	< 2.0
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	-	< 2.0	-	< 2.0
Heavy Metals / Metalloids								
Magnesium (leachate equivalent)	mg/l	2.5	NONE	3.2	-	< 2.5	-	< 2.5
Magnesium (water soluble)	mg/kg	5	NONE	6.3	-	< 5.0	-	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-012660
Project / Site name: Land Adj. To Church Lane Climping West Sussex BN17 5GG

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
163296	WS2	None Supplied	2	Brown clay and sand with vegetation
163297	WS3	None Supplied	2.5	Brown sand with gravel
163298	WS4	None Supplied	4.5	Beige clay and sand with gravel
163299	WS5	None Supplied	3	Brown clay and sand with gravel
163300	WS7	None Supplied	5	Brown sand with gravel

Analytical Report Number : 24-012660
Project / Site name: Land Adj. To Church Lane Climping West Sussex BN17 5GG

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078B	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Ground and Water Ltd
2 The Long Barn
Norton Farm
Selbourne Road
Alton
Hampshire
GU34 3NB

[redacted]

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

[redacted]

Analytical Report Number : 24-011076

Project / Site name:	Land adj to Church Lane Climping West Sussex BN17 5GG	**Samples received on:**	26/03/2024
Your job number:	GWPR5921	**Samples instructed on/ Analysis started on:**	26/03/2024
Your order number:	GWPR5921	**Analysis completed by:**	04/04/2024
Report Issue Number:	1	**Report issued on:**	04/04/2024
Samples Analysed:	11 soil samples		

[redacted]

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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

Analytical Report Number: 24-011076
Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG
Your Order No: GWPR5921

Lab Sample Number				155604	155605	155606	155607	155608
Sample Reference				CBR1	CBR3	CBR7	CBR15	CBR20
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.00	1.00-1.00	1.50-1.50	2.00-2.00	2.00-2.00
Date Sampled				22/03/2024	19/03/2024	19/03/2024	21/03/2024	22/03/2024
Time Taken				1200	1200	1200	1200	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	44.7	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.3	17	17	18	14
Total mass of sample received	kg	0.1	NONE	0.5	0.5	0.5	0.5	0.5
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	-	-	-	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.9	7.8	7.9	8.9	8.2
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO_4	%	0.005	MCERTS	-	-	-	0.036	0.048
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	330	34	430	19	340
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	164	16.8	215	9.66	170
Water Soluble SO_4 16hr extraction (2:1)	mg/l	1.25	MCERTS	-	-	-	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	1	1
Total Sulphur	mg/kg	50	MCERTS	-	-	-	120	130
Total Sulphur	%	0.005	MCERTS	-	-	-	0.012	0.013
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	-	-	-	< 0.5	< 0.5
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Organic Matter (automated)	%	0.1	MCERTS	-	-	-	-	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	-	-	-
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	-	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	-	< 2.0	< 2.0
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	-	-	-

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-011076
Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG
Your Order No: GWPR5921

Lab Sample Number				155604	155605	155606	155607	155608
Sample Reference				CBR1	CBR3	CBR7	CBR15	CBR20
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.00	1.00-1.00	1.50-1.50	2.00-2.00	2.00-2.00
Date Sampled				22/03/2024	19/03/2024	19/03/2024	21/03/2024	22/03/2024
Time Taken				1200	1200	1200	1200	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	3.3	8.3
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	6.5	17
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C35 - C40 EH_CU_1D_AL	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C5 - C40 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-
TPH Total >C5 - C40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-	-	-	-
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 24-011076
Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG
Your Order No: GWPR5921

Lab Sample Number				155609	155610	155611	155612	155613
Sample Reference				CBR23	CBR2	CBR4	CBR9	CBR14
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50-1.50	0.20-0.20	0.50-0.50	0.20-0.20	0.50-0.50
Date Sampled				20/03/2024	21/03/2024	19/03/2024	21/03/2024	21/03/2024
Time Taken				1200	1200	1200	1200	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	16	17	16	15
Total mass of sample received	kg	0.1	NONE	0.5	0.8	0.8	0.8	0.8
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	-	PDO	PDO	PDO	PDO
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.4	7.9	7.8	7.9	7.5
Total Cyanide	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	0.015	-	-	-	-
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	28	30	20	23	24
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	13.8	-	-	-	-
Water Soluble SO_4 16hr extraction (2:1)	mg/l	1.25	MCERTS	-	15.1	9.96	11.7	12
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	2.9	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	< 50	-	-	-	-
Total Sulphur	%	0.005	MCERTS	< 0.005	-	-	-	-
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	< 0.5	-	-	-	-
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	-	1.8	0.4	0.4	0.7
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	1	0.3	0.2	0.4
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	< 2.0	-	-	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	-	-	-	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	0.09	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	0.28	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	0.27	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	0.12	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	0.16	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	0.17	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	0.1	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	0.16	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.13	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.13	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	1.61	< 0.80	< 0.80	< 0.80

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Analytical Report Number: 24-011076
Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG
Your Order No: GWPR5921

Lab Sample Number				155609	155610	155611	155612	155613
Sample Reference				CBR23	CBR2	CBR4	CBR9	CBR14
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50-1.50	0.20-0.20	0.50-0.50	0.20-0.20	0.50-0.50
Date Sampled				20/03/2024	21/03/2024	19/03/2024	21/03/2024	21/03/2024
Time Taken				1200	1200	1200	1200	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	11	15	12	9.7
Boron (water soluble)	mg/kg	0.2	MCERTS	-	0.3	0.6	< 0.2	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	21	33	26	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	16	14	11	8
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	21	14	10	12
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	14	23	20	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	35	48	42	33
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	61	52	41	37
Magnesium (leachate equivalent)	mg/l	2.5	NONE	3.9	-	-	-	-
Magnesium (water soluble)	mg/kg	5	NONE	7.8	-	-	-	-
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	-	< 0.020	< 0.020	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	-	< 0.020	< 0.020	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	-	< 0.050	< 0.050	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	< 2.0	< 2.0	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	< 8.0	< 8.0	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	< 8.0	< 8.0	-
TPHCWG - Aliphatic >C35 - C40 EH_CU_1D_AL	mg/kg	10	NONE	-	-	< 10	< 10	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	< 10	< 10	-
TPHCWG - Aliphatic >C5 - C40 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	< 10	< 10	-
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	-	< 0.010	< 0.010	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	-	< 0.010	< 0.010	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	-	< 0.050	< 0.050	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	< 2.0	< 2.0	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	< 10	< 10	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	< 10	< 10	-
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	-	-	< 10	< 10	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	< 10	< 10	-
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	< 10	< 10	-
TPH Total >C5 - C40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-	< 10	< 10	-
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	< 5.0	< 5.0	-
Benzene	µg/kg	5	MCERTS	-	-	< 5.0	< 5.0	-
Toluene	µg/kg	5	MCERTS	-	-	< 5.0	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	< 5.0	< 5.0	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	< 5.0	< 5.0	-
o-Xylene	µg/kg	5	MCERTS	-	-	< 5.0	< 5.0	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 24-011076
Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG
Your Order No: GWPR5921

Lab Sample Number				155614
Sample Reference				CBR23
Sample Number				None Supplied
Depth (m)				0.20-0.50
Date Sampled				20/03/2024
Time Taken				1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	17
Total mass of sample received	kg	0.1	NONE	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	PDO

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	-
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	37
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-
Water Soluble SO_4 16hr extraction (2:1)	mg/l	1.25	MCERTS	18.3
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-
Total Sulphur	mg/kg	50	MCERTS	-
Total Sulphur	%	0.005	MCERTS	-
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	-
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-
Organic Matter (automated)	%	0.1	MCERTS	1.4
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.8
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.06
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.19
Pyrene	mg/kg	0.05	MCERTS	0.16
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.08
Chrysene	mg/kg	0.05	MCERTS	0.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.11
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.08
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80

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Analytical Report Number: 24-011076
Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG
Your Order No: GWPR5921

Lab Sample Number				155614
Sample Reference				CBR23
Sample Number				None Supplied
Depth (m)				0.20-0.50
Date Sampled				20/03/2024
Time Taken				1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.7
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	10
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	30
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	40
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-
Magnesium (water soluble)	mg/kg	5	NONE	-
Petroleum Hydrocarbons				
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-
TPHCWG - Aliphatic >C35 - C40 EH_CU_1D_AL	mg/kg	10	NONE	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-
TPHCWG - Aliphatic >C5 - C40 EH_CU+HS_1D_AL	mg/kg	10	NONE	-
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	-
TPH Total >C5 - C40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-
VOCs				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-
Benzene	µg/kg	5	MCERTS	-
Toluene	µg/kg	5	MCERTS	-
Ethylbenzene	µg/kg	5	MCERTS	-
p & m-Xylene	µg/kg	5	MCERTS	-
o-Xylene	µg/kg	5	MCERTS	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 24-011076
Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
155604	CBR1	None Supplied	1.00-1.00	Brown clay and sand with stones
155605	CBR3	None Supplied	1.00-1.00	Brown clay and sand
155606	CBR7	None Supplied	1.50-1.50	Brown clay and sand
155607	CBR15	None Supplied	2.00-2.00	Light brown clay with chalk
155608	CBR20	None Supplied	2.00-2.00	Brown clay and sand
155609	CBR23	None Supplied	1.50-1.50	Brown clay and sand
155610	CBR2	None Supplied	0.20-0.20	Brown sand with vegetation
155611	CBR4	None Supplied	0.50-0.50	Brown clay
155612	CBR9	None Supplied	0.20-0.20	Brown clay and sand
155613	CBR14	None Supplied	0.50-0.50	Brown clay and sand
155614	CBR23	None Supplied	0.20-0.50	Brown clay and sand

Analytical Report Number : 24-011076
Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078B	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	MCERTS

Analytical Report Number : 24-011076
Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report

Analytical Report Number : 24-011076

Project / Site name: Land adj to Church Lane Climping West Sussex BN17 5GG

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
CBR4	N/A	S	155611	c	Total cyanide in soil	L080	c

APPENDIX H:
Soil
Assessment

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

Ground and Water Limited

Soil Guideline Values and Generic Assessment Criteria

The Contaminated Land Regime reflects the UK Government's stated objectives of achieving sustainable development through the 'suitable for use approach'. At preliminary risk assessment stage, risks are evaluated qualitatively. As the site investigation progresses to a generic or detailed quantitative risk assessment, data is collected and assessment criteria are utilised to evaluate whether the contaminants represent an unacceptable risk to the identified receptors.

1. Contaminated Land Exposure Assessment Model (CLEA)

Current United Kingdom risk assessment practice is based on the Contaminated Land Exposure Assessment Model (CLEA).

The CLEA Guidance comprises the following documents:

1) EA Science Report SC050021/SR2: Human health toxicological assessment of contaminants in soil.
2) EA Science Report SC050021/SR3: Updated technical background to the CLEA model.
3) EA CLEA Bulletin (2009).
4) CLEA software version 1.07 (2015)
5) Toxicological reports and SGV technical notes.

The CLEA guidance and tools:

- Do not cover other types of risk to humans, such as fire, suffocation or explosion, or short-term and acute exposures;
- Do not cover risks to the environment, such as groundwater, ecosystems or buildings;
- Do not provide a definitive test for telling when human health risks are significant; and
- Are not a legal requirement in assessing land contamination risks. They are not part of the legal regime for Part 2A of the Environmental Protection Act 1990.

The CLEA guidance derives soil concentrations of contaminants above which (in the opinion of the EA) there may be a concern that warrants further investigation. It does not provide a definitive test for establishing that the risk is significant.

1.1. Land-use Scenarios

The CLEA model uses a range of standard land-use scenarios to develop conceptual exposure models outlined in the following sections.

1.1.1. Residential (with home grown produce) (RwHP)

Generic scenario assumes a typical two-storey house built on a ground bearing slab with a private garden having a lawn, flowerbeds and a small fruit and vegetable patch.

- Critical receptor is a young female child (zero to six years old)
- Exposure duration is six years.
- Exposure pathways include direct soil and indoor dust ingestion, consumption of homegrown produce and any adhering soil, skin contact with soils and indoor dust and inhalation of indoor and outdoor dust and vapours.
- Building type is a two-storey small-terraced house.

A sub-set of this land-use is residential apartments with communal landscaped gardens where the consumption of home grown vegetables will not occur. (Residential without homegrown produce (RwoHP)).

1.1.2. Allotments

Provision of open space (about 250sq.m) commonly made available to tenants by the local authority to grow fruit and vegetable for their own consumption. Typically, there are a number of plots to a site which may have a total area of up to 1 hectare. The tenants are assumed to be adults and that young children make occasional accompanied visits.

Although some allotment holders may choose to keep animals including rabbits, hens, and ducks, potential exposure to contaminated meat and eggs is not considered.

- Critical receptor is a young female child (zero to six years old)
- Exposure duration is six years.
- Exposure pathways include direct soil ingestion, consumption of homegrown produce and any adhering soil, skin contact with soils and inhalation of outdoor dust and vapours.
- There is no building.

1.1.3. Commercial/Industrial

The generic scenario assumes a typical commercial or light industrial property comprising a three-storey building at which employees spend most time indoors and are involved in office-based or relatively light physical work.

- Critical receptor is a working female adult (aged 16 to 65 years old).
- Exposure duration is a working lifetime of 49 years.
- Exposure pathways include direct soil and indoor dust ingestion, skin contact with soils and dusts and inhalation of dust and vapours.
- Building type is a three-storey office (pre 1970).

2. LQM/CIEH Suitable 4 Use Levels (S4UL)

For derivation of these S4UL reference must be made to:

Nathanial, P., McCaffrey, C., Gillet, A., Ogden, R., Nathanial, J., *The LQM/CIEH S4UL's for Human Health Risk Assessment*. **Land Quality Press**. 2015

2.1. S4UL Background

The Land Quality Management/Chartered Institute of Environmental Health (LQM/CIEH) S4UL for a given land use is the concentration of the contaminant in soil at which the predicted daily exposure,

as calculated by the CLEA software, equals the Health Criteria Value. The S4ULs have been derived for substances based on various generic land use and soil organic matter contents.

The final output for each contaminant represents a synthesis of new toxicological (and fate and transport) reviews published since the preparation of the 2nd edition LQM/CIEH GAC's (Nathanial et al., 2009).

In the derivation of LQM/CIEH S4UL's the principles of 'minimal' or 'tolerable' risk enshrined in SR2, which has not been withdrawn, has been maintained.

2.2. S4UL Land-use

S4UL's have been derived for the basic CLEA land-uses, as described in section 1.2, and for two new land uses:

- Public Open Spaces near Residential Housing (POSresi).
- Public Park (POSpark).

2.2.1. Public Open Spaces near Residential Housing (POSresi)

Includes the predominantly grassed areas adjacent to high density housing, the central green area on many 1930's – 1970's housing estates, and smaller areas commonly incorporated in newer developments as informal grassed areas or more formal landscaped areas with a mixture of open space and covered soils with planting. It is assumed that the close proximity to the place of residence will allow tracking back of soil to occur.

2.2.2. Public Park (POSpark)

An area of open space, usually owned and maintained by the local authority, provided for recreational uses including family visists and picnics, children's play area, informal sporting activities (not a dedicated sports pitch), and dog walking. It is assumed that tracking back of soils into places of residence will be negligible.

The following LQM/CIEH S4Uls (Copyright Land Quality Management Limited) have been reproduced with permission, to the publication number S4UL3072.

3. Category 4 Screening Levels (C4SLs)

In the case of Lead, no SGV or GAC has been published to date. This is likely to be due to the toxicity review that is currently being undertaken by the Environment Agency. In the absence of updated toxicity information the SGV derived using CLEA 1.07 methodology and related toxicity will be used.

The overall objective of the C4SLs research project was to assist the provision of technical guidance in support of Defra's revised Statutory Guidance (SG) for Part 2A of the Environmental Protection Act 1990 (Part 2A) (Defra, 2012a). Specifically, the project aimed to deliver:

- A methodology for deriving C4SLs for four generic land-uses comprising residential, commercial, allotments and public open space; and
- A demonstration of the methodology, via the derivation of C4SLs for six substances – arsenic, benzene, benzo(a)pyrene, cadmium, chromium (VI) and lead.

To help achieve a more targeted approach to identifying and managing contaminated land in relation to the risk (or possibility) of harm to human health, the revised SG presented a new four category

system for considering land under Part 2A, ranging from Category 4, where there is no risk that land poses a significant possibility of significant harm (SPOSH), or the level of risk is low, to Category 1, where the risk that land poses a significant possibility of significant harm (SPOSH) is unacceptably high. More specific guidance on what type of land should be considered as Category 4 (Human Health) is provided in Paragraphs 4.21 and 4.22 of the revised SG, as follows:

> *"4.21 The local authority should consider that the following types of land should be placed into Category 4: Human Health:*
> *(a) Land where no relevant contaminant linkage has been established.*
> *(b) Land where there are only normal levels of contaminants in soil, as explained in Section 3 of this Guidance.*
> *(c) Land that has been excluded from the need for further inspection and assessment because contaminant levels do not exceed relevant generic assessment criteria in accordance with Section 3 of this Guidance, or relevant technical tools or advice that may be developed in accordance with paragraph 3.30 of this Guidance.*
> *(d) Land where estimated levels of exposure to contaminants in soil are likely to form only a small proportion of what a receptor might be exposed to anyway through other sources of environmental exposure (e.g. in relation to average estimated national levels of exposure to substances commonly found in the environment, to which receptors are likely to be exposed in the normal course of their lives).*
>
> *4.22 The local authority may consider that land other than the types described in paragraph 4.21 should be placed into Category 4: Human Health if following a detailed quantitative risk assessment it is satisfied that the level of risk posed is sufficiently low."*

The C4SLs are intended as "relevant technical tools" (in relation to Paragraph 4.21(c)) to help local authorities and others when deciding to stop further assessment of a site, on the grounds that it falls within Category 4 (Human Health).

The Impact Assessment (IA), which accompanied the revised SG (Defra, 2012b) provides further information on the nature and potential role of the C4SLs. Paragraph 47(h) of the IA states that:

> *"The new statutory guidance will bring about a situation where the current SGVs/GACs are replaced with more pragmatic (but still strongly precautionary) Category 4 screening levels (C4SLs) which will provide a higher simple test for deciding that land is suitable for use and definitely not contaminated land."*

A key distinction between the Soil Guideline Values (SGVs) and the C4SLs is the level of risk that they describe. As described by the Environment Agency (2009a):

> *"SGVs are guidelines on the level of long-term human exposure to individual chemicals in soil that, unless stated otherwise, are tolerable or pose a minimal risk to human health."*

The implication of Paragraph 47(h) of the IA is that minimal risk is well within Category 4 and that the C4SLs should describe a higher level of risk which, whilst not minimal, can still be considered low enough to allow a judgement to be made that land containing substances at, or below, the C4SLs would typically fall within Category 4. This reflects Paragraph 4.20 of the revised SG, which states:

> *"4.20 The local authority should not assume that land poses a significant possibility of significant harm if it considers that there is no risk or that the level of risk posed is low. For the purposes of this Guidance, such land is referred to as a "Category 4: Human Health" case. The authority may decide that the land is a Category 4: Human Health case as soon as it considers it has evidence to this effect, and this may happen at any stage during risk assessment including the early stages."*

C4SLs, therefore, should not be viewed as "SPOSH levels" and they should not be used as a legal trigger for the determination of land under Part 2A.

The generic screening values referred to before usually take the form of risk-based Soil Guideline Values (SGVs) or other Generic Assessment Criteria (GACs) that are most typically derived using the Environment Agency's Contaminated Land Exposure Assessment (CLEA) model, as described in the Environment Agency's SR2, SR3 and SR7 reports (EA, 2009b & c; EA, 2008). It is anticipated that C4SLs will be used in a similar manner; as generic screening criteria that can be used within a GQRA, albeit describing a higher level of risk than the SGVs.

The suggested approach to the development of C4SLs consists of the retention and use of the CLEA framework, modified according to considerations of the underlying science within the context of Defra's policy objectives relating to the revised SG. Within this context, it is suggested that the development of C4SLs may be achieved in one of three ways, namely:

- By modifying the toxicological parameters used within CLEA (while maintaining current exposure parameters);
- By modifying the exposure parameters embedded within CLEA (while maintaining current toxicological "minimal risk" interpretations); and
- By modifying both toxicological and exposure parameters.

There is also a suggested check on "other considerations" (e.g., background levels, epidemiological data, sources of uncertainty) within the approach, applicable to all three options.

It is suggested that a new term is defined for the toxicological guidance values associated with the derivation of C4SLs – a Low Level of Toxicological Concern (LLTC). A LLTC should represent an intake of low concern that remains suitably protective of health, and definitely does not approach an intake level that could be defined as SPOSH.

4. CL:AIRE Generic Assessment Criteria (GAC)

For derivation of the CL:AIRE Generic Assessment Criteria (GAC) reference should be made to the following report:

> CL:AIRE, *The Soil Generic Assessment Criteria for Human Health Risk Assessment.* **Contaminated Land: Applications in the Real Environment**. 2009.

Within this report, Contaminated Land: Applications in Real Environments (CL:AIRE) provided Generic Assessment Criteria (GAC) in accordance with the CLEA software and the principles outlined previously for a further 35 contaminants sometimes encountered on land affected by contamination.

5. SoBRA Acute GAC

The Society of Brownfield Risk Assessment (SoBRA) identified that most human health risk assessments focus on the chronic risks arising from long-term exposure to specific substances. As chronic risks often occur at lower doses than acute risks, they are often the key drivers, however, in some instances the acute dose may also be an important consideration within risk assessments.

The methodology for deriving the acute GAC were related to two distinct receptor groups:

- Members of the public, where the 'critical' receptor for this group will typically be a female child, which is consistent with CLEA residential and Public Open Space/allotments land-uses;
- Workers involved with excavations. The critical receptor for this group is assumed to be a female working adult, without the use of PPE.

The acute GACs relate to short term exposure of high concentrations of a substance that lead to acute effects. They are not considered to be average exposures across a specific / defined area. As a result, the GACs should be normally be compared with the maximum likely concentration that the individual may be exposed to, and not the average concentration within a specific area.

The SoBRA acute GAC will primarily be used for contaminants that do not currently have any GAC, most notably Cyanide.

6. Detailed Quantitative Risk Assessments (DQRA)

Where the adoption of a GAC is not appropriate, for instance when the intended land-use is at variance the CLEA standard land-uses, then a DQRA may be undertaken to develop site specific values for relevant soil contaminants.

- Establishing the plausibility that generic exposure pathways exist in practice by measurement and observation.
- Developing more accurate parameters using site data.

7. Phytotoxicity

CLEA guidance only addresses human health toxicity; assessment of plant toxicity (phytotoxicity) is based on threshold trigger values obtained from the following source:

- BS3882:2015 – *Specification for Topsoil*

The trigger values are relevant only to those contaminants, where present in excess, have the potential to inhibit plant growth, or kill plants (Cu, Ni and Zn). The criteria have been based on a wide range of planting that are common within a multi-purpose topsoil.

