



***40 Little Paddocks, Ferring, Worthing, BN12
5NJ***

***Mr Paul Bridgwater
(LITTLELINK HOLDINGS LIMITED)***

GEOTECHNICAL GROUND INVESTIGATION REPORT

Project No. 1188-20



March, 2020

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APPENDIX