8. Statistical Tests

DEFRA R&D Publication CLR 7 (DOE 1994) addressed the statistical treatment of test results and their comparison to Soil Guideline Values.

Consideration must be given to the appropriate area of land to be considered termed the critical averaging area.

For a communal open space or commercial land-use, the critical averaging area will depend on the proposed layout. For a residential use with private gardens the averaging area is the individual plot.

It may be appropriate to compare the upper 95th percentile concentration with the Soil Guideline Value, subject to applying a statistical test to establish that the range of concentrations are reasonably consistent and belonging to the same underlying distribution of data.

CL:AIRE published guidance in 2020, *Guidance in comparing soil contamination data with a critical concentration,* superseding the CL:AIRE/CIEH 2008 report of the same name. The guidance provides ways to assist land contamination stakeholders to apply statistical methods to their data to enable decisions under the legislative framework; either planning system or Part 2A of the Environmental Protection Act 1990.

The use of the statistical tests should only be applied if the following statements are valid for the datasets:

- Averaging areas, as well as the smallest area of concern have been identified on the basis of the CSM, including the desk study and/or the site walkover;
- The sample locations were chosen using a simple random, stratified random or stratified systematic (square, herringbone or triangular grid) sampling pattern, rather than being targeted to locations suspected of being contaminated;
- The sample locations are relatively evenly spread across the area and are not clustered, to avoid giving undue weight to some parts of the site over others in the calculated statistics;
- The analyses do not suggest a hotspot or outlier of contamination that should be treated as a separate zone. This has been established by a histogram and/or a names statistical test;
- The sample locations are all taken from one population (i.e. the same material);
- Where an averaging zone encompasses several averaging areas, analyses do not show a spatial trend or other spatial pattern across that zone; and
- The number of samples has been shown to be sufficient for a statistical analysis.

Any included statistical spreadsheet is based on an in-house method of statistical analysis, in line with those outlined within the CL:AIRE guidance (2020).

Treatment of Hot-Spots

- A statistical test is applied to establish whether the data is a part of a single set, or whether data outliers are present.
- Provided that the data is based on random sampling and no distinct contamination source was present at the sampling location, the hot-spot(s) may be excluded and the mean of the remaining data assessed.

9. Ground and Water Limited Soil Assessment Criteria

The Soil Assessment Criteria used in the preparation of the Generic Quantitative Risk Assessment are tabulated in the following pages, where the source of each has been outlined in the previous sections.

9.1. Inorganics

SoBRA – Acute Generic Assessment Criteria						
Determinand	**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
Cyanide	24	24	24	1400	24	24

9.2. Metals

C4SL Low Level of Toxicological Concern						
Determinand	**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
Lead	< 200	< 310	< 80	< 2300	< 630	< 1300

LQM/CIEH Suitable 4 Use Levels – Metals and Semi-metals						
Determinand	**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
Arsenic	37	40	43	640	79	170
Beryllium	1.7	1.7	35	12	2.2	63
Boron	290	11000	45	240000	21000	46000
Cadmium	11	85	1.9	190	120	532
Chromium (III)	910	910	18000	8600	1500	33000
Chromium (VI)	6	6	1.8	33	7.7	220
Copper	2400	7100	520	68000	12000	44000
Elemental Mercury	1.2	1.2	21	58	16	30
Inorganic Mercury	40	56	19	1100	120	240
Methylmercury	11	15	6	320	40	68
Nickel	130	180	53	980	230	800
Selenium	250	430	88	12000	1100	1800
Vanadium	410	1200	91	9000	2000	5000
Zinc	3700	40000	620	730000	81000	170000

Phytotoxicity (Harmful to Plants) Threshold Trigger Values			
Determinand	**Soil pH < 6.0 (mg/kg)**	**Soil pH 6.0 – 7.0 (mg/kg)**	**Soil pH > 7.0 (mg/kg)**
Copper	100	135	200
Nickel	60	75	110
Zinc	200	200	300
Notes: BS3882:2015 – *Specification for Topsoil*. Based on a wide range of common plants that will be exposed to multi-purpose topsoil. Toxicity of contaminant may also be impacted by pH of soils. Site observation of plant vitality may give additional guidance.			

CL:AIRE Soil Generic Assessment Criteria				
Determinand	**Residential (mg/kg)**	**Residential without plant uptake (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**
Antimony	ND	550	ND	7500
Barium	ND	1300	ND	22000
Molybdenum	ND	670	ND	17000
ND – Not derived				

9.3. Total Petroleum Hydrocarbons (TPHs)

9.3.1. BTEX Compounds

LQM/CIEH Suitable 4 Use Levels – BTEX Compounds							
Determinand	**Soil Organic Matter**	**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
Benzene	1.0% SOM	0.087	0.38	0.017	27	72	90
	2.5% SOM	0.170	0.70	0.034	47	72	100
	6.0% SOM	0.370	1.40	0.075	90	73	110
Toluene	1.0% SOM	130	880	22	56000	56000	87000
	2.5% SOM	290	1900	51	110000	56000	95000
	6.0% SOM	660	3900	120	180000	56000	100000
Ethylbenzene	1.0% SOM	47	83	16	5700	24000	17000
	2.5% SOM	110	190	39	13000	24000	22000
	6.0% SOM	260	440	91	27000	25000	27000
o-Xylene	1.0% SOM	60	88	28	6600	41000	17000
	2.5% SOM	140	210	67	15000	42000	24000
	6.0% SOM	330	480	160	33000	43000	33000
m-Xylene	1.0% SOM	59	82	31	6200	41000	17000
	2.5% SOM	140	190	74	14000	42000	24000
	6.0% SOM	320	450	170	31000	43000	33000
p-Xylene	1.0% SOM	56	79	29	5900	41000	17000
	2.5% SOM	130	180	69	14000	42000	23000
	6.0% SOM	310	430	160	30000	43000	31000
SOM = Soil Organic Matter Content (%)							

9.3.2. Total Petroleum Hydrocarbons – Aliphatic

LQM/CIEH Suitable 4 Use Levels For TPH							
Aliphatic		**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
EC 5-6	1.0% SOM	42	42	730	3,200 (304) [sol]	570,000 (304) [sol]	95,000 (304) [sol]
	2.5% SOM	78	78	1,700	5,900 (558) [sol]	590,000	130,000 (558) [sol]
	6.0% SOM	160	160	3,900	12,000 (1150) [sol]	600,000 (1150)[sol]	180,000 (1150) [sol]
EC >6-8	1.0% SOM	100	100	2,300	7,800 (144) [sol]	600,000	150,000 (144) [sol]
	2.5% SOM	230	230	5,600	17,000 (322) [sol]	610,000	220,000 (322) [sol]
	6.0% SOM	530	530	13,000	40,000 (736) [sol]	620,000	320,000 (736) [sol]
EC >8-10	1.0% SOM	27	27	320	2,000 (78) [sol]	13,000	14,000 (78) [sol]
	2.5% SOM	65	65	770	4,800 (118) [vap]	13,000	18,000 (118) [vap]
	6.0% SOM	150	150	1,700	11,000 (451) [vap]	13,000	21,000 (451) [vap]
EC >10-12	1.0% SOM	130 (48) [vap]	130 (48) [vap]	2,200	9,700 (48) [sol]	13,000	21,000 (48) [sol]
	2.5% SOM	330 (118) [vap]	330 (118) [vap]	4,400	23,000 (118) [vap]	13,000	23,000 (118) [vap]
	6.0% SOM	760 (283) [vap]	760 (283) [vap]	7,300	47,000 (283) [vap]	13,000	24,000 (283) [vap]
EC >12-16	1.0% SOM	1,100 (24) [sol]	1,100 (24) [sol]	11,000	59,000 (24) [sol]	13,000	25,000 (24) [sol]
	2.5% SOM	2,400 (59) [sol]	2,400 (59) [sol]	13,000	82,000 (59) [sol]	13,000	25,000 (59) [sol]
	6.0% SOM	4,300 (142) [sol]	4,400 (142) [sol]	13,000	90,000 (142) [sol]	13,000	26,000 (142) [sol]
EC >16-35	1.0% SOM	65,000 (8.48) [sol]	65,000 (8.48) [sol]	260,000	1,600,000	250,000	450,000
	2.5% SOM	92,000 (21) [sol]	92,000 (21) [sol]	270,000	1,700,000	250,000	480,000
	6.0% SOM	110,000	110,000	270,000	1,800,000	250,000	490,000
EC >35-44	1.0% SOM	65,000 (8.48) [sol]	65,000 (8.48) [sol]	260,000	1,600,000	250,000	450,000
	2.5% SOM	92,000 (21) [sol]	92,000 (21) [sol]	270,000	1,700,000	250,000	480,000
	6.0% SOM	110,000	110,000	270,000	1,800,000	250,000	490,000

SOM = Soil Organic Matter Content (%)

[vap] – GAC presented exceeds the vapour saturation limit, which is presented in brackets.

[sol] – GAC presented exceeds the soil saturation limit, which is presented in brackets.

9.3.3. Total Petroleum Hydrocarbons – Aromatic

LQM/CIEH Suitable 4 Use Levels For TPH							
Aromatic		**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
EC 5-7 (Benzene)	1.0% SOM	70	370	13	26,000 (1220) [sol]	56,000	76,000 (1220 [sol]
	2.5% SOM	140	690	27	46,000 (2260) [sol]	56,000	84,000 (2260) [sol]
	6.0% SOM	300	1,400	57	86,000 (4710) [sol]	56,000	92,000 (4710) [sol]
EC >7-8 (Toluene)	1.0% SOM	130	860	22	56,000 (869) [vap]	56,000	87,000 (869) [sol]
	2.5% SOM	290	1,800	51	110,000 (1920) [sol]	56,000	95,000 (1920) [sol]
	6.0% SOM	660	3,900	120	180,000 (4360) [vap]	56,000	100,000 (4360) [vap]
EC >8-10	1.0% SOM	34	47	8.6	3,500 (613) [vap]	5,000	7,200 (613) [vap]
	2.5% SOM	83	110	21	8,100 (1500) [vap]	5,000	8,500 (1500) [vap]
	6.0% SOM	190	270	51	17,000 (3850) [vap]	5,000	9,300 (3580) [vap]
EC >10-12	1.0% SOM	74	250	13	16,000 (364) [sol]	5,000	9,200 (364) [sol]
	2.5% SOM	180	590	31	28,000 (899) [sol]	5,000	9,700 (889) [sol]
	6.0% SOM	380	1,200	74	34,000 (2150) [sol]	5,000	10,000
EC >12-16	1.0% SOM	140	1,800	23	36,000 (169) [sol]	5,100	10,000
	2.5% SOM	330	2,300 (419) [sol]	57	37,000	5,100	10,000
	6.0% SOM	660	2,500	130	38,000	5,000	10,000
EC >16-21	1.0% SOM	260	1,900	46	28,000	3,800	7,600
	2.5% SOM	540	1,900	110	28,000	3,800	7,700
	6.0% SOM	930	1,900	260	28,000	3,800	7,800
EC >21-35	1.0% SOM	1,100	1,900	370	28,000	3,800	7,800
	2.5% SOM	1,500	1,900	820	28,000	3,800	7,800
	6.0% SOM	1,700	1,900	1,600	28,000	3,800	7,900
EC >35-44	1.0% SOM	1,100	1,900	370	28,000	3,800	7,800
	2.5% SOM	1,500	1,900	820	28,000	3,800	7,800
	6.0% SOM	1,700	1,900	1,600	28,000	3,800	7,900
EC >44-70	1.0% SOM	1,600	1,900	1,200	28,000	3,800	7,800
	2.5% SOM	1,800	1,900	2,100	28,000	3,800	7,800
	6.0% SOM	1,900	1,900	3,000	28,000	3,800	7,900

SOM = Soil Organic Matter Content (%)

[vap] – GAC presented exceeds the vapour saturation limit, which is presented in brackets.

[sol] – GAC presented exceeds the soil saturation limit, which is presented in brackets.

9.4. Polycyclic Aromatic Hydrocarbons (PAHs)

LQM/CIEH Suitable 4 Use Levels For Polycyclic Aromatic Hydrocarbons (PAHs)							
Determinands		**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
Acenapthene	1.0% SOM	210	3,000 (57.0) [sol]	34	84,000(57.0) [sol]	15,000	29,000
	2.5% SOM	510	4,700(141) [sol]	85	97,000(141) [sol]	15,000	30,000
	6.0% SOM	1100	6,000(336) [sol]	200	100,000	15,000	30,000
Acenapthylene	1.0% SOM	170	2,900(86.1) [sol]	28	83,000(86.1) [sol]	15,000	29,000
	2.5% SOM	420	4,600(212) [sol]	69	97,000(212) [sol]	15,000	30,000
	6.0% SOM	920	6,000(506) [sol]	160	100,000	15,000	30,000
Anthracene	1.0% SOM	2,400	31,000(1.17) [vap]	380	520,000	74,000	150,000
	2.5% SOM	5,400	35,000	950	540,000	74,000	150,000
	6.0% SOM	11,000	37,000	2,200	540,000	74,000	150,000
Benzo(a)anthracene	1.0% SOM	7.20	11	2.90	170	29	49
	2.5% SOM	11	14	6.50	170	29	56
	6.0% SOM	13	15	13	180	29	62
Benzo(a)pyrene	1.0% SOM	2.20	3.20	0.97	35	5.70	11
	2.5% SOM	2.70	3.20	2.00	35	5.70	12
	6.0% SOM	3.00	3.20	3.50	36	5.70	13
Benzo(b)flouranthene	1.0% SOM	2.60	3.90	0.99	44	7.10	13
	2.5% SOM	3.30	4.00	2.10	44	7.20	15
	6.0% SOM	3.70	4.00	3.90	45	7.20	16
Benzo(ghi)perylene	1.0% SOM	320	360	290	3,900	640	1,400
	2.5% SOM	340	360	470	4,000	640	1,500
	6.0% SOM	350	360	640	4,000	640	1,600
Benzo(k)flouranthene	1.0% SOM	77	110	37	1,200	190	370
	2.5% SOM	93	110	75	1,200	190	410
	6.0% SOM	100	110	130	1,200	190	440
Chrysene	1.0% SOM	15	30	4.10	350	57	93
	2.5% SOM	22	31	9.40	350	57	110
	6.0% SOM	27	32	19	350	57	120
Dibenzo(ah)anthracene	1.0% SOM	0.24	0.31	0.14	3.50	0.57	1.10
	2.5% SOM	0.28	0.32	0.27	3.50	0.57	1.30
	6.0% SOM	0.30	0.32	0.43	3.60	0.58	1.40
Flouranthene	1.0% SOM	280	1,500	52	23,000	3,100	6,300
	2.5% SOM	560	1,600	130	23,000	3,100	6,300
	6.0% SOM	890	1,600	290	23,000	3,100	6,300
Flourene	1.0% SOM	170	2,800 (30.9) [sol]	27	63,000(30.9) [sol]	9,900	20,000
	2.5% SOM	400	3,800(76.5) [sol]	67	68,000	9,900	20,000
	6.0% SOM	860	4,500(183) [sol]	160	71,000	9,900	20,000
Indeno(123-cd)pyrene	1.0% SOM	27	45	9.50	500	82	150
	2.5% SOM	36	46	21	510	82	170
	6.0% SOM	41	46	39	510	82	180
Napthalene	1.0% SOM	15	36	65	1,600	11,000	800
	2.5% SOM	36	36	130	3,700	15,000	1,200
	6.0% SOM	85	85	200	8,400	17,000	1,900
Phenanthrene	1.0% SOM	95	1,300(183) [sol]	15	22,000	3,100	6,200
	2.5% SOM	220	1,500	38	22,000	3,100	6,200
	6.0% SOM	440	1,500	90	23,000	3,100	6,300
Pyrene	1.0% SOM	620	3,700	110	54,000	7,400	15,000
	2.5% SOM	1200	3,800	270	54,000	7,400	15,000
	6.0% SOM	2000	3,800	620	54,000	7,400	15,000
Coal Tar (Benzo(a)pyrene used as marker compound)	1.0% SOM	0.79	1.2	0.32	15	2.20	4.40
	2.5% SOM	0.98	1.2	0.67	15	2.20	4.70
	6.0% SOM	1.10	1.2	1.20	15	2.20	4.80

SOM = Soil Organic Matter Content (%)

[vap] – GAC presented exceeds the vapour saturation limit, which is presented in brackets.

[sol] – GAC presented exceeds the soil saturation limit, which is presented in brackets.

9.5. Volatile and Semi-volatile Organic Compounds

LQM CIEH General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds							
Determinands		**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
Chloroalkanes & alkenes							
1,2 Dichloroethane	1.0% SOM	0.0071	0.0092	0.0046	0.67	29	21
	2.5% SOM	0.011	0.013	0.0083	0.97	29	24
	6.0% SOM	0.019	0.023	0.016	1.70	29	28
1,1,2,2 Tetrachloroethane	1.0% SOM	1.60	3.90	0.41	270	1,400	1,800
	2.5% SOM	3.40	8.00	0.89	550	1,400	2,100
	6.0% SOM	7.50	17	2.00	1,100	1,400	2,300
1,1,1,2 Tetrachloroethane	1.0% SOM	1.20	1.50	0.79	110	1,400	1,500
	2.5% SOM	2.80	3.50	1.90	250	1,400	1,800
	6.0% SOM	6.40	8.20	4.40	560	1,400	2,100
Tetrachloroethene	1.0% SOM	0.18	0.18	0.65	19	1,400	810 [sol](424)
	2.5% SOM	0.39	0.40	1.50	42	1,400	1,100 [sol](951)
	6.0% SOM	0.90	0.92	3.60	95	1,400	1,500
1,1,1 Trichloroethane	1.0% SOM	8.80	9.00	48	660	140,000	57,000 [vap](1425)
	2.5% SOM	18	18	110	1,300	140,000	76,000 [vap](2915)
	6.0% SOM	39	40	240	3,000	140,000	100,000 [vap] (6392)
Tetrachloromethene	1.0% SOM	0.026	0.026	0.45	2.90	890	190
	2.5% SOM	0.056	0.056	1.00	6.30	920	270
	6.0% SOM	0.130	0.130	2.40	14	950	400
Trichloroethene	1.0% SOM	0.016	0.017	0.041	1.20	120	70
	2.5% SOM	0.034	0.036	0.091	2.60	120	91
	6.0% SOM	0.075	0.080	0.210	5.70	120	120
Trichloromethane	1.0% SOM	0.91	1.20	0.42	99	2,500	2,600
	2.5% SOM	1.70	2.10	0.83	170	2,500	2,800
	6.0% SOM	3.40	4.20	1.70	350	2,500	3,100
Vinyl Chloride	1.0% SOM	0.00064	0.00077	0.00055	0.059	3.50	4.80
	2.5% SOM	0.00087	0.00100	0.00100	0.077	3.50	5.00
	6.0% SOM	0.00014	0.00150	0.00180	0.120	3.50	5.40
Explosives							
2,4,6 Trinitrotoluene	1.0% SOM	1.60	65	0.24	1,000	130	260
	2.5% SOM	3.70	66	0.58	1,000	130	270
	6.0% SOM	8.10	66	1.40	1,000	130	270
RDX (Hexogen/Cyclonite/1,3,5-trinitro-1,3,5-triazacyclohexane)	1.0% SOM	120	13,000	17	210,000	26,000	49,000(18.7)[sol]
	2.5% SOM	250	13,000	38	210,000	26,000	51,000
	6.0% SOM	540	13,000	85	210,000	27,000	53,000
HMX (Octogen/1,3,5,7-tetrenitro-1,3,5,7-tetrazacyclo-octane)	1.0% SOM	5.70	67,00	0.86	110,000	13,000	23,000(0.35)[vap]
	2.5% SOM	13	67,00	1.90	110,000	13,000	23,000(0.39)[vap]
	6.0% SOM	26	67,00	3.90	110,000	13,000	24,000(0.48)[vap]
Atrazine	1.0% SOM	3.30	610	0.50	9,300	1,200	2,300
	2.5% SOM	7.60	620	1.20	9,400	1,200	2,400
	6.0% SOM	17.40	620	2.70	9,400	1,200	2,400

[vap] – GAC presented exceeds the vapour saturation limit, which is presented in brackets.
[sol] – GAC presented exceeds the soil saturation limit, which is presented in brackets.

VOC and SVOC table continued overleaf

VOC and SVOC table continued from previous page

LQM CIEH General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds							
Determinands		**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
Pesticides							
Aldrin	1.0% SOM	5.70	7.30	3.20	170	18	30
	2.5% SOM	6.60	7.40	6.10	170	18	31
	6.0% SOM	7.10	7.50	9.60	170	18	31
Dieldrin	1.0% SOM	0.97	7.00	0.17	170	18	30
	2.5% SOM	2.00	7.30	0.41	170	18	30
	6.0% SOM	3.50	7.40	0.96	170	18	31
Dichlorvos	1.0% SOM	0.032	6.40	0.0049	140	16	26
	2.5% SOM	0.066	6.50	0.0100	140	16	26
	6.0% SOM	0.140	6.60	0.0220	140	16	27
Alpha - Endosulfan	1.0% SOM	7.40	160(0.003)[vap]	1.20	5,600(0.003)[vap]	1,200	2,400
	2.5% SOM	18	280(0.007)[vap]	2.90	7,400(0.007)[vap]	1,200	2,400
	6.0% SOM	41	410(0.016)[vap]	6.80	8,400(0.016)[vap]	1,200	2,400
Beta - Endosulfan	1.0% SOM	7.00	190(0.00007)[vap]	1.10	6,300(0.00007)[vap]	1,200	2,400
	2.5% SOM	17	320(0.0002)[vap]	2.70	7,800(0.0002)[vap]	1,200	2,400
	6.0% SOM	39	440(0.0004)[vap]	6.40	8700	1,200	2,500
Alpha - Hexachlorocyclohexanes	1.0% SOM	0.23	6.90	0.035	170	24	47
	2.5% SOM	0.55	9.20	0.087	180	24	48
	6.0% SOM	1.20	11	0.210	180	24	48
Beta - Hexachlorocyclohexanes	1.0% SOM	0.085	3.70	0.013	65	8.10	15
	2.5% SOM	0.200	3.80	0.032	65	8.10	15
	6.0% SOM	0.460	3.80	0.077	65	8.10	16
Gamma - Hexachlorocyclohexanes	1.0% SOM	0.06	2.90	0.0092	67	8.2	14
	2.5% SOM	0.14	3.30	0.0230	69	8.2	15
	6.0% SOM	0.33	3.50	0.0540	70	8.2	15
Chlorobenzenes							
Chlorobenzene	1.0% SOM	0.46	0.46	5.90	56	11,000	1,300(675)[sol]
	2.5% SOM	1.00	1.00	14	130	13,000	2,000(1520)[sol]
	6.0% SOM	2.40	2.40	32	290	14,000	2,900
1,2-Dichlorobenzene	1.0% SOM	23	24	94	2,000 (571) [sol]	90,000	24,000(571)[sol]
	2.5% SOM	55	57	230	4,800 (1370) [sol]	95,000	36,000(1370)[sol]
	6.0% SOM	130	130	540	11,000 (3240) [sol]	98,000	51,000(3240)[sol]
1,3-Dichlorobenzene	1.0% SOM	0.40	0.44	0.25	30	300	390
	2.5% SOM	1.00	1.10	0.60	73	300	440
	6.0% SOM	2.30	2.50	1.50	170	300	470
1,4-Dichlorobenzene	1.0% SOM	61	61	15	4,400 (224)[vap]	17,000[g]	36,000 (224)[vap]
	2.5% SOM	150	150	37	10,000 (540)[vap]	17,000[g]	36,000 (540)[vap]
	6.0% SOM	350	350	88[g]	25,000 (1280)[vap]	17,000[g]	36,000 (1280)[vap]
1,2,3,-Trichlorobenzene	1.0% SOM	1.50	1.50	4.70	102	1,800	770(134[vap]
	2.5% SOM	3.60	3.70	12	250	1,800	1,100(330)[vap]
	6.0% SOM	8.60	8.80	28	590	1,800	1,600(789)[vap]
1,2,4,-Trichlorobenzene	1.0% SOM	2.60	2.60	55	220	15,000	1,700(318)[vap]
	2.5% SOM	6.40	6.40	140	530	17,000	2,600(786)[vap]
	6.0% SOM	15	15	320	1,300	19,000	4,000(1880)[vap]
1,3,5,-Trichlorobenzene	1.0% SOM	0.33	0.33	4.70	23	1,700	380(36.7)[vap]
	2.5% SOM	0.81	0.81	12	55	1,700	590(90.8)[vap]
	6.0% SOM	1.90	1.90	140	130	1,800	860(217)[vap]

[vap] – GAC presented exceeds the vapour saturation limit, which is presented in brackets.
[sol] – GAC presented exceeds the soil saturation limit, which is presented in brackets.

VOC and SVOC table continued overleaf

VOC and SVOC table continued from previous page

LQM CIEH General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds							
Determinands		**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**	**POSresi (mg/kg)**	**POSpark (mg/kg)**
Chlorobenzenes (cont.)							
1,2,3,4,- Tetrachlorobenzene	1.0% SOM	15	24	4.40	1,700(122)[vap]	830	1,500(122)[vap]
	2.5% SOM	36	56	11	3,080(304)[vap]	830	1,600
	6.0% SOM	78	120	26	4,400(728)[vap]	830	1,600
1,2,3,5,- Tetrachlobenzene	1.0% SOM	0.66	0.75	0.38	49(39.4)[vap]	78	110(39)[vap]
	2.5% SOM	1.60	1.90	0.90	120(98.1)[vap]	79	120
	6.0% SOM	3.70	4.30	2.20	240(235)[vap]	79	130
1,2,4, 5,- Tetrachlobenzene	1.0% SOM	0.33	0.73	0.06	42(19.7)[sol]	13	25
	2.5% SOM	0.77	1.70	0.16	72(49.1)[sol]	13	26
	6.0% SOM	1.60	3.50	0.37	96	13	26
Pentachlrobenzene	1.0% SOM	5.80	19	1.20	640(43.0)[sol]	100	190
	2.5% SOM	12	30	3.10	770(107)[sol]	100	190
	6.0% SOM	22	38	7.00	830	100	190
Hexachlorobenzene	1.0% SOM	1.80(0.20)[vap]	4.10 (0.20)[vap]	0.47	110(0.20)[vap]	16	30
	2.5% SOM	3.30(0.50)[vap]	5.70 (0.50)[vap]	1.10	120	16	30
	6.0% SOM	4.90	6.70 (1.2)[vap]	2.50	120	16	30
Phenols & Chlorophenols							
BTEX	1.0% SOM	280	750	66	760[dir](31,000)	760[dir](11,000)	760[dir](8,600)
	2.5% SOM	550	1,300	140	1,500[dir](35,000)	1,500[dir](11,000)	1,500[dir](9,700)
	6.0% SOM	1100	2,300	280	3,200[dir](37,000)	3,200[dir](11,000)	3,200[dir](11,000)
Chlorophenols (4 Congeners)	1.0% SOM	0.87	94	0.13	3,500	620	1,100
	2.5% SOM	2.00	150	0.30	4,000	620	1,100
	6.0% SOM	4.50	210	0.70	4,300	620	1,100
Pentachlorophenols	1.0% SOM	0.22	27(16.4)[vap]	0.03	400	60	110
	2.5% SOM	0.52	29	0.08	400	60	120
	6.0% SOM	1.20	31	0.19	400	60	120
Others							
Carbon Disulphide	1.0% SOM	0.14	0.14	4.80	11	11,000	1,300
	2.5% SOM	0.29	0.29	10	22	11,000	1,900
	6.0% SOM	0.62	0.62	23	47	12,000	2,700
Hexachloro-1,3-Butadiene	1.0% SOM	0.29	0.32	0.25	31	25	48
	2.5% SOM	0.70	0.78	0.61	68	25	50
	6.0% SOM	1.60	1.80	1.40	120	25	51

[vap] – GAC presented exceeds the vapour saturation limit, which is presented in brackets.
[sol] – GAC presented exceeds the soil saturation limit, which is presented in brackets.

VOC and SVOC table continued overleaf

VOC and SVOC table continued from previous page

CL:AIRE General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds					
Determinands		**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**
1,1,2 Trichloroethane	1.0% SOM	0.60	0.88	0.28	94
	2.5% SOM	1.20	1.8	0.61	190
	6.0% SOM	2.70	3.9	1.40	400
1,1-Dichloroethane	1.0% SOM	2.40	2.50	9.20	280
	2.5% SOM	3.90	4.10	17	450
	6.0% SOM	7.40	7.70	35	850
1,1-Dichloroethene	1.0% SOM	0.23	0.23	2.80	26
	2.5% SOM	0.40	0.41	5.60	46
	6.0% SOM	0.82	0.82	12	92
1,2,4-Trimethylbenzene	1.0% SOM	0.35	0.41	0.38	42
	2.5% SOM	0.85	0.99	0.93	99
	6.0% SOM	2.00	2.30	2.20	220
1,2-Dichloropropane	1.0% SOM	0.024	0.024	0.62	3.3
	2.5% SOM	0.042	0.042	1.20	5.9
	6.0% SOM	0.084	0.085	2.60	12
2,4-Dimethylphenol	1.0% SOM	19	210	3.10	16000*
	2.5% SOM	43	410	7.20	24000*
	6.0% SOM	97	730	17	30000*
2,4-Dinitrotoluene	1.0% SOM	1.50	170*	0.22	3700*
	2.5% SOM	3.20	170	0.49	3700*
	6.0% SOM	7.20	170	1.10	3800*
2,6-Dinitrotoluene	1.0% SOM	0.78	78	0.12	1900*
	2.5% SOM	1.70	84	0.27	1900*
	6.0% SOM	3.90	87	0.61	1900*
2-Chloronapthalene	1.0% SOM	3.70	3.80	40	390*
	2.5% SOM	9.20	9.30	98	960*
	6.0% SOM	22	22	230	2200*
Biphenyl	1.0% SOM	66*	220*	14	18000*
	2.5% SOM	160	500*	35	33000*
	6.0% SOM	360	980*	83	48000*
Bis (2-ethylhexyl) phthalate	1.0% SOM	280*	2700*	47*	85000*
	2.5% SOM	610*	2800*	120*	86000*
	6.0% SOM	1100*	2800*	280*	86000*
Bromobenzene	1.0% SOM	0.87	0.91	3.2	97
	2.5% SOM	2.0	2.1	7.6	220
	6.0% SOM	4.7	4.9	18	520
Bromodichloromethane	1.0% SOM	0.016	0.019	0.016	2.1
	2.5% SOM	0.030	0.034	0.032	3.7
	6.0% SOM	0.061	0.070	0.068	7.6
Bromoform	1.0% SOM	2.8	5.2	0.95	760
	2.5% SOM	5.9	11	2.1	1500
	6.0% SOM	13	23	4.6	3100
Butyl benzyl phthalate	1.0% SOM	1400*	42000*	220*	940000*
	2.5% SOM	3300*	44000*	550*	940000*
	6.0% SOM	7200*	44000*	1300*	950000*

*soil concentration above saturation limit

VOC and SVOC table continued overleaf

VOC and SVOC table continued from previous page

CL:AIRE General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds					
Determinands		**RwHP (mg/kg)**	**RwoHP (mg/kg)**	**Allotment (mg/kg)**	**Commercial (mg/kg)**
Chloroethane	1.0% SOM	8.3	8.4	110	960
	2.5% SOM	11	11	200	1300
	6.0% SOM	18	18	380	2100
Chloromethane	1.0% SOM	0.0083	0.0085	0.066	1.0
	2.5% SOM	0.0098	0.0099	0.13	1.2
	6.0% SOM	0.013	0.013	0.23	1.6
***Cis* 1,2 Dichloroethene**	1.0% SOM	0.11	0.12	0.26	14
	2.5% SOM	0.19	0.20	0.50	24
	6.0% SOM	0.37	0.39	1.0	47
Dichloromethane	1.0% SOM	0.58	2.10	0.10	270
	2.5% SOM	0.98	2.80	0.19	360
	6.0% SOM	1.70	4.50	0.34	560
Diethyl Phthalate	1.0% SOM	120*	1800*	19*	150000*
	2.5% SOM	260*	3500*	41*	220000*
	6.0% SOM	570*	6300*	94*	290000*
Di-*n*-butyl phthalate	1.0% SOM	13*	450*	2.00	15000*
	2.5% SOM	31*	450*	5.00	15000*
	6.0% SOM	67*	450*	12	15000*
Di-*n*-octyl phthalate	1.0% SOM	2300*	3400*	940*	89000*
	2.5% SOM	2800*	3400*	2100*	89000*
	6.0% SOM	3100*	3400*	3900*	89000*
Hexachloroethane	1.0% SOM	0.20	0.22	0.27	22*
	2.5% SOM	0.48	0.54	0.67	53*
	6.0% SOM	1.10	1.30	1.60	120*
Isopropylbenzene	1.0% SOM	11	12	32	1400*
	2.5% SOM	27	28	79	3300*
	6.0% SOM	64	67	190	7700*
Methyl *tert*-butyl ether (MTBE)	1.0% SOM	49	73	23	7900
	2.5% SOM	84	120	44	13000
	6.0% SOM	160	220	90	24000
Propylbenzene	1.0% SOM	34	40	34	4100*
	2.5% SOM	82	97	83	9700*
	6.0% SOM	190	230	200	21000*
Styrene	1.0% SOM	8.10	35	1.60	3300*
	2.5% SOM	19	78	3.70	6500*
	6.0% SOM	43	170	8.70	11000*
Total Cresols (2-, 3-, and 4-methylphenol)	1.0% SOM	80	3700	12	160000
	2.5% SOM	180	5400	27	180000*
	6.0% SOM	400	6900	63	180000*
***Trans* 1,2 Dichloroethene**	1.0% SOM	0.19	0.19	0.93	22
	2.5% SOM	0.34	0.35	1.90	40
	6.0% SOM	0.70	0.71	0.24	81
Tributyl tin oxide	1.0% SOM	0.25	1.40	0.042	130*
	2.5% SOM	0.59	3.10	0.100	180*
	6.0% SOM	1.30	5.70	0.240	200*

*soil concentration above saturation limit

C4SL Low Level of Toxicological Concern							
Determinands		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
1,2-Dichloroethane (Ethylene Dichloride)	1.0% SOM	0.11	0.16	0.054	12	300	300
	2.5% SOM	0.18	0.24	0.10	17	310	330
	6.0% SOM	0.31	0.41	0.19	29	310	380
Cis-1,2-Dichloroethene	1.0% SOM	0.46	0.50	0.89	38	3,800	2,000
	2.5% SOM	0.78	0.84	1.7	64	3,800	2,400
	6.0% SOM	1.5	1.6	3.6	120	3,900	3,100
Tetrachloroethene (PCE)	1.0% SOM	0.31	0.32	2	24	3,200	1,400
	2.5% SOM	0.70	0.71	4.8	55	3,300	1,900
	6.0% SOM	1.60	1.60	11	130	3,400	2,500
Trans-1,2-Dichloroethene	1.0% SOM	0.90	0.93	3.70	69	13,000	5,600
	2.5% SOM	1.60	1.70	7.50	120	13,000	7,000
	6.0% SOM	3.30	3.40	16	260	13,000	9,100
Trichloroethene (TCE)	1.0% SOM	0.0093	0.0097	0.032	0.73	76	41
	2.5% SOM	0.020	0.020	0.072	1.5	78	54
	6.0% SOM	0.043	0.045	0.16	3.4	79	69
Vinyl Chloride (Chloroethene)	1.0% SOM	0.0064	0.015	0.0017	1.1	7.8	18
	2.5% SOM	0.010	0.019	0.0031	1.4	7.8	19
	6.0% SOM	0.017	0.029	0.0058	2.2	7.8	19

9.6. Asbestos

No asbestos or asbestos containing materials (ACM's) are considered acceptable on-site from a human health perspective. Therefore the GAC for asbestos & ACM's within any imported material should be none detected (ND).

APPENDIX I: Waste Hazard Assessment

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

8S3MM-9XH1I-QFJLM

Job name

Land adj. to Church Lane Climping West Sussex BN17 5GG

Description/Comments

Project

GWPR5921 Land adj. to Church Lane Climping West Sussex BN17 5GG

Site

Land adj. to Church Lane Climping West Sussex BN17 5GG

Classified by

Name:
Alex Stratford
Date:
26 Apr 2024 13:57 GMT
Telephone:

Company:
Ground and Water
2 The Long Barn, Norton Farm, Selborne Road
Alton
GU34 3NB

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:	-
Course	**Date**
Hazardous Waste Classification	-

Purpose of classification

2 - Material Characterisation

Address of the waste

Land adj. to Church Lane Climping West Sussex **Post Code** BN17 5GG

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

Construction of Residential Housing development

Description of the specific process, sub-process and/or activity that created the waste

Waste created during construction and excavations

Description of the waste

Topsoil and River Terrace Deposits

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	CBR2--21032024-0.20		Non Hazardous		3
2	CBR4--19032024-0.50		Non Hazardous		5
3	CBR9--21032024-0.20		Non Hazardous		8
4	CBR14--21032024-0.50		Non Hazardous		11
5	CBR23--20032024-0.20		Non Hazardous		13

Related documents

#	Name	Description
1	24-011076_HWOL.hwol	i2 Analytical .hwol file used to populate the Job

Report

Created by: Alex Stratford

Created date: 26 Apr 2024 13:57 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	15
Appendix B: Rationale for selection of metal species	16
Appendix C: Version	17

Classification of sample: CBR2--21032024-0.20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CBR2--21032024-0.20
Moisture content:
16%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		7.9	pH		7.9	pH	7.9 pH		
2	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
3	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
4	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		11	mg/kg		9.24	mg/kg	0.000924 %	✓	
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16	mg/kg	1.126	15.132	mg/kg	0.00151 %	✓	
7	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		14	mg/kg	1.579	18.575	mg/kg	0.00186 %	✓	
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	21	mg/kg		17.64	mg/kg	0.00176 %	✓	
10	selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
11	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		35	mg/kg	1.785	52.484	mg/kg	0.00525 %	✓	
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		61	mg/kg	2.469	126.527	mg/kg	0.0127 %	✓	
13	fluoranthene		205-912-4	206-44-0		0.28	mg/kg		0.235	mg/kg	0.0000235 %	✓	
14	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
15	indeno[123-cd]pyrene		205-893-2	193-39-5		0.13	mg/kg		0.109	mg/kg	0.0000109 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
17		phenanthrene				0.09	mg/kg		0.0756	mg/kg	0.00000756 %	✓	
			201-581-5	85-01-8									
18		pyrene				0.27	mg/kg		0.227	mg/kg	0.0000227 %	✓	
			204-927-3	129-00-0									
19		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
20		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
21		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
22		benzo[a]anthracene				0.12	mg/kg		0.101	mg/kg	0.0000101 %	✓	
		601-033-00-9	200-280-6	56-55-3									
23		benzo[a]pyrene; benzo[def]chrysene				0.16	mg/kg		0.134	mg/kg	0.0000134 %	✓	
		601-032-00-3	200-028-5	50-32-8									
24		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
25		benzo[b]fluoranthene				0.17	mg/kg		0.143	mg/kg	0.0000143 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.1	mg/kg		0.084	mg/kg	0.0000084 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[ghi]perylene				0.13	mg/kg		0.109	mg/kg	0.0000109 %	✓	
			205-883-8	191-24-2									
28		chrysene				0.16	mg/kg		0.134	mg/kg	0.0000134 %	✓	
		601-048-00-0	205-923-4	218-01-9									
29		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
30		boron { boron tribromide }				0.3	mg/kg	23.173	5.84	mg/kg	0.000584 %	✓	
		005-003-00-0	233-657-9	10294-33-4									
31		chromium in chromium(III) compounds { chromium(III) oxide }				21	mg/kg	1.462	30.693	mg/kg	0.00307 %		
			215-160-9	1308-38-9									
										Total:	0.0286 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CBR4--19032024-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CBR4--19032024-0.50
Moisture content:
17%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		7.8	pH		7.8	pH	7.8 pH		
2	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
3	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
4	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		15	mg/kg		12.45	mg/kg	0.00125 %	✓	
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14	mg/kg	1.126	13.083	mg/kg	0.00131 %	✓	
7	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		23	mg/kg	1.579	30.153	mg/kg	0.00302 %	✓	
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	14	mg/kg		11.62	mg/kg	0.00116 %	✓	
10	selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
11	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		48	mg/kg	1.785	71.122	mg/kg	0.00711 %	✓	
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		52	mg/kg	2.469	106.575	mg/kg	0.0107 %	✓	
13	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
14	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
15	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
17		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
18		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
19		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
21		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
22		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
23		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
24		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
25		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
26		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
27		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
28		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
29		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
30		boron { boron tribromide }	005-003-00-0	233-657-9	10294-33-4		0.6	mg/kg	23.173	11.54	mg/kg	0.00115 %	✓	
31		benzene	601-020-00-8	200-753-7	71-43-2		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
32		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
34		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
36		toluene	601-021-00-3	203-625-9	108-88-3		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
37		TPH (C6 to C40) petroleum group			TPH		<40	mg/kg		<40	mg/kg	<0.004 %		<LOD
38		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		33	mg/kg	1.462	48.231	mg/kg	0.00482 %		
											Total:	0.0353 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CBR9--21032024-0.20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CBR9--21032024-0.20
Moisture content:
16%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		7.9	pH		7.9	pH	7.9 pH		
2	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
3	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		12	mg/kg		10.08	mg/kg	0.00101 %	✓	
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11	mg/kg	1.126	10.403	mg/kg	0.00104 %	✓	
7	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		20	mg/kg	1.579	26.536	mg/kg	0.00265 %	✓	
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	10	mg/kg		8.4	mg/kg	0.00084 %	✓	
10	selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
11	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		42	mg/kg	1.785	62.981	mg/kg	0.0063 %	✓	
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		41	mg/kg	2.469	85.043	mg/kg	0.0085 %	✓	
13	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
14	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
15	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
17		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
18		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
19		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
21		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
22		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
23		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
24		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
25		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
26		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
27		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
28		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
29		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
30		boron { boron tribromide }	005-003-00-0	233-657-9	10294-33-4		<0.2	mg/kg	23.173	<4.635	mg/kg	<0.000463 %		<LOD
31		benzene	601-020-00-8	200-753-7	71-43-2		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
32		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
34		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
36		toluene	601-021-00-3	203-625-9	108-88-3		<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
37		TPH (C6 to C40) petroleum group			TPH		<40	mg/kg		<40	mg/kg	<0.004 %		<LOD
38		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26	mg/kg	1.462	38	mg/kg	0.0038 %		
											Total:	0.0295 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CBR14--21032024-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CBR14--21032024-0.50
Moisture content:
15%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		7.5	pH		7.5	pH	7.5 pH		
2	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
3	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
4	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		9.7	mg/kg		8.245	mg/kg	0.000824 %	✓	
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8	mg/kg	1.126	7.656	mg/kg	0.000766 %	✓	
7	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		13	mg/kg	1.579	17.453	mg/kg	0.00175 %	✓	
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	12	mg/kg		10.2	mg/kg	0.00102 %	✓	
10	selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
11	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		33	mg/kg	1.785	50.074	mg/kg	0.00501 %	✓	
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		37	mg/kg	2.469	77.659	mg/kg	0.00777 %	✓	
13	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
14	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
15	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
17		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
18		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
19		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
20		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
21		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
22		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
23		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
24		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
25		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
27		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
28		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
29		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
30		boron { boron tribromide }				0.6	mg/kg	23.173	11.818	mg/kg	0.00118 %	✓	
		005-003-00-0	233-657-9	10294-33-4									
31		chromium in chromium(III) compounds { chromium(III) oxide }				20	mg/kg	1.462	29.231	mg/kg	0.00292 %		
			215-160-9	1308-38-9									
										Total:	0.0221 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CBR23--20032024-0.20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CBR23--20032024-0.20
Moisture content:
17%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		7.8	pH		7.8	pH	7.8 pH		
2	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
3	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
4	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		8.7	mg/kg		7.221	mg/kg	0.000722 %	✓	
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10	mg/kg	1.126	9.345	mg/kg	0.000934 %	✓	
7	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		11	mg/kg	1.579	14.421	mg/kg	0.00144 %	✓	
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	17	mg/kg		14.11	mg/kg	0.00141 %	✓	
10	selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
11	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		30	mg/kg	1.785	44.451	mg/kg	0.00445 %	✓	
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		40	mg/kg	2.469	81.981	mg/kg	0.0082 %	✓	
13	fluoranthene		205-912-4	206-44-0		0.19	mg/kg		0.158	mg/kg	0.0000158 %	✓	
14	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
15	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
17		phenanthrene				0.06	mg/kg		0.0498	mg/kg	0.00000498 %	✓	
			201-581-5	85-01-8									
18		pyrene				0.16	mg/kg		0.133	mg/kg	0.0000133 %	✓	
			204-927-3	129-00-0									
19		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
20		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
21		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
22		benzo[a]anthracene				0.08	mg/kg		0.0664	mg/kg	0.00000664 %	✓	
		601-033-00-9	200-280-6	56-55-3									
23		benzo[a]pyrene; benzo[def]chrysene				0.08	mg/kg		0.0664	mg/kg	0.00000664 %	✓	
		601-032-00-3	200-028-5	50-32-8									
24		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
25		benzo[b]fluoranthene				0.11	mg/kg		0.0913	mg/kg	0.00000913 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
27		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
28		chrysene				0.1	mg/kg		0.083	mg/kg	0.0000083 %	✓	
		601-048-00-0	205-923-4	218-01-9									
29		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
30		boron { boron tribromide }				0.4	mg/kg	23.173	7.693	mg/kg	0.000769 %	✓	
		005-003-00-0	233-657-9	10294-33-4									
31		chromium in chromium(III) compounds { chromium(III) oxide }				19	mg/kg	1.462	27.77	mg/kg	0.00278 %		
			215-160-9	1308-38-9									
										Total:	0.0216 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

monohydric phenols (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 <= conc. < 3 % , Eye Irrit. 2; H319 1 <= conc. < 3 % , Aquatic Chronic 2; H411

arsenic (EC Number: 231-148-6, CAS Number: 7440-38-2)

GB MCL index number: 033-001-00-X
Description/Comments: Worst Case: IARC considers arsenic Group 1; Carcinogenic to humans
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

lead compounds with the exception of those specified elsewhere in this Annex (worst case)

GB MCL index number: 082-001-00-6
Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

GB MCL index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from ECHA's C&L inventory database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 30 Apr 2020
Hazard Statements: Acute Tox. 4; H302 , Skin Sens. 1; H317 , Eye Irrit. 2; H319

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

Appendix B: Rationale for selection of metal species

chromium in chromium(VI) compounds {chromium(VI) oxide}

Most likely worst case.

arsenic {arsenic}

Most likely worst case.

cadmium {cadmium sulfide}

Most likely worst case.

copper {dicopper oxide; copper (I) oxide}

Most likely worst case.

mercury {mercury}

Most likely worst case.

nickel {nickel dihydroxide}

Most likely worst case.

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

Most Likely Worst Case

selenium {selenium}

Most likely worst case.

vanadium {divanadium pentaoxide; vanadium pentoxide}

Most likely worst case.

zinc {zinc sulphate}

Most likely worst case.

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Most likely worst case.

boron {boron tribromide}

Most likely worst case.

chromium in chromium(III) compounds {chromium(III) oxide}

Most likely worst case.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2024.114.6027.11166 (23 Apr 2024)
HazWasteOnline Database: 2024.114.6027.11166 (23 Apr 2024)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021
GB MCL List v2.0 - version 2.0 of 20th October 2023
GB MCL List v3.0 - version 3.0 of 11th January 2024
GB MCL List v4.0 - version 4.0 of 2nd March 2024

APPENDIX J:
DCP results

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

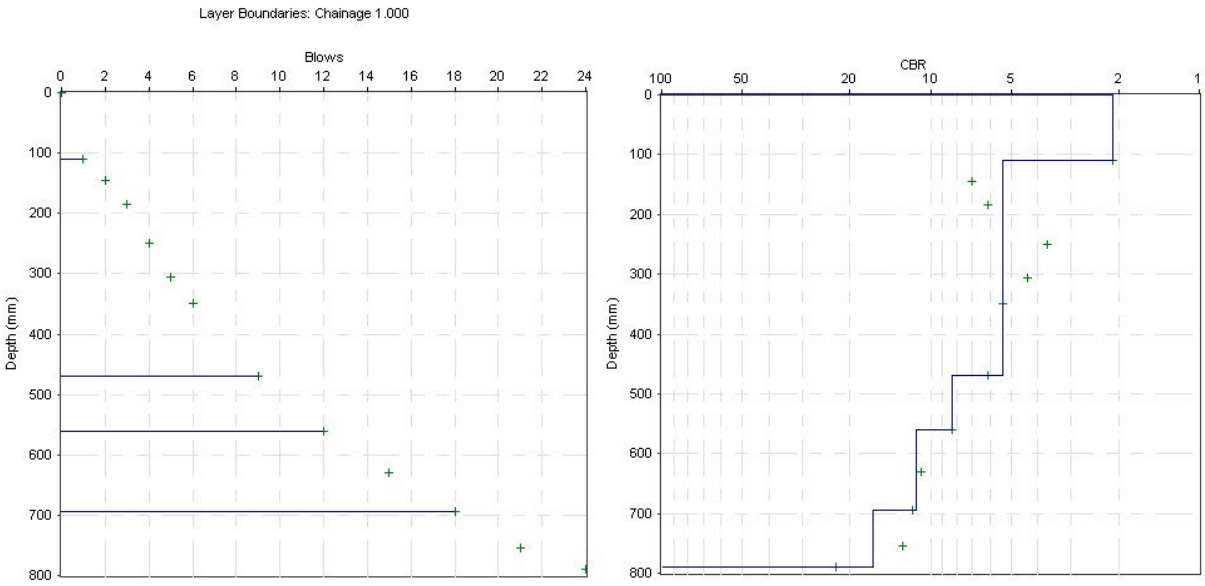
[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	1.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	160	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	110.00	2	110	110
2	45.00	5	360	470
3	30.00	8	90	560
4	22.50	11	135	695
5	15.83	16	95	790

CBR Relationship:

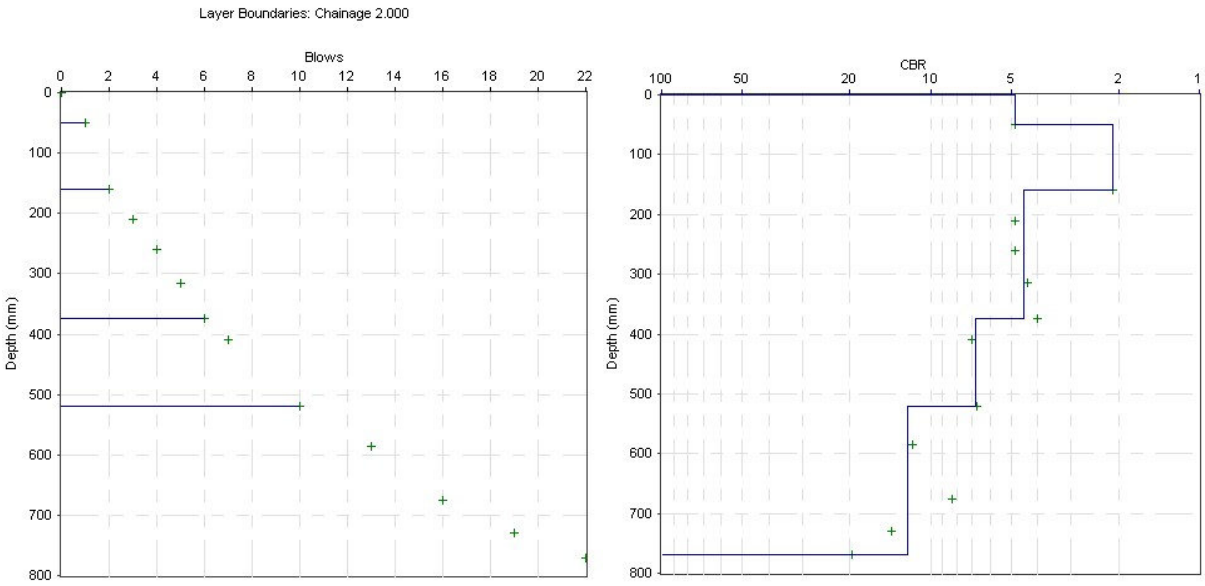
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	2.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	200	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	50.00	5	50	50
2	110.00	2	110	160
3	53.75	4	215	375
4	36.25	7	145	520
5	20.83	12	250	770

CBR Relationship:

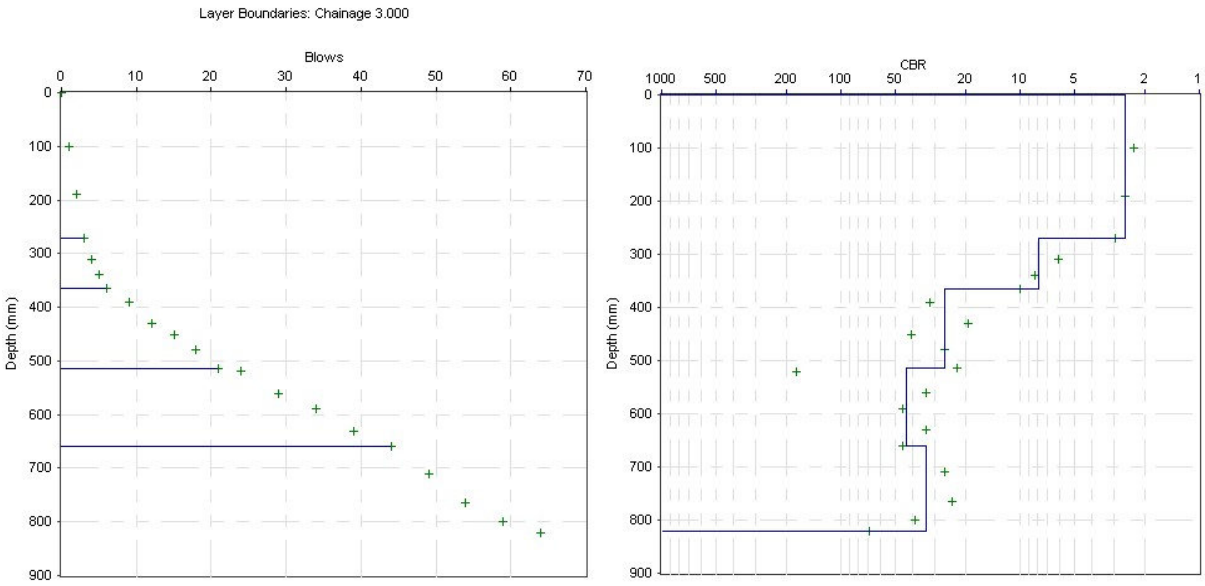
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	3.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	130	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	90.00	3	270	270
2	31.67	8	95	365
3	10.00	26	150	515
4	6.30	43	145	660
5	8.00	34	160	820

CBR Relationship:

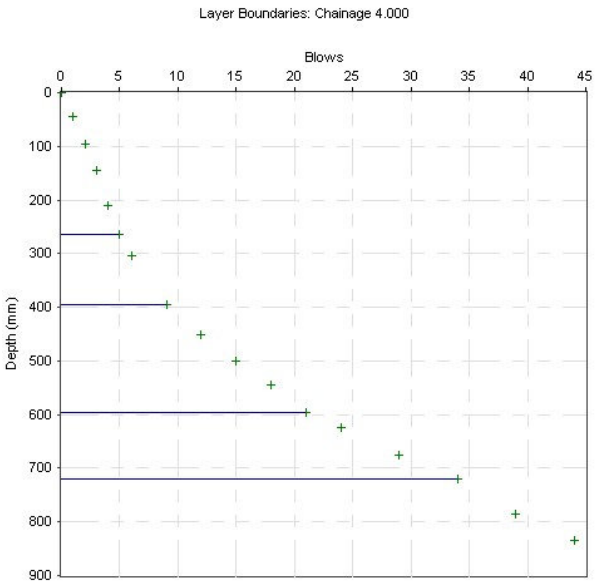
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

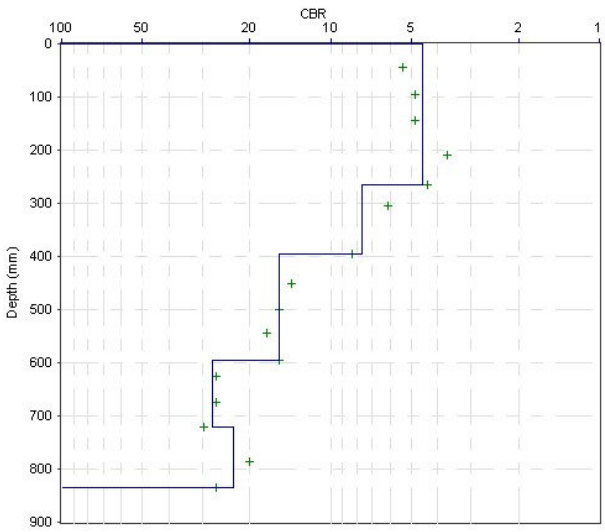
DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	4.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	125	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	53.00	5	265	265
2	32.50	8	130	395
3	16.67	15	200	595
4	9.62	28	125	720
5	11.50	23	115	835

CBR Relationship:

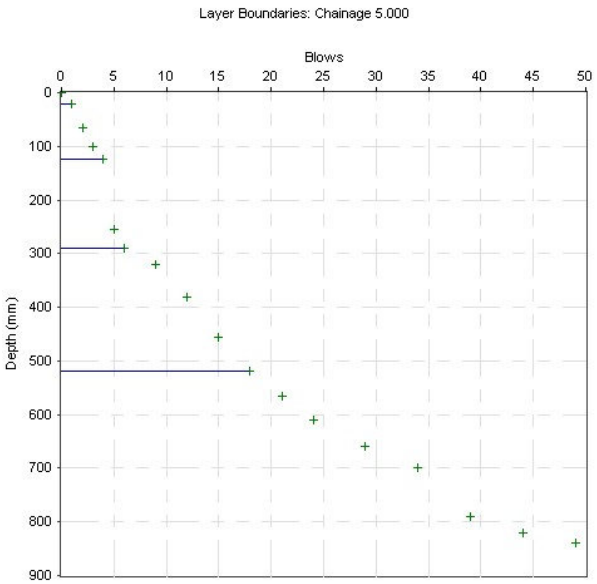
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

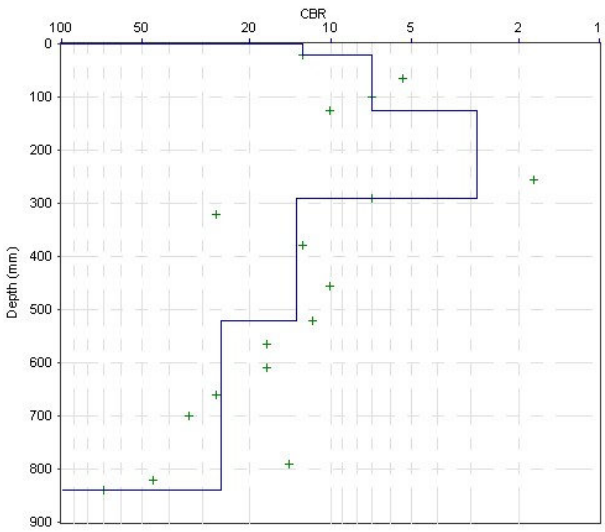
DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	5.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	130	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	20.00	13	20	20
2	35.00	7	105	125
3	82.50	3	165	290
4	19.17	13	230	520
5	10.32	26	320	840

CBR Relationship:

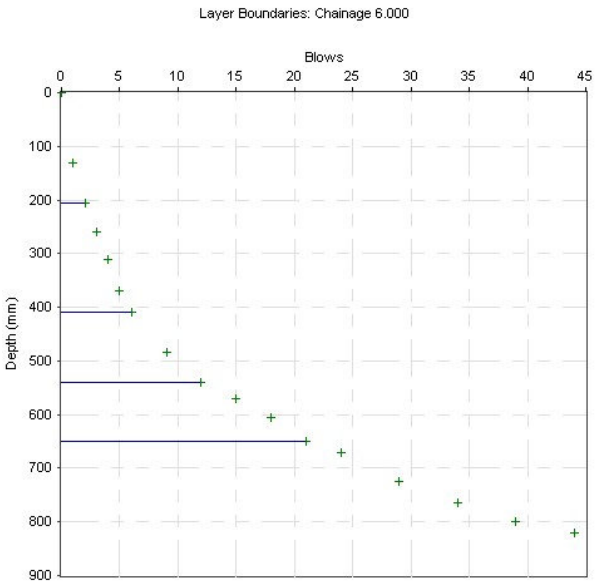
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

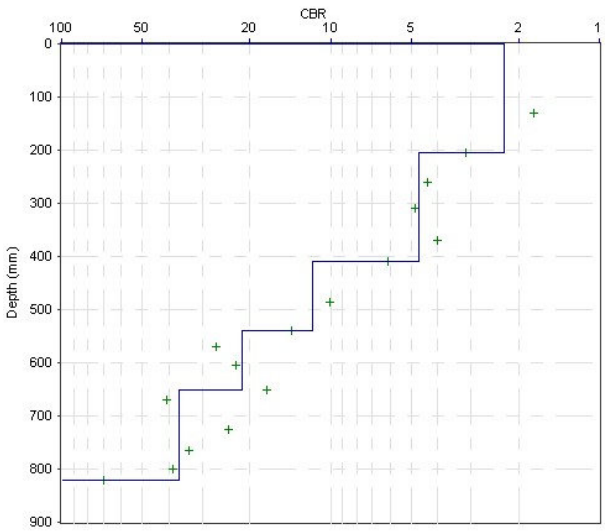
DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	6.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	140	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	102.50	2	205	205
2	51.25	5	205	410
3	21.67	12	130	540
4	12.22	21	110	650
5	7.39	36	170	820

CBR Relationship:

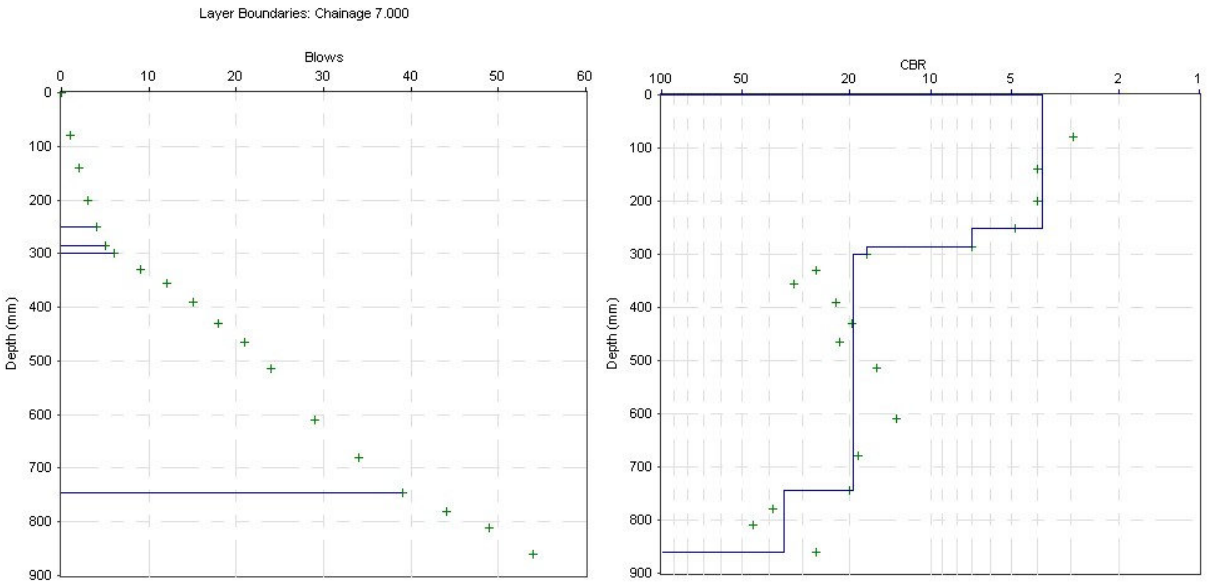
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	7.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	110	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	62.50	4	250	250
2	35.00	7	35	285
3	15.00	17	15	300
4	13.48	19	445	745
5	7.67	35	115	860

CBR Relationship:

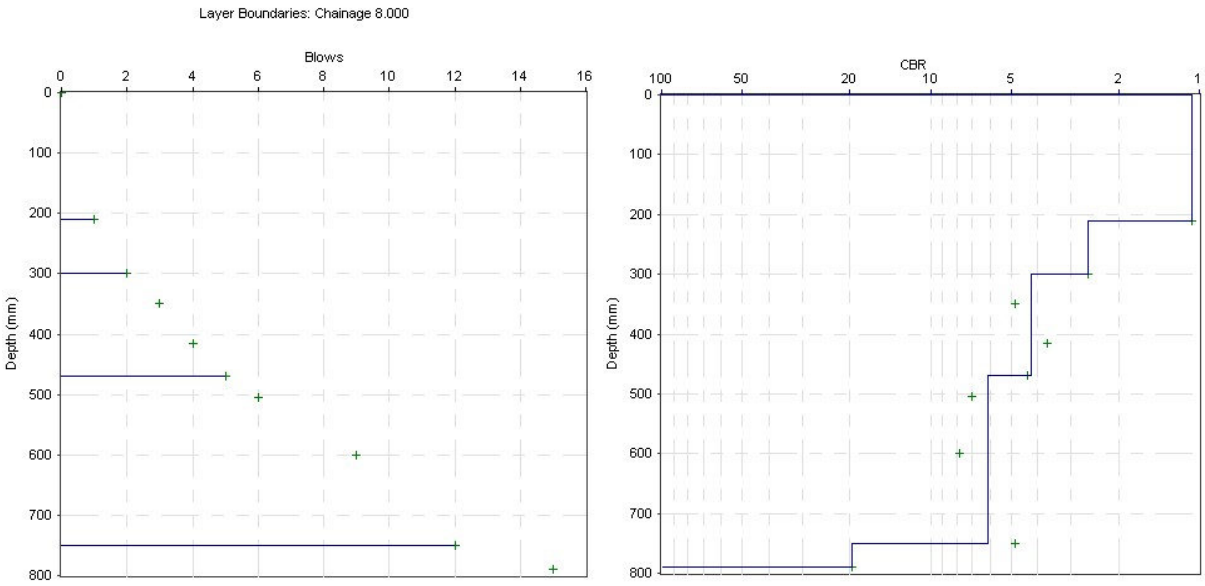
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	8.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	180	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	210.00	1	210	210
2	90.00	3	90	300
3	56.67	4	170	470
4	40.00	6	280	750
5	13.33	20	40	790

CBR Relationship:

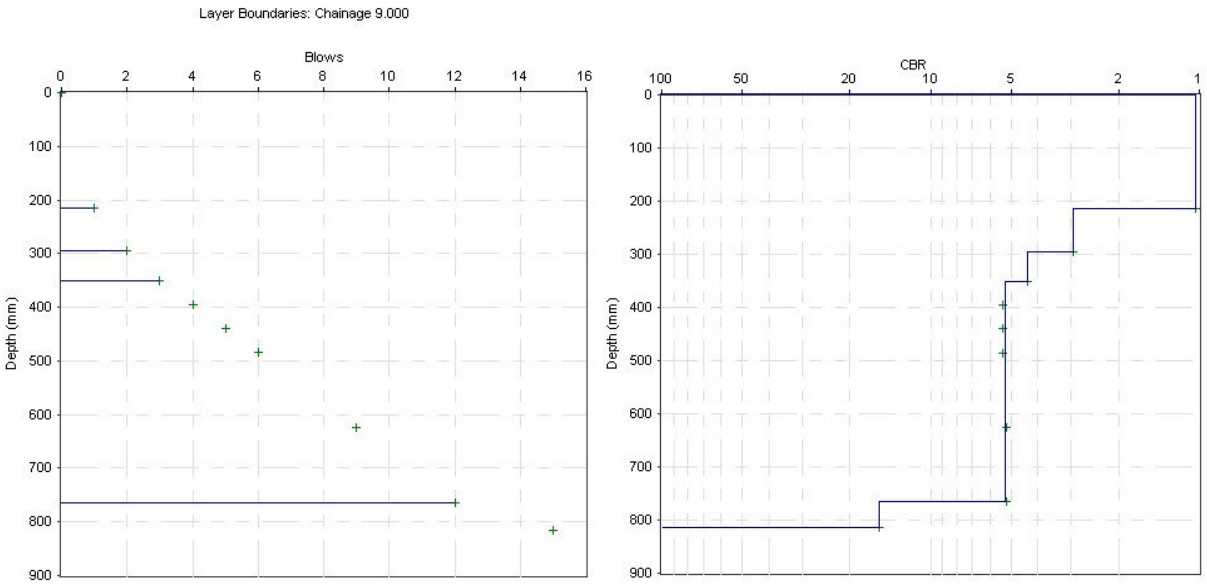
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	9.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	155	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	215.00	1	215	215
2	80.00	3	80	295
3	55.00	4	55	350
4	46.11	5	415	765
5	16.67	15	50	815

CBR Relationship:

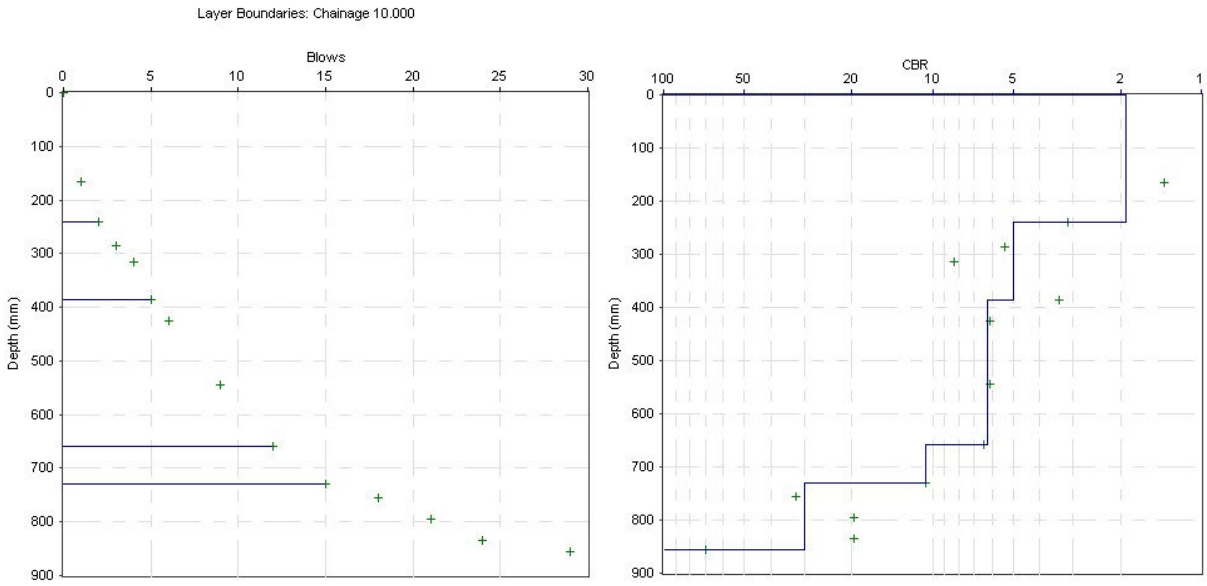
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	10.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	115	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	120.00	2	240	240
2	48.33	5	145	385
3	39.14	6	274	659
4	23.67	11	71	730
5	8.93	30	125	855

CBR Relationship:

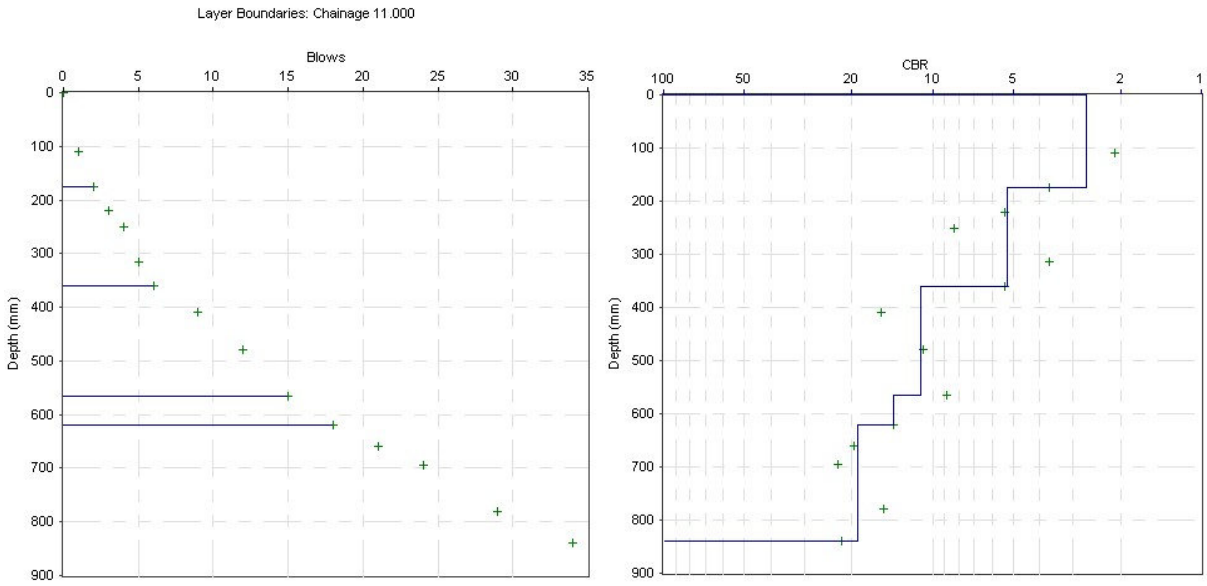
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	11.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	120	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	87.50	3	175	175
2	46.25	5	185	360
3	22.78	11	205	565
4	18.33	14	55	620
5	13.75	19	220	840

CBR Relationship:

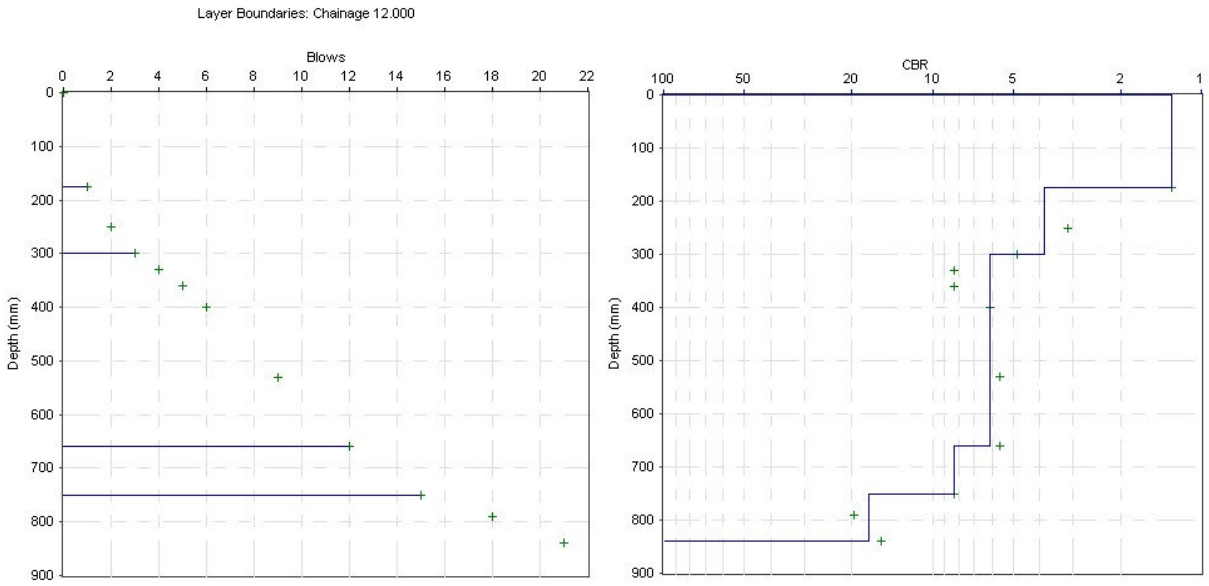
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	12.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	120	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	175.00	1	175	175
2	62.50	4	125	300
3	40.00	6	360	660
4	30.00	8	90	750
5	15.00	17	90	840

CBR Relationship:

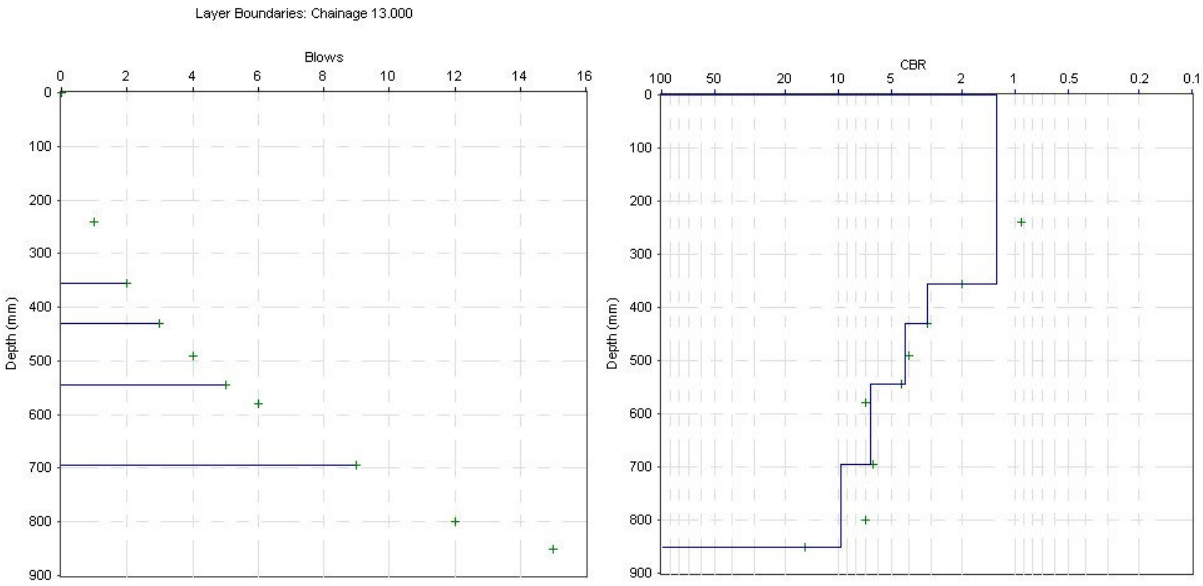
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	13.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	120	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	177.50	1	355	355
2	75.00	3	75	430
3	57.50	4	115	545
4	37.50	7	150	695
5	25.83	10	155	850

CBR Relationship:

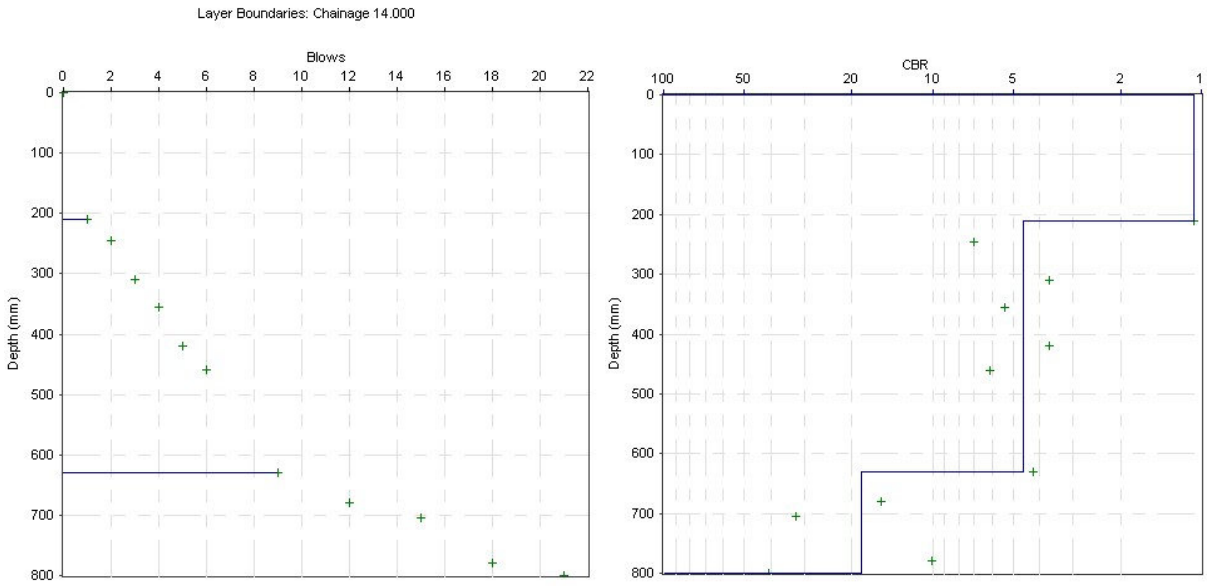
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	14.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	170	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	210.00	1	210	210
2	52.50	5	420	630
3	14.17	18	170	800

CBR Relationship:

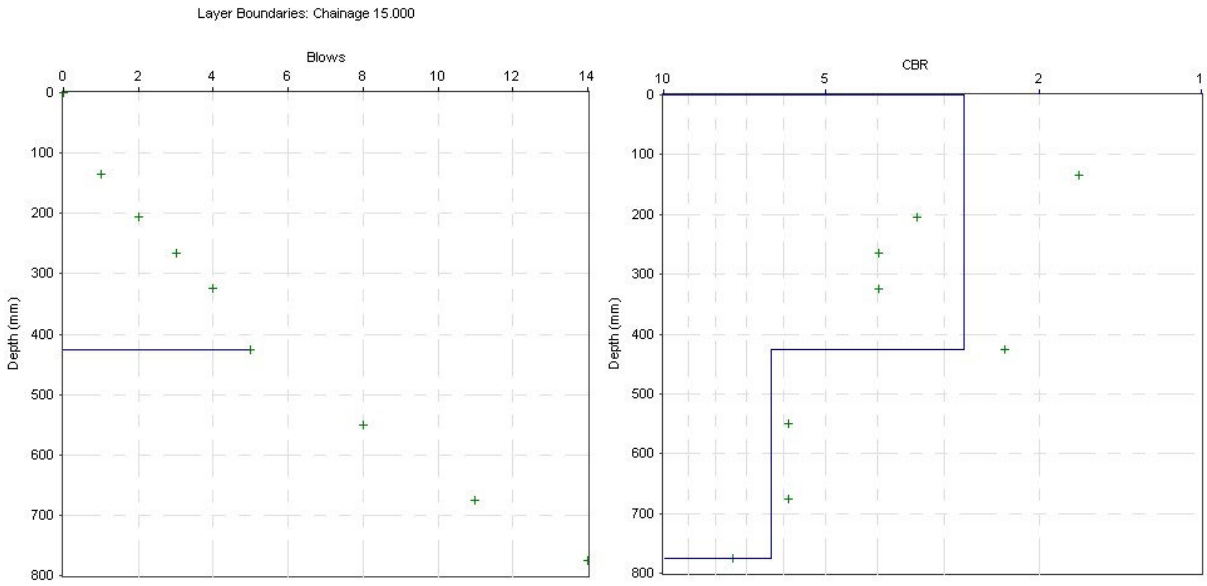
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	15.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	175	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	85.00	3	425	425
2	38.89	6	350	775

CBR Relationship:

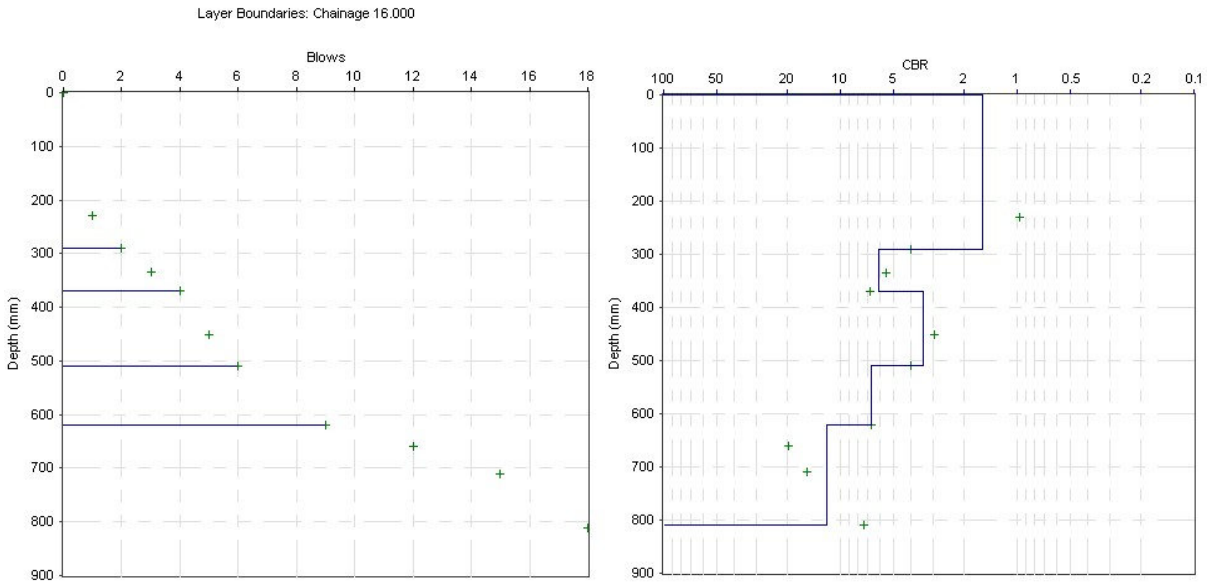
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	16.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	160	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	145.00	2	290	290
2	40.00	6	80	370
3	70.00	3	140	510
4	36.67	7	110	620
5	21.11	12	190	810

CBR Relationship:

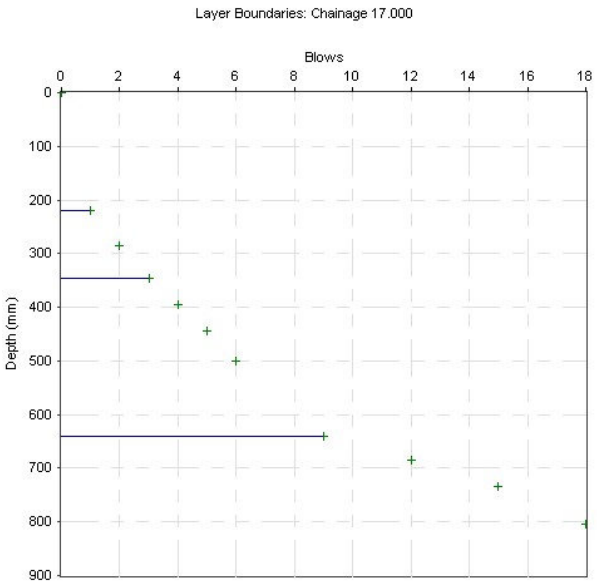
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

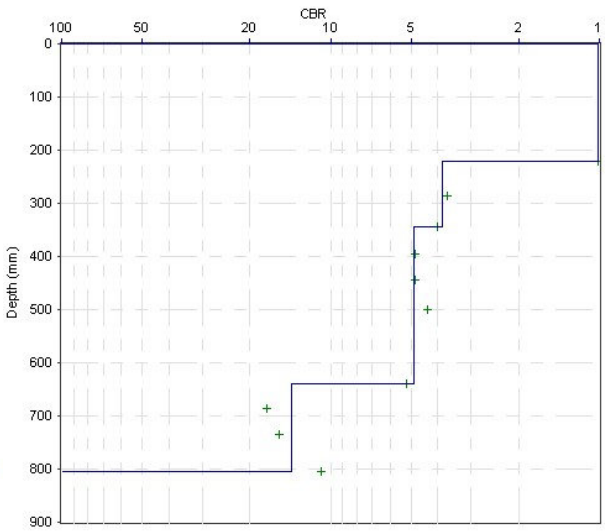
DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	17.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	155	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	220.00	1	220	220
2	62.50	4	125	345
3	49.17	5	295	640
4	18.33	14	165	805

CBR Relationship:

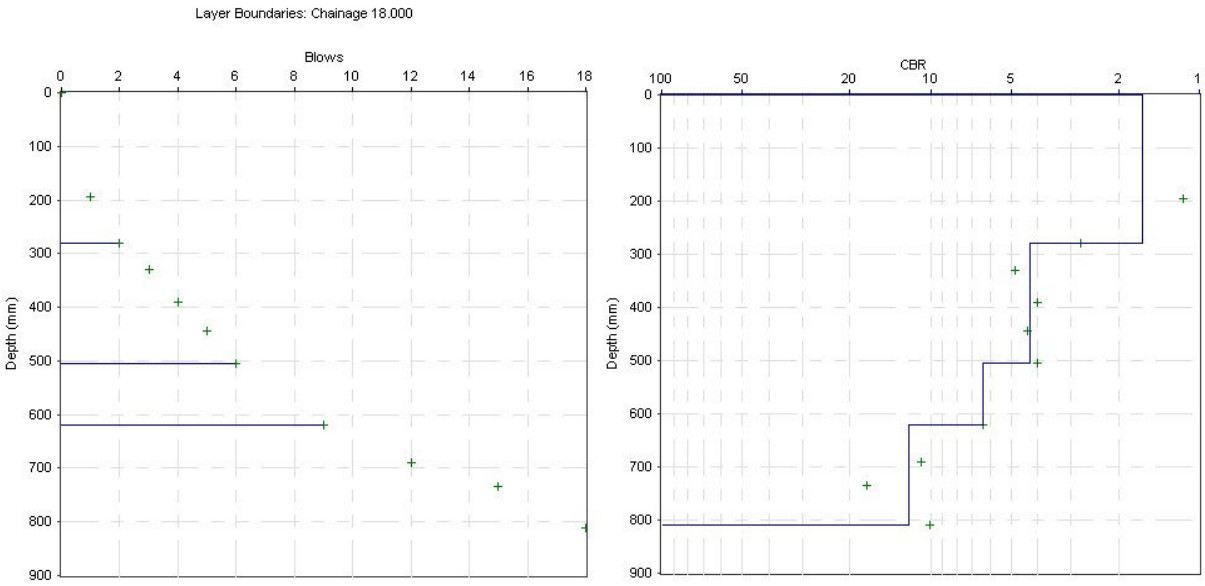
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	18.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	140	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	140.00	2	280	280
2	56.25	4	225	505
3	38.33	6	115	620
4	21.11	12	190	810

CBR Relationship:

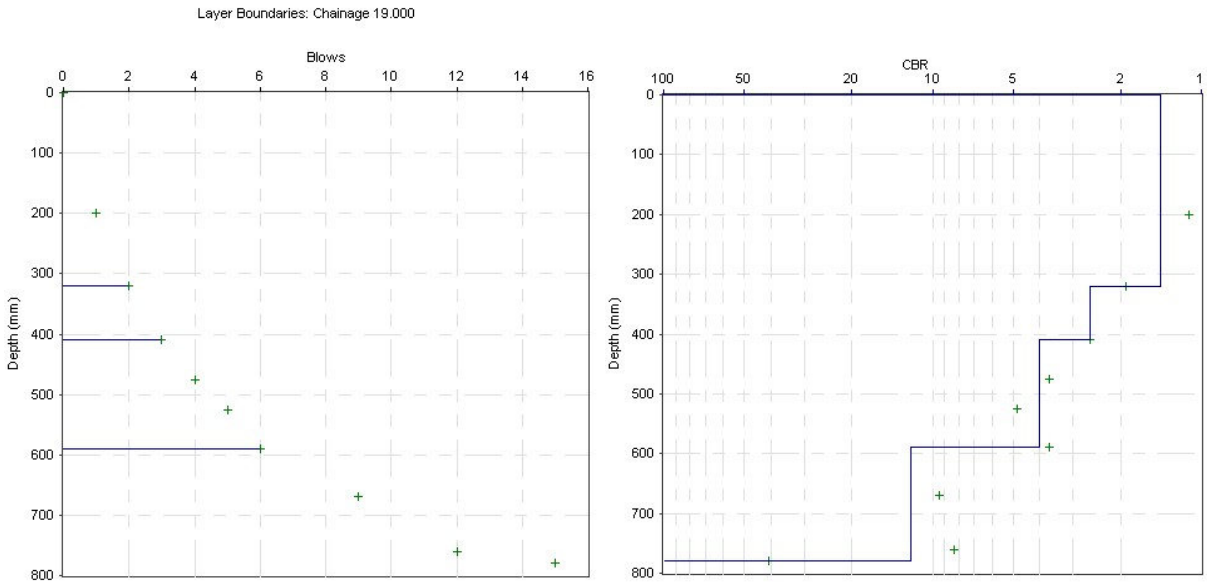
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	19.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	190	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	160.00	1	320	320
2	90.00	3	90	410
3	60.00	4	180	590
4	21.11	12	190	780

CBR Relationship:

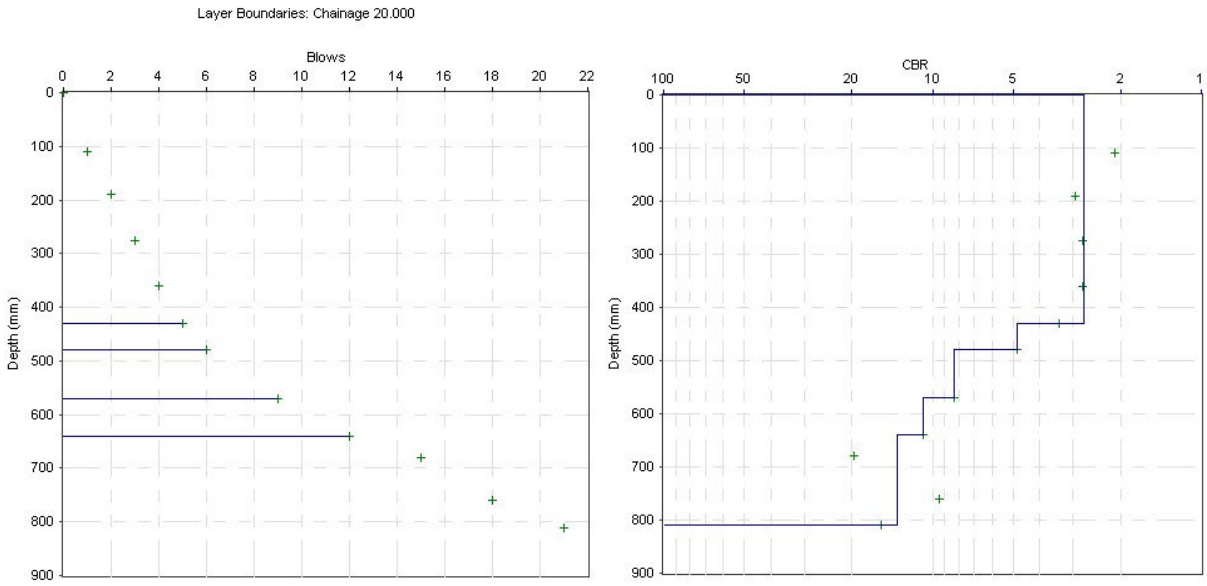
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	20.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	160	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	86.00	3	430	430
2	50.00	5	50	480
3	30.00	8	90	570
4	23.33	11	70	640
5	18.89	14	170	810

CBR Relationship:

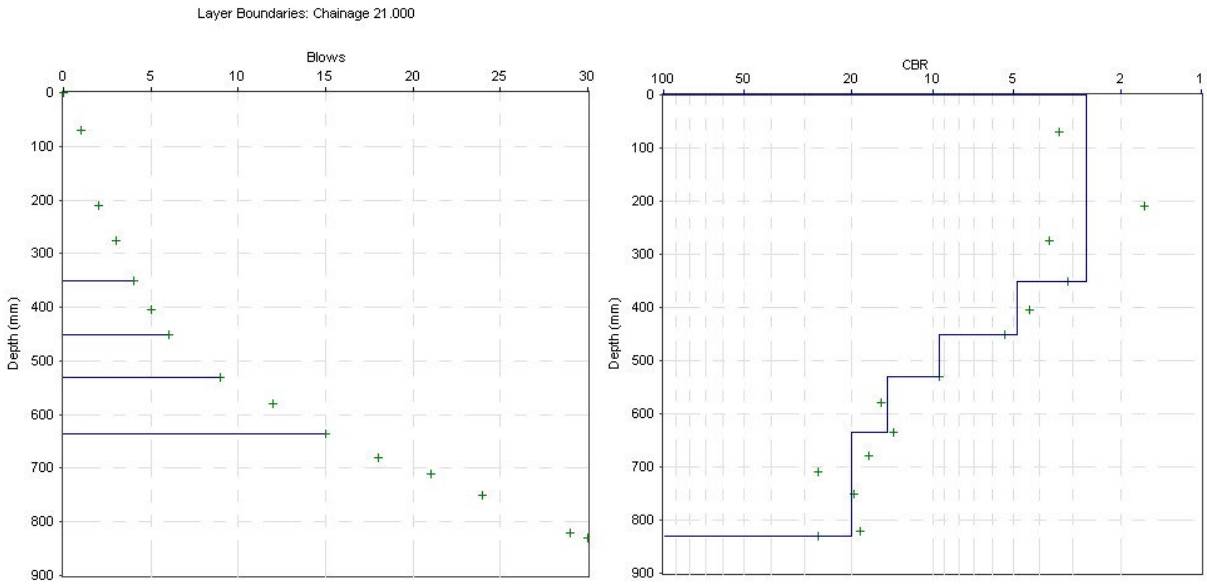
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	21.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	140	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	87.50	3	350	350
2	50.00	5	100	450
3	26.67	9	80	530
4	17.50	15	105	635
5	13.00	20	195	830

CBR Relationship:

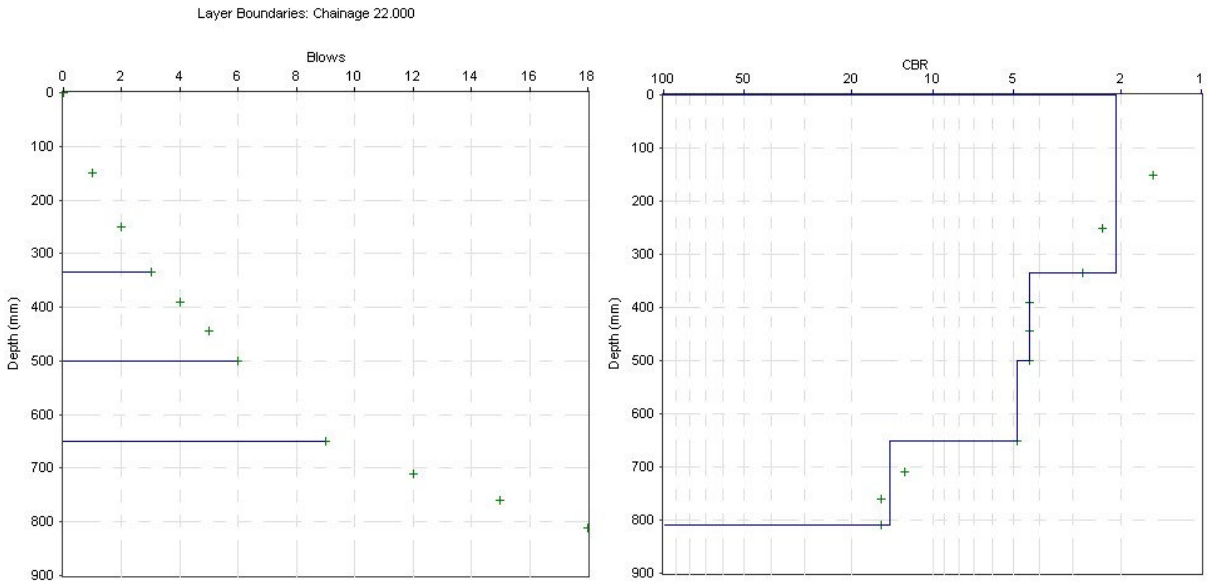
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	22.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	160	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	111.67	2	335	335
2	55.00	4	165	500
3	50.00	5	150	650
4	17.78	14	160	810

CBR Relationship:

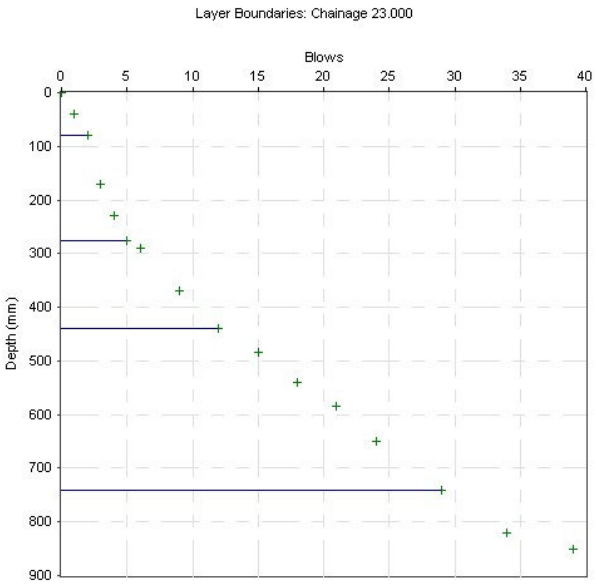
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

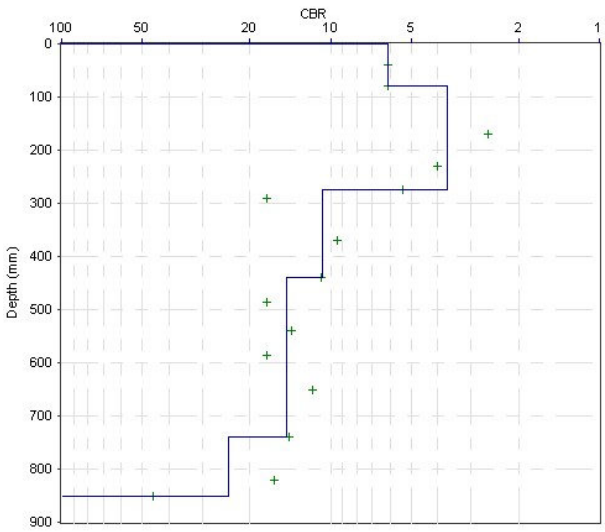
DCP Layer Strength Analysis Report

Project Name: GWPR5921 DCP's

Chainage (km):	23.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	120	Surface Moisture:	Unknown
Test Date:	09/04/2024	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	40.00	6	80	80
2	65.00	4	195	275
3	23.57	11	165	440
4	17.65	15	300	740
5	11.00	24	110	850

CBR Relationship:

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

Report produced by .....

APPENDIX K: Third Party Site Investigation Report

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

Your Environment

STAGE 2: SITE INVESTIGATION – LAND ADJACENT TO CHURCH LANE, CLIMPING, WEST SUSSEX, BN17 5GG

Bailifscourt Estate

Your Environment
Head Office, Chilgrove Business Centre, Chilgrove Park Road, Chilgrove, Nr Chichester, PO18 9HU
[redacted]

Report Number: YE6619, Date: February 2019

Daniel Speight
[redacted]

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Appendices

Appendix A: Current redevelopment plans
Appendix B: Site investigation plan
Appendix C: Borehole logs
Appendix D: Geotechnical laboratory results

	Name	Position	Signature	Date
Prepared by:	Daniel Speight	Graduate Geotechnical Engineer	[redacted]	February 2019
Reviewed by:	Rob Lewis	Principal Engineer		February 2019
Approved:	Colin Hiscock	Director		February 2019
For and on behalf of *Your*Environment				

Issue	Date	Description	Prepared	Reviewed	Approved
00	06.02.2019	Final Report	DS	RL	CH

Executive Summary

*Your*Environment (YE) was instructed by Bailifscourt Estate (Quote No: 6619, Dated: January 10th 2019) to conduct a Site Investigation (SI) at a site identified as Land Adjacent to Church Lane, Climping, West Sussex BN17 5GG. The purpose of this investigation was to provide a factual and interpretative report on our findings in respect to works completed at the site by YE, which comprised fifteen (15no.) windowless sampler boreholes with associated SPTs with geotechnical laboratory testing.

We understand from reference to information provided by the client, that the report is a preliminary feasibility investigation. Based on the current plans provided by the client the development of the site includes:

- Erection of multiple low-rise residential properties;
- Creation of a driveway, car parking hardstanding;
- Areas of public open space;
- Ponds: and amenity buildings;
- Construction of connector roads; and
- Realignment and construction of a roundabout.

The relevant British Geological Survey (BGS) online mapping information indicates the site to be underlain by raised beach superficial deposits on the eastern half of the site, and by river terrace deposits on the western side off the site. Underling these superficial deposits, the Lewes Nodular Chalk Formation is reported, comprising hard nodular chalks with regular flint seams.

A review of the ground conditions within the boreholes indicates the presence of variable Topsoil deposits to up to 0.75m depth. The Topsoil comprised sandy clays.

Underlying the topsoil, within boreholes WS03, WS08, WS11 and WS15, silty sandy gravelly clays were recorded to depths of boreholes at 4.45mbgl. Underlying these gravelly clays, within boreholes WS04, WS05, WS07 and WS12 gravelly sands were recorded between 1.68mbgl and 4.45mbg. It is likely that these deposits are representative of river terrace and raised beach superficial deposits as suggested by BGS mapping.

Underlying these superficial deposits, within Boreholes WS01, WS02, WS06, WS09, WS10, WS13 and WS14, Chalks - recovered as white gravelly silts - were reported from depths of 1.80mbgl to full depths of boreholes. It is likely that these deposits represent weathered sections of the Lewes Nodular Chalk Formation.

SPT N values within the superficial deposits were generally noted between 9 and 12. In view of this it is possible that shallow traditional foundations could be utilised at the site dependant on the presence of weak deposits noted above. These could generally be placed at depths from 1.00m in cohesive soils described in a firm in situ condition, however these may need to be increased in depth dependant on the presence of weaker zones.

Within areas of the site where sands are present at foundation depths strip or spread foundations placed within the sands (with a medium dense instiu condition) with a minimum width of 1m and constructed at depths from 1.0m, providing the bearing surface has been compacted, an allowable increase in stress of 90kN/m^2 should be achievable at this depth, with a factor of safety against general shear failure of in excess of 3. For narrower strip foundations it is suggested that the allowable increase in load be limited to say 60kN/m^2, Settlements at these loading intensities should remain within tolerable limits for the type of structure proposed, provided that the underlying soils are carefully inspected immediately after final trimming has taken place.

It should be appreciated that foundations should preferably be placed wholly in clay bearing strata or sand bearing strata due to the potential for excessive differential settlement occurring between foundations placed across the two soil types alternatively suitable reinforcement would be required.

Consideration may be directed to the use of piles to transfer the foundation loads through the weaker upper levels of the sands and clays to more competent soils at depth within the chalk.

In view of the above further investigation should be considered and a foundation schedule prepared for each structure planned across the site.

We trust this is sufficient for your requirements and should you have any questions please do not hesitate to contact the undersigned.

For *Your*Environment

[redacted]

Daniel Speight

Graduate Geotechnical Engineer

Colin Hiscock

Director

1.0 Introduction

*Your*Environment (YE) was instructed by Bailifscourt Estate (Quote No: 6619, Dated: January 10th 2019) to conduct a Site Investigation (SI) at a site identified as Land Adjacent to Church Lane, Climping, West Sussex BN17 5GG.

The purpose of this investigation was to provide a factual and interpretative report on our findings in respect to works completed at the site by YE, which comprised fifteen (15no.) windowless sampler boreholes with associated SPTs with geotechnical laboratory testing.

This report presents a full factual record of all site works carried out, the results of *insitu* testing and subsequent laboratory testing of selected samples obtained during these works. The report has been formulated in accordance with BS10175:2015 '*Investigation into Potentially Contaminated Sites – Code of Practice*' and CLR11 – '*Model Procedures for the Management of Land Contamination*' and from the National Planning Policy Framework.

YE take no responsibility for conditions which have not been revealed by the windowless sampler boreholes, or which occur between windowless sampler boreholes. Whilst every effort has been made to interpret the conditions between investigation locations, such information is only indicative, and liability cannot be accepted for its accuracy.

The information contained in this report is intended for the use of the named client (or their approved contractors). Should a third party rely on any part of this report, that party does so wholly at its own risk and YE disclaim any liability to such parties. Should the purposes for which the report is used, or the proposed use of the site change, this report may no longer be valid and further use of reliance upon the report in those circumstances shall be at the client's sole and own risk. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. YE should in all such altered circumstances be commissioned to review and update this report accordingly.

2.0 Proposed Development

We understand from reference to information provided by the client, that the report is a preliminary feasibility investigation. Based on the current plans provided by the client the development of the site includes:

- Erection of multiple low-rise residential properties;
- Creation of a driveway, car parking hardstanding;
- Areas of public open space;
- Ponds: and amenity buildings;
- Construction of connector roads; and
- Realignment and construction of a roundabout.

The proposed redevelopment plans for the site can be reviewed within **Appendix A.**

3.0 Physical Setting

3.1 Site Information

The site is located within the south-western limits of the village of Climping, approximately 7km northeast of Bognor Regis. The approximately L-shaped site is enclosed by Yapton Road (B233) forming the western site boundary, Church Lane forming the eastern site boundary and the Southern site boundary being formed by the A259. The northern site boundary is

formed by residential properties and their respective gardens. Mature scrubs and trees are growing on site, along the eastern, southern and western site boundaries. The site is currently occupied by agricultural land.

3.2 Geology

The relevant British Geological Survey (BGS) online mapping information indicates the site to be underlain by raised beach superficial deposits on the eastern half of the site, and by river terrace deposits on the western side off the site. Underling these superficial deposits, the Lewes Nodular Chalk Formation is reported, comprising hard nodular chalks with regular flint seams.

4.0 Fieldworks

4.1 Site Investigation

All SI works were completed on January 24th, 25th and 26th 2019 under the supervision of a Geo-Environmental Engineer contracted from YE. In summary the investigation included:

- A two man team ascertained the routes of any below ground services in close proximity to the proposed exploratory hole positions, using a CAT scan and lifting up of any man hole covers. Following the CAT scan, hand dug starter pits were completed to a depth of 1.2 metres below ground level (mbgl).
- Fifteen (15no.) windowless sampler boreholes (WS01 to WS15) were completed, by means of a competitor dart rig, to depths of 4.45mbgl. The locations of exploratory positions were selected relative to the historic land use and the current proposed redevelopment plans for the site.
- The windowless sampler boreholes were logged with any groundwater conditions noted and representative soil samples removed in accordance with current guidelines.
- Soil samples were removed from shallow sub surface locations, with further samples taken at depth at every 0.5mbgl or when the underlying stratum changed. Samples were subsequently placed in suitable containers including 1kg tubs and 250ml glass jars and placed in cool boxes with cool packs prior to storage within our *in-house* laboratory fridges and then subsequent forwarding to our designated laboratory for analysis.
- Standard Penetration Tests were undertaken during the drilling to provide an assessment of the strength of the underlying deposits with depth.
- Upon completion, all exploratory holes were back filled, compacted and made good to existing levels and finishes, with any surplus spoil bagged up and removed from site.

The positions of exploratory holes in relation to the existing site layout can be reviewed within **Appendix B**. Exploratory windowless sampler borehole logs are located in **Appendix C**.

5.0 Geology & Ground Conditions

A review of the ground conditions within the boreholes indicates the presence of variable Topsoil deposits to up to 0.75m depth. The Topsoil comprised sandy clays.

Underlying the topsoil, within boreholes WS03, WS08, WS11 and WS15, silty sandy gravelly clays were recorded to depths of boreholes at 4.45mbgl. Underlying these gravelly clays, within boreholes WS04, WS05, WS07 and WS12 gravelly sands were recorded between

1.68mbgl and 4.45mbg. It is likely that these deposits are representative of river terrace and raised beach superficial deposits as suggested by BGS mapping.

Underlying these superficial deposits, within Boreholes WS01, WS02, WS06, WS09, WS10, WS13 and WS14, Chalks - recovered as white gravelly silts - were reported from depths of 1.80mbgl to full depths of boreholes. It is likely that these deposits represent weathered sections of the Lewes Nodular Chalk Formation.

Reference to the Standard Penetration Tests results also shows N values of between N=8 and N=12 were recorded at 1.2m depth, N=9 to 60 at 2.0m depth, N=7 to 45 at 3.0m depth and N=40 to 46 at 4.0m depth.

6.0 Groundwater Conditions

Groundwater was encountered at depths of 3.0mbgl within borehole WS01, depths of 3.1mbgl within borehole WS02, depths of 2.3mbgl within borehole WS03, depths of 3.4mbgl within borehole WS05, depths of 3.20mbgl within borehole WS07 and depths of 3.6mbgl within borehole WS13. However, it should be appreciated that a programme of ground water monitoring is currently being undertaken and will be reported at a later date.

It should be noted that groundwater levels are dependent upon seasonal variations and can change after periods of prolonged rainfall or drought.

7.0 Visual and Olfactory Observations

With the exception of general anthropogenic material identified, no visual and/or olfactory evidence of potential contamination was noted within any soils encountered as part of the investigative works undertaken.

8.0 Geotechnical Soil Laboratory Testing

Seven (7no.) soil samples were forwarded to a UKAS & MCERTS accredited laboratory facility (Messrs Chemtech) with sixteen (16no.) soil samples forwarded to *Your*Geotechnical Ltd (YG). The testing comprised the following:

8.1 Sulphates and pH

Seven (7no.) samples of the underlying naturally occurring deposits were submitted for assessment of water-soluble sulphate, total sulphate, pH value and total sulphur concentrations.

Water-soluble sulphate concentrations of between <10mg/l and 16mg/l were recorded, total (acid) sulphate concentrations of <0.01% and 0.03%, total sulphur concentrations of <0.01% to 0.22%, with pH values varying between 7.2 and 7.8 units. Total Potential Sulphates were between <0.03% and 0.66%.

8.2 Atterberg Limits and Natural Moisture Content

Sixteen (16no.) samples from the naturally occurring drift deposits were submitted for determination of their Natural Moisture Content and Plasticity Index.

Natural Moisture Contents of these samples were between 16% and 28%.

Modified Plasticity Indices of 6% and 26% were recorded for the results. As a consequence, the deposits encountered can be generally classed as being of medium volume change potential, in accordance with NHBC guidelines.

All geotechnical laboratory certificates can be reviewed within **Appendix D.**

9.0 Discussion of Ground Conditions

9.1 General

We understand that current redevelopment plans for the site are to include:

- Erection of multiple low-rise residential properties;
- Creation of a driveway, car parking hardstanding;
- Areas of public open space;
- Ponds: and amenity buildings;
- Construction of connector roads; and
- Realignment and construction of a roundabout.

The proposed redevelopment plans for the site can be reviewed within **Appendix A**

9.2 Construction Consideration

The topsoil is not considered suitable for the construction of shallow foundations due to the risk of unacceptable total and differential settlement occurring under moderately light surface loading.

The investigation recorded the presence of clays, sands (sometimes clayey), silts, silty sandy clays and are representative of the superficial geology recorded across the site. In some areas of the site these soils were noted to be relatively weak to depths of 3.0mbgl with SPT N values of 7 noted at this depth in WS02 recorded. Underlying these soils weathered chalk deposits were generally recorded. SPT N values within the superficial deposits were generally noted between 9 and 12. In view of this it is possible that shallow traditional foundations could be utilised at the site dependant on the presence of weak deposits noted above. These could generally be placed at depths from 1.00m in cohesive soils described in a firm in situ condition, however these may need to be increased in depth dependant on the presence of weaker zones. In view of this further investigation should be considered and a foundation schedule prepared for each structure planned across the site. In addition, final placement of foundations should be done in accordance with the guidance regards construction in shrinkable soils and taking cognisance of the clays of medium shrink potential recorded in the investigation. It is considered that spread foundations constructed within the underlying cohesive deposits could be designed assuming an allowable increase in load given below in Table 1: Allowable Increase in Stress. However, this should only be utilised as a guide for design purposes and further investigation is recommended.

Foundation Type	Strip Foundations (m)			Spread Foundations (m)		
Foundation Width	0.6	1.0	1.5	1.0	2.0	3.0
Foundation Depth	From 1.0m			From 1.0m		
Allowable increase in stress (kN/m^2)	100	95	90	145	135	130

Table 1: Allowable Increase in Stress

The allowable increase in stress given above assumes a factor of safety of 3 against general shear failure, with cohesion of $45kN/m^2$ at the foundation depths. Settlements at the above loading intensities should remain within tolerable limits for the type of structure proposed provided that the underlying soils are carefully inspected immediately final trimming has taken place. Should any soft or weak material be encountered they should be locally removed and replaced with lean-mix concrete or compacted granular soil.

Within areas of the site where sands are present at foundation depths strip or spread foundations placed within the sands (with a medium dense instiu condition) with a minimum width of 1m and constructed at depths from 1.0m, providing the bearing surface has been compacted, an allowable increase in stress of 90kN/m^2 should be achievable at this depth, with a factor of safety against general shear failure of in excess of 3. For narrower strip foundations it is suggested that the allowable increase in load be limited to say 60kN/m^2, Settlements at these loading intensities should remain within tolerable limits for the type of structure proposed, provided that the underlying soils are carefully inspected immediately after final trimming has taken place. Should any very loose, cohesive or weak material be encountered they should be locally removed and replaced with lean-mix concrete or compacted granular soil. In addition, if the excavations are required to stand open for any period of time then a blinding layer of lean-mix concrete should be placed in the excavation bases. This expedient will reduce loosening of the sub-grade due to the ingress of surface water.

Any existing structures and foundations if found should be grubbed up and replaced with a suitable engineered granular backfill and should be compacted in layers.

The excavator must be set up with care and operated correctly to ensure trench walls are vertical and base horizontal as any slight inclination will result in eccentric loading on such deep trench fill footings.

It should be appreciated that foundations should preferably be placed wholly in clay bearing strata or sand bearing strata due to the potential for excessive differential settlement occurring between foundations placed across the two soil types alternatively suitable reinforcement would be required.

In view of the above, consideration may be directed to the use of piles to transfer the foundation loads through the weaker upper levels of the sands and clays to more competent soils at depth within the chalk. For preliminary design purposes it is considered that driven pre-cast concrete piles are likely to represent the most economical foundation solution. In order to formulate a suitable design, it is recommended that the advice of specialist piling contractors be sought. In addition, the pile design should include provision for negative skin friction within the made ground soils as these deposits may be subject to collapse compression if not treated.

In view of the relatively weak near surface soils, it may be necessary to construct a working platform for the piling rig and any other plant required during the works. Such a design should be undertaken in accordance with the procedures given in the BRE publication: Working platforms for tracked plant.

9.3 Floor Slabs

In view for the clays of medium shrink potential it is recommended that all floors are locally suspended.

9.4 Sulphates

Reference to BRE Special Digest 1 and the test results indicates the results from the fall within Design Sulphate Class DS-3. Consequently, concrete may be designed to AC-2s concrete classification.

9.5 Road Pavement

Any new pavements will require assessment of the existing sub grade in terms of its California Bearing Ratio (CBR) to facilitate the actual pavement design.

9.6 Sustainable Drainage

In accordance with PPS25 (2007) the Planning Authority are likely to insist that surface water drainage from any new-build or redevelopment complies with current design practices for Sustainable Urban Drainage (SUD's) with the construction of separate drainage systems for foul and surface water.

Based on the ground conditions encountered it is possible that sustainable drainage may be suitable at the site within the chalk deposits. If sustainable drainage is to be considered, it is recommended that soak-away testing is carried out in accordance with BRE 365 at the site to establish the sites suitability for sustainable drainage.

9.7 Excavations

Groundwater was encountered during the investigation. However, it should be appreciated that groundwater levels are subject to seasonal variation or changes on local drainage conditions.

Groundwater is may represent a particular problem to the construction of the development at this site particularly if encountered with excavations in the sand and further consideration should be made to groundwater upon completion of ground water monitoring being undertake. However, it should be recognized that slight seepages and minor water entries may combine in any long trench excavations to create a significant volume of water which may cause local problems during the construction phase. Any minor groundwater seepages or significant standing water within excavations made upon this site may be removed by using a simple form of de-watering. Such a system could include the excavation of sumps from which the water could be pumped. Advice on Groundwater Control is given in CIRIA Report No 515 – Groundwater Control Design and Practice.

The stability of the excavation faces cannot be guaranteed thus temporary support to the excavation faces may become necessary unless the foundations are constructed using trench-fill techniques. In this method the foundation trenches should be excavated, inspected and backfilled with concrete as a continuous operation. Under no circumstances should operatives be allowed to enter unsupported excavations.

Subject to space constraints, excavations could be battered back to a suitable angle of repose (typically 1:1 for a 2.00m deep excavation). Alternatively, if there is a requirement to protect nearby structures or services, appropriate supports may be required. Advice on excavation support is given in CIRIA Report No 97 – Trenching Practice.

As a consequence of the sands at shallow depth excavations may also be prone to rapid and unpredictable partial or more large-scale collapse in unsupported excavations. Therefore, consideration should be given to installing trench support/shoring or battering to maintain excavation stability during foundation construction/services installation. Due to the potential for unpredictable collapse excavations requiring man entry should be either battered back to a safe angle or adequately shored to provide safe working conditions within excavations.

Where trench support/shoring is utilised an appropriately qualified and experienced engineer should design the support system. The shoring/support will require regular

inspection in accordance with published guidelines to ensure that the support/shoring is adequate for the ground conditions present.

9.8 Groundworks Watching Brief

We would recommend that a watching brief be maintained during the course of the development, particularly during the ground works stage.

During construction works visual and olfactory appraisal of the underlying soils should be made. If during construction works any material is noted to show visual and/or olfactory signs of contamination an environmental consultant should be contacted to supervise/guide further works. This material should be stockpiled separately and tested prior to its appropriate removal off site or re-use as necessary.

If any landscaping materials are to be imported on site they should be tested to check that they are suitable for the intended use. Clean, uncontaminated rock, subsoil brick rubble, crushed concrete, ceramics and topsoil only should be permitted as infill material.

9.9 Services

Given that new services will be installed as part of the redevelopment of the site, we would recommend the local water board be contacted to determine their specification for the type of pipework, which should be used on this site.

All services and in particular potable water supply pipework should comprise of material that is resistant to attack and degradation to chemical attack.

Further information can be found within the published guidance for the '*Selection of Water Supply Pipes to be used in Brownfield Sites'*, issued in January 2011 by the UK Water Industry Research (UKWIR), this supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note – '*Laying Pipes in Contaminated Land*' which has been withdrawn.

9.10 Muckaway

If any soils are to be removed off site, a copy of the laboratory results should be given to the waste contractors and/or landfill operators involved to ascertain their requirements with regards to removal of soils from this area of the site and the acceptance of the waste at landfill. It may be prudent to undertake Waste Acceptance Criteria (WAC) analyses on the soils to be removed.

All materials must be transported in compliance with the Duty of Care Regulations by authorising movements with Carrier's individually numbered Duty of Care conveyance notes, complete with the appropriate EWC Codes. All relevant dockets will need to be kept to provide evidence of the removal as these may be required as part of a Validation Report.

10.0 Limitations

YE have prepared this report with all reasonable skill, care and diligence. The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources.

The opinions given in this report have been dictated by the finite data on which are they based and are relevant only to the purpose for which the report was commissioned.

Information reviewed should not be considered exhaustive and has accepted in good faith as providing true and representative data with respect to site conditions. Should additional information become available which may influence the opinion expressed in this report, YE reserves the right to review such information and, if warranted, to alter the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed.

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted industry practices at this time and as such are not a guarantee that the study site is free of hazardous conditions.

This report has been prepared solely for the use of the named client and may not be relied upon by other parties without written consent from YE. YE disclaim any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

APPENDIX A: Proposed Redevelopment Plans

1. GENERAL
(i) THIS DRAWING IS NOT TO BE SCALED. WORK TO FIGURED DIMENSIONS ONLY, CONFIRMED ON SITE.
(ii) THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS, DETAILED SPECIFICATIONS WHERE APPLICABLE AND ALL ASSOCIATED DRAWINGS IN THIS SERIES.
(iii) ANY DISCREPANCY ON THIS DRAWING IS TO BE REPORTED IMMEDIATELY TO THE PARTNERSHIP FOR CLARIFICATION.
(iv) THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.

OUTFALL TO WATERCOURSE

HYDROBRAKE MANHOLE LIMITING FLOWS TO QBar - 76.6l/s

TO BE READ IN CONJUNCTION WITH
AMBIENTAL SWDS REPORT 2322
AMBIENTAL FRA REPORT 2323

PRELIMINARY DRAWING
DRAWING FOR INFORMATION ONLY. NOT FOR CONSTRUCTION.

KEY
- POTENTIAL LOCATION FOR PERMEABLE PAVING
- SURFACE WATER STORAGE AREAS
- SURFACE WATER DRAIN
- BIORETENTION
- OVERLAND FLOW

N
INDICATIVE ONLY

FEASIBILITY ILLUSTRATIVE MASTERPLAN

REV	DATE	BY	DESCRIPTION
-	-	-	-

Graphic Scale: SCALE 1:1250 (A1)

Client: PARKER DANN

Ambiental Technical Solutions
The Sussex Innovation Centre
Science Park Square,
Falmer, Brighton
BN1 9SB
Tel +44 (0) 203 857 8536
www.ambiental.co.uk
drainage@ambiental.co.uk

Project: LAND ADJ CHURCH LANE, CLYMPING
CONTRACT No. 2322 07.12.16

Drawing: SITE LAYOUT
OUTLINE DRAINAGE STRATEGY

Drawn by:	MN	Date:	07.12.16
Checked by:	OH	Date:	07.12.16
Approved by:	DC	Date:	07.12.16

Drawing No. 2322/01 Revision -

Drawing Scale: 1:1250 A1

APPENDIX B: Site Investigation Plan



Title: **Investigation Location Plan**

Your Environment	Site Name: **Church Lane, Clymping**	Job No: **YE6619**

APPENDIX C: Borehole Logs

YourGeotechnical

Borehole Log

Borehole No. **WS01**

Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	499901E - 102043N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.00	C					TOPSOIL: Grass overlying soft brown silty, slightly sandy CLAY. Sand is fine.
					0.40			Soft becoming firm brown becoming light brown silty CLAY.
		1.00 - 2.00	C					
		1.20	C	N=11 (2,1/2,3,2,4)				
					1.68			Light brown slightly clayey SAND. Sand is fine to medium.
		2.00 - 3.00	C					
		2.00	C	N=10 (3,2/3,2,2,3)				
					2.35			Soft light brown silty, slightly sandy CLAY becoming more sandy with depth. Sand is fine to medium.
	▼	3.00 - 4.00	C					
		3.00	C	N=8 (2,3/2,2,2,2)				
					3.50			CHALK comprised of brown mottled white clayey, gravelly SILT. Gravel is fine to medium, sub-rounded to sub-angular of flint. (LEWES NODULAR FORMATION).
		4.00	C	N=46 (10,10/11,11,11,13)				
					4.45			End of Borehole at 4.45m

Remarks

Core recovery: 0-1m 90%, 1-2m 80%, 2-3m 100%, 3-4m 100%.
Installation noted to 3.00m.
Water strike at 3.00m.

AGS

YourGeotechnical

Borehole Log

Borehole No.
WS02
Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords: 499912E - 101958N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:	Scale 1:50
Client:	Bailifscourt Estate.		Dates: 23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C					TOPSOIL: Grass overlying soft brown silty, slightly sandy CLAY. Sand is fine.
					0.50			Soft brown becoming light brown silty CLAY.
		1.00 - 2.00	C					
		1.20	C	N=9 (2,2/2,2,2,3)				
		2.00 - 3.00	C					
		2.00	C	N=9 (2,3/2,3,2,2)				
					2.70			CHALK comprised of brown becoming white clayey, gravelly SILT. Gravel is fine to medium, angular to sub-angular of flint. (LEWES NODULAR FORMATION).
	▼	3.00 - 4.00	C					
		3.00	C	N=7 (1,1/1,2,2,2)				
		4.00	C	N=40 (9,9/10,10,10,10)				
					4.45			End of Borehole at 4.45m

1 2 3 4 5 6 7 8 9 10

Remarks

Core recovery: 0-1m 80%, 1-2m 80%, 2-3m 90%, 3-4m 100%.
Water strike at 3.10m.

AGS

YourGeotechnical

Borehole Log

Borehole No. **WS03**

Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	499956E - 101865N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.00	C		0.25			TOPSOIL: Grass overlying soft brown silty, slightly sandy CLAY. Sand is fine.
								Brown becoming light brown silty, slightly sandy, slightly gravelly CLAY. Sand is fine to medium. Gravel is occasional fine to coarse, sub-angular of flint.
		1.00 - 2.00	C					
		1.20	C	N=9 (2,2/3,2,2,2)				
	▼	2.00 - 3.00	C					
	▼	2.00	C	N=11 (2,3/3,2,3,3)				
		3.00	C	N=42 (10,10/10,11,10,11)				
					3.45			End of Borehole at 3.45m

1 2 3 4 5 6 7 8 9 10

Remarks

Core recovery: 0-1m 95%, 1-2m 750%, 2-3m 100%.
Installation noted to 3.00m.
Water stirke at 2.30m.

AGS

YourGeotechnical

Borehole Log

Borehole No.
WS04
Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords: 499956E - 102067N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:	Scale 1:50
Client:	Bailifscourt Estate.		Dates: 23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C					TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
					0.53			Soft brown becoming light brown silty CLAY.
		1.00 - 2.00	C					
		1.20	C	N=10 (2,2/2,3,2,2,3)	1.25			Orangish brown slightly clayey, gravelly SAND. Sand is fine to medium. Gravel is fine to medium, angular to sub-angular of flint.
		2.00	C	N=60 (4,4/7,8,15,30)				
					2.45			End of Borehole at 2.45m

Remarks
Core recovery: 0-1m 100%, 1-2m 85%.

AGS

YourGeotechnical

Borehole Log

Borehole No. **WS05** Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	500003E - 101979N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.00	C					TOPSOIL: Grass overlying brown silty, slightly sandy, slightly gravelly CLAY. Sand is fine. Gravel is occasional, coarse sub-rounded of flint.
					0.70			
		1.00 - 2.00	C					Soft brown silty, slightly gravelly CLAY. Gravel is occasional, fine of mixed lithology.
		1.20	C	N=9 (2,2/2,2,2,3)				
					1.75			
		2.00 - 3.00	C					Light brown slightly clayey, gravelly SAND. Sand is fine to medium. Gravel is fine, sub-angular of flint.
		2.00	C	N=11 (3,3/3,2,3,3)				
					2.80			
		3.00 - 4.00	C					Soft becoming firm light brown silty, slightly sandy CLAY becoming more sandy with depth. Sand is fine to medium.
	▼	3.00	C	N=8 (2,2/2,2,2,2)				
		4.00	C	N=45 (10,11/11,11,11,12)				
					4.45			End of Borehole at 4.45m

Remarks

Core recovery: 0-1m 90%, 1-2m 70%, 2-3m 100%, 3-4m 80%.
Water strike at 3.40m.

AGS

YourGeotechnical

Borehole Log

Borehole No.
WS06
Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords: 500074E - 101898N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:	Scale 1:50
Client:	Bailifscourt Estate.		Dates: 23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C		0.25			TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
		1.00 - 2.00	C					Firm orangish brown becoming light brown silty, slightly gravelly CLAY. Gravel is occasional, fine of mixed lithology.
		1.20	C	N=12 (2,2/3,3,3,3)				
		2.00 - 3.00	C		1.90			CHALK comprised of light brown becoming light brown mottled white clayey, silty, sandy GRAVEL. Sand is fine to medium. Gravel is fine to medium, angular of chalk and flint. (LEWES NODULAR FORMATION).
		2.00	C	N=14 (3,3/3,3,4,4)				
		3.00	C	N=42 (9,9/9,10,11,12)				
					3.45			End of Borehole at 3.45m

Remarks
Core recovery: 0-1m 100%, 1-2m 60%, 2-3m 100%.

AGS

YourGeotechnical

Borehole Log

Borehole No. **WS07**

Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	500026E - 102095N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.00	C		0.30			TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
		1.00 - 2.00	C					Soft becoming firm brown sandy, slightly gravelly CLAY. Sand is fine. Gravel is occasional, fine of mixed lithology.
		1.20	C	N=8 (2,2/2,2,2,2)				
		2.00 - 3.00	C		2.00			Light brown clayey, gravelly SAND. Sand is fine. Gravel is fine of chalk and flint.
		2.00	C	N=14 (2,3/3,4,3,4)				
	▼	3.00 - 4.00	C					
	▼	3.00	C	N=10 (2,2/2,2,2,4)				
		4.00	C	N=45 (9,11/10,13,10,12)				
					4.45			End of Borehole at 4.45m

Remarks

Core recovery: 0-1m 70%, 1-2m 100%, 2-3m 70%, 3-4m 100%.
Installation noted to 3.00m.
Water strike at 3.20m.

AGS

YourGeotechnical

Borehole Log

Borehole No.
WS08
Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords: 500134E - 102035N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:	Scale 1:50
Client:	Bailifscourt Estate.		Dates: 23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30			TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
		1.20	C	N=11 (3,3/2,3,3,3)				Soft becoming firm brown silty, sandy, slightly gravelly CLAY getting sandier with depth. Sand is fine. Gravel is occasional, fine of mixed lithology.
		2.00	C	N=14 (3,3/3,3,4,4)				
		3.00	C	N=41 (8,9/11,10,10,10)				
					3.45			End of Borehole at 3.45m

1 2 3 4 5 6 7 8 9 10

Remarks
Core recovery: 0-1m 90%, 1-2m 80%, 2-3m 95%, 3-4m 100%.

AGS

YourGeotechnical

Borehole Log

Borehole No.
WS09
Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	500231E - 101956N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C		0.30			TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
		1.00 - 2.00	C					Soft brown becoming light brown silty, slightly gravelly CLAY. Gravel is occasional, fine of flint and mixed lithology.
		1.20	C	N=12 (3,3/3,3,3,3)	1.80			CHALK comprised of white clayey, silty GRAVEL. Gravel is fine to medium, angular to sub-angular of flint. (LEWES NODULAR FORMATION).
		2.00 - 3.00	C					
		2.00	C	N=9 (2,2/3,2,2,2)				
		3.00	C	N=40 (10,10/10,10,10,10)				
					3.45			End of Borehole at 3.45m

1 2 3 4 5 6 7 8 9 10

Remarks
Core recovery: 0-1m 100%, 1-2m 100%, 2-3m 90%, 3-4m 70%.

AGS

YourGeotechnical

Borehole Log

Borehole No. **WS10**

Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	500140E - 102164N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	23/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C		0.30			TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
		1.00 - 2.00	C					Soft brown becoming light brown silty, slightly gravelly CLAY. Gravel is occasional, fine of flint and mixed lithology.
		1.20	C	N=8 (2,2/2,2,2,2)	1.80			Light brown clayey, slightly gravelly SAND. Sand is fine to medium. Gravel is occasional, fine, angular to sub-angular of flint.
		2.00 - 3.00	C					
		2.00	C	N=16 (3,4/4,4,4,4)	3.00			Chalk comprised of white clayey, silty GRAVEL. Gravel is fine to medium, angular to sub-angular of flint. (LEWES NODULAR FORMATION).
		3.00 - 4.00	C					
		3.00	C	N=12 (3,3/2,3,3,4)				
		4.00	C	N=48 (7,9/10,10,13,15)	4.45			End of Borehole at 4.45m

1 2 3 4 5 6 7 8 9 10

Remarks

Core recovery: 0-1m 90%, 1-2m 90%, 2-3m 80%, 3-4m 100%.

AGS

YourGeotechnical

Borehole Log

Borehole No. **WS11** Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	500229E - 102119N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	24/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.00	C		0.40			TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
								Soft brown slightly sandy CLAY. Sand is fine.
		1.00 - 2.00	C		1.00			
		1.20	C	N=11 (2,3/2,3,3,3)				Firm light brown sandy, slightly gravelly CLAY. Sand is fine. Gravel is occasional, fine of chalk, flint and mixed lithology.
		2.00 - 3.00	C					
		2.00	C	N=16 (4,4/4,4,4,4)				
		3.00	C	N=41 (9,10/10,10,11,10)				
					3.45			End of Borehole at 3.45m

Remarks

Core recovery: 0-1m 85%, 1-2m 90%, 2-3m 100%, 3-4m 100%.
Installation noted to 3.00m.

AGS

YourGeotechnical

Borehole Log

Borehole No.
WS12
Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	500338E - 102060N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	24/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C		0.30			TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
								Soft brown slightly sandy CLAY. Sand is fine.
		1.00 - 2.00	C		1.00			
		1.20	C	N=9 (2,2/2,2,3,2)				Firm light brown sandy CLAY. Sand is fine.
					1.75			
		2.00 - 3.00	C					Light brown clayey, slightly gravelly SAND. Sand is fine to medium. gravel is occasional, fine of flint.
		2.00	C	N=12 (3,3/3,3,3,3)				
		3.00 - 4.00	C		3.00			
		3.00	C	N=16 (3,4/4,4,4,4)				Firm light brown sandy, gravelly CLAY. Sand is fine. Gravel is fine to medium, angular to sub-angular of flint and chalk.
		4.00	C	N=43 (9,9/10,11,11,11)				
					4.45			End of Borehole at 4.45m

Remarks
Core recovery: 0-1m 90%, 1-2m 100%, 2-3m 90%, 3-4m 80%.

AGS

YourGeotechnical

Borehole Log

Borehole No.
WS13
Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords: 500156E - 102303N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:	Scale 1:50
Client:	Bailifscourt Estate.		Dates: 24/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C					TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
					0.75			
		1.00 - 2.00	C					Soft brown becoming light brown sandy CLAY becoming sandier with depth. Sand is fine.
		1.20	C	N=11 (2,3/2,2,3,4)				
		2.00 - 3.00	C		2.00			CHALK comprised of cream slightly clayey, very silty GRAVEL. Gravel is fine to medium, angular of chalk. (LEWES NODULAR FORMATION).
		2.00	C	N=12 (3,3/3,3,3,3)				
		3.00 - 4.00	C					
		3.00	C	N=11 (3,2/2,2,3,4)				
	▼							
		4.00	C	N=45 (11,12/12,11,11,11)				
					4.45			End of Borehole at 4.45m

Remarks

Core recovery: 0-1m 80%, 1-2m 85%, 2-3m 90%, 3-4m 100%.
Water strike at 3.60m.

AGS

YourGeotechnical

Borehole Log

Borehole No. **WS14**

Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	500230E - 102252N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	24/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C					TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
					0.60			
		1.00 - 2.00	C					Firm brown becoming light brown sandy, slightly gravelly CLAY becoming sandier with depth. Sand is fine. Gravel is occasional, fine to medium of flint and chalk.
		1.20	C	N=12 (3,3/3,3,3,3)				
		2.00 - 3.00	C		2.00			CHALK comprised of white slightly clayey, very silty GRAVEL. Gravel is fine to medium, angular of chalk. (LEWES NODULAR FORMATION)
		2.00	C	N=16 (3,4/4,4,4,4)				
		3.00	C	N=43 (7,9/9,11,11,12)				
					3.45			End of Borehole at 3.45m

Remarks

Core recovery: 0-1m 70%, 1-2m 80%, 2-3m 100%, 3-4m 100%.
Installation noted to 3.00m.

AGS

YourGeotechnical

Borehole Log

Borehole No. **WS15**

Sheet 1 of 1

Project Name:	Church Lane, Climping.	Project No. YE6619	Co-ords:	500307E - 102187N	Hole Type WLS
Location:	Littlehampton, BN17.		Level:		Scale 1:50
Client:	Bailifscourt Estate.		Dates:	24/01/2019	Logged By TJS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C					TOPSOIL: Grass overlying brown silty, slightly sandy CLAY. Sand is fine.
					0.60			
		1.00 - 2.00	C					Firm brown sandy, slightly gravelly CLAY becoming sandier with depth. Sand is fine. Gravel is occasional, fine of flint.
		1.20	C	N=10 (2,2/2,3,2,3)				
		2.00 - 3.00	C					
		2.00	C	N=23 (4,5/5,6,6,6)				
		3.00	C	N=45 (9,10/11,11,11,12)				
					3.45			End of Borehole at 3.45m

Remarks

Core recovery: 0-1m 80%, 1-2m 95%, 2-3m 100%, 3-4m 90%.

AGS

APPENDIX D: Geotechnical Lab Results

YourGeotechnical
Chilgrove Business Centre
Chilgrove Park Road
Chichester
PO18 9HU

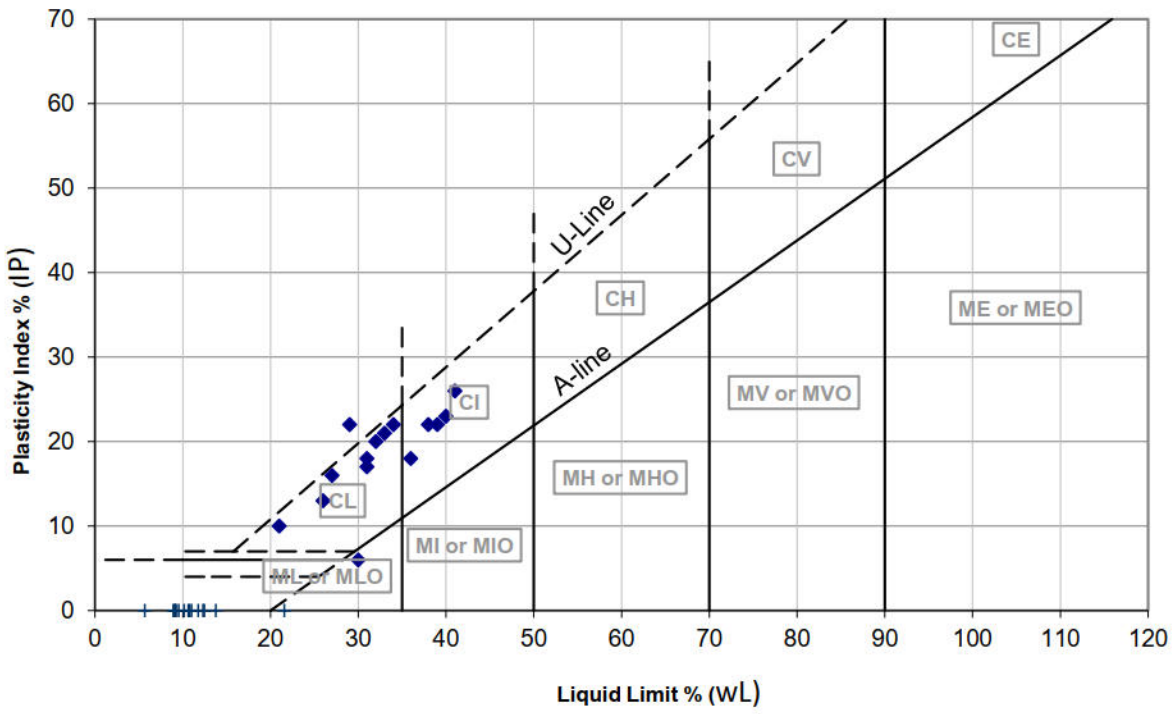
Client: Bailifscourt Estate.

Job No:	Site:	Date:	Sheet:
YE 6619	Church Lane, Climping.	04/02/2019	1

Interpretation of Moisture Content, Liquid and Plastic Limits

Location	Depth	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Retained by 0.425mm	Modified (w)	Modified (I_P)	Liquidity/ Consistency		Casagrande Class	N.H.B.C Class
		(w)	(w_L)	(w_P)	(I_P)		(w')	(I_P')	(I_L)	(I_C)		
	(m)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)		(%)
WS01	1.00	20	36	18	18	0	20	18	0.1	0.9	C I	LOW
WS02	1.80	25	40	17	23	0	25	23	0.3	0.7	C I	MEDIUM
WS03	2.75	21	31	13	18	0	21	18	0.4	0.6	C L	LOW
WS04	0.50	17	27	11	16	11	19	14	0.4	0.6	C L	LOW
WS05	1.50	16										
WS06	1.00	23	38	16	22	0	23	22	0.3	0.7	C I	MEDIUM
WS07	1.50	18	32	12	20	0	18	20	0.3	0.7	C L	MEDIUM
WS08	2.75	27	39	17	22	0	27	22	0.5	0.5	C I	MEDIUM
WS09	2.80	27	29	7	22	0	27	22	0.9	0.1	C? L	MEDIUM
WS10	3.75	28	30	24	6	0	28	6	0.7	0.3	M L	*
WS11	0.80	18	34	12	22	0	18	22	0.3	0.7	C L	MEDIUM
WS12	3.50	13	21	11	10	0	13	10	0.2	0.8	C L	LOW
WS13	1.50	23	41	15	26	0	23	26	0.3	0.7	C I	MEDIUM
WS14	1.80	16	31	14	17	0	16	17	0.1	0.9	C L	LOW
WS14	0.80	17	26	13	13	0	17	13	0.3	0.7	C L	LOW
WS15	1.50	18	33	12	21	0	18	21	0.3	0.7	C L	MEDIUM

*Clause 4.2 - D5 (b) of the NHBC Standards states that 'shrinkable soils are those...having a modified plasticity index of 10% or greater'



2531

ANALYTICAL TEST REPORT

Contract no: 76457

Contract name: Church Lane

Client reference: YE6619

Clients name: YourGeotechnical

Clients address: Unit 8-10 Brockholes Business Park
Brockholes
Holmfirth
HD9 7BN

Samples received: 30 January 2019

Analysis started: 30 January 2019

Analysis completed: 05 February 2019

Report issued: 05 February 2019

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by:
[redacted]
Karan Campbell
Director

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
76457-1	WS01	1.50	Sandy Clay	-	-	14.7
76457-2	WS03	2.50	Silty Clay	-	-	14.3
76457-3	WS05	3.50	Silty Clay	-	-	14.3
76457-4	WS07	1.00	Silty Clay	-	-	14.5
76457-5	WS09	2.00	Silty Clay with Gravel	-	-	19.9
76457-6	WS11	3.00	Sandy Clay with Gravel	-	-	10.6
76457-7	WS13	0.75	Sandy Clay	-	-	15.9

Chemtech Environmental Limited

SOILS

Lab number			76457-1	76457-2	76457-3	76457-4	76457-5	76457-6
Sample id			WS01	WS03	WS05	WS07	WS09	WS11
Depth (m)			1.50	2.50	3.50	1.00	2.00	3.00
Date sampled			28/01/2019	28/01/2019	28/01/2019	28/01/2019	28/01/2019	28/01/2019
Test	**Method**	**Units**						
pH	CE004 M	units	7.2	7.3	7.4	7.3	7.7	7.8
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	<10	<10	<10	16	<10	<10
Sulphate (2:1 water soluble)	CE061 M	g/l SO_4	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Sulphate (total)	CE062 M	mg/kg SO_4	120	134	109	156	290	<100
Sulphate (total)	CE062 M	% w/w SO_4	0.01	0.01	0.01	0.02	0.03	<0.01
Sulphur (total)	CE119	% w/w S	<0.01	0.02	<0.01	<0.01	0.22	0.05

Chemtech Environmental Limited

SOILS

Lab number			76457-7
Sample id			WS13
Depth (m)			0.75
Date sampled			28/01/2019
Test	**Method**	**Units**	
pH	CE004 M	units	7.5
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	<10
Sulphate (2:1 water soluble)	CE061 M	g/l SO_4	<0.01
Sulphate (total)	CE062 M	mg/kg SO_4	183
Sulphate (total)	CE062 M	% w/w SO_4	0.02
Sulphur (total)	CE119	% w/w S	0.02

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	Wet	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO_4
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	0.01	g/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	0.01	% w/w SO_4
CE119	Sulphur (total)	Acid extraction, ICP-MS	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
76457-1	WS01	1.50	N	
76457-2	WS03	2.50	N	
76457-3	WS05	3.50	N	
76457-4	WS07	1.00	N	
76457-5	WS09	2.00	N	
76457-6	WS11	3.00	N	
76457-7	WS13	0.75	N	

APPENDIX L: PileDesigns Geotechncial Expertise Technical Note

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB

[redacted]

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

PILEDESIGNS
GEOTECHNICAL EXPERTISE

Technical Note

To: Alex Stratford (Ground & Water)
cc:
From: Samuel Akinola (Piledesigns Limited)
Date: 22th July 2024
Project: 27481 – Climping - Land adjacent to Church Lane, West Sussex, BN17 5GG

Pile Capacity Assessment

This Technical Note (TN) provides an assessment of the pile design resistances at the proposed development at the land adjacent to Church Lane, Climping, West Sussex. It is understood that the proposed development comprises of the of construction of multiple new residential dwellings.

Piledesigns Limited has been appointed by Ground & Water to undertake a review of pile capacities. At the time or writing no pile loads are currently available and we have provided approximate capacities for 300mm, 350mm and 450mm diameter auger bored piles.

The design has been carried out in accordance with BS EN 1997 and other relevant documents.

Ground Conditions

Information in the ground conditions have been taken from the Ground & Water Borehole logs (Ref: GWPR6003) dated 21/05/2024. This site investigation comprised records of seven cable percussive boreholes which were shown to extend to a maximum depth of 20mBGL (metres below ground level.

The general sequence of strata found during the investigation comprised of made ground overlying River Terrace Deposits and in turn Undifferentiated Chalk - Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk and Portsdown Chalk Formation with depth.

The River Terrace Deposits were generally composed both cohesive and granular parts. The cohesive part was proven to a maximum depth of 5.2mBGL and generally described as brown, grey gravelly sandy Clay and were encountered in all exploratory hole. The granular part was proven to a maximum depth of 6.7mBGL and generally described as brown, grey, yellow, gravelly clayey Sand and encountered in only BH1-2 and BH6.

The Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk and Portsdown Chalk Formation was recorded as an off white, cream, brown gravelly sandy Silt. For preliminary assessment the Chalk has been assumed from a maximum depth of 7.0mBGL.

Groundwater strikes were encountered between 3.0m-6.0mBGL during the site investigation work. For design purpose we have modelled groundwater at 3.0mBGL.

Note that solution features can be typical of some chalk stratum it is understood that whilst they haven't specifically been identified during site works, they cannot be discounted. The design is based on a seven

borehole and the depth to Chalk could vary across the site. There is a residual risk that dissolution features could be encountered in the construction phase, identified by voiding or locally loose soil.

A summary of the soil profile and geotechnical test results are presented in the Appendices.

Ground Model

It is assumed that works will be carried out from approximately borehole commencement level. A single ground model has been taken which is outlined in Table 1 below.

Table 1: Ground Model

Depth (mBGL)			Soil
0.0	to	2.5	Made Ground and potentially desiccated Clay
2.5	to	7.0	River Terrace Deposits
7.0	to	--	Undifferentiated Chalk Formation

For design purpose we have modelled groundwater at 3.0mBGL

Geotechnical Assessment

All piles have been designed to derive their bearing capacity from shaft and end bearing within the Chalk. Positive shaft friction within the made ground and upper cohesive deposits up to a maximum depth of 2.50mBGL which has been ignored to account for heave, deeper made ground deposits and or material above cut off level.

Concrete Aggressivity

C28/35 concrete has been used in the structural analysis and is sufficient for the pile actions. In the absence of relevant testing sulphate conditions are unknown.

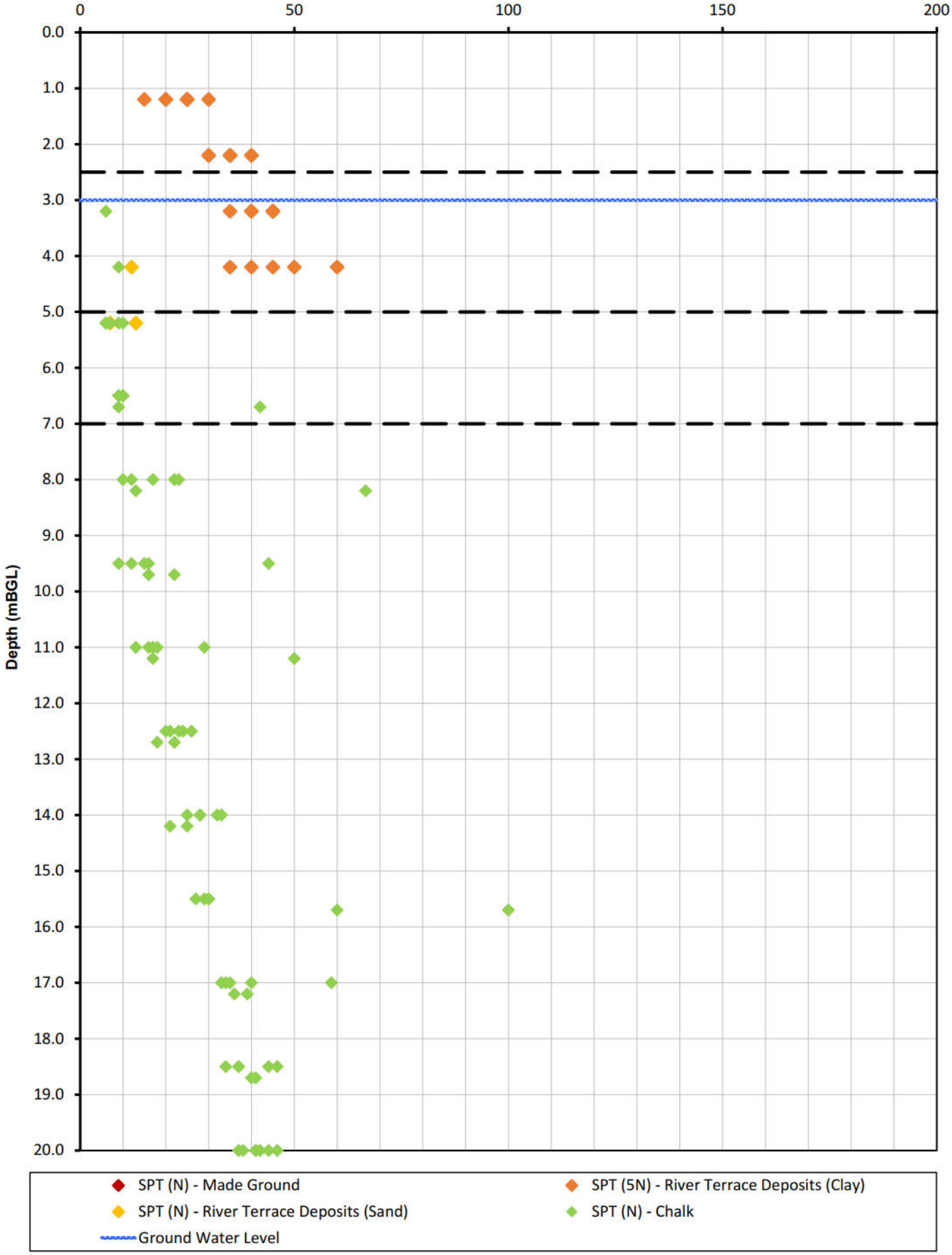
Appendix A

Soil Profile, Geotechnical Tests Results

PILEDESIGNS
GEOTECHNICAL EXPERTISE

Project Name:	Climping- Land adjacent to Church Lane			**Date:**	22/07/2024
Project No:	27481	**Drawn by:**	SA	**Rev:**	TA1

All against depth for all boreholes

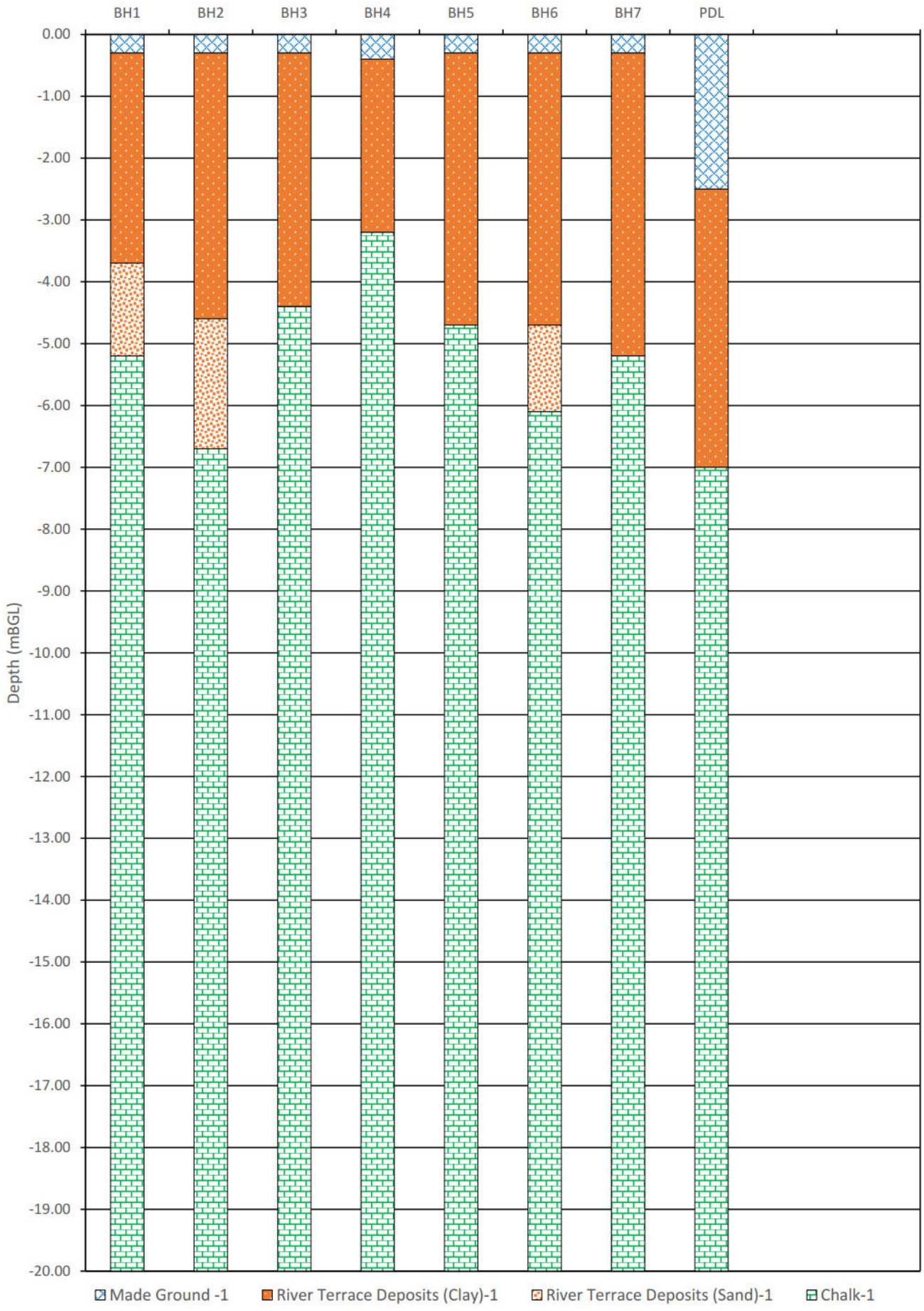


PILEDESIGNS
GEOTECHNICAL EXPERTISE

Project Name: Climping- Land adjacent to Church Lane **Date:** 22/07/2024

Project No. 27481 **Drawn by:** SA **Rev:** TA1

Borehole Profile



PILEDESIGNS
GEOTECHNICAL EXPERTISE

Appendix B

Summary of Allowable Pile Capacities

PILEDESIGNS
GEOTECHNICAL EXPERTISE

Project Name:	Climping - Land adjacent to Church Lane			**Date:**	16/07/2024
Project No:	27481	**Drawn by:**	SA	**Rev:**	TA0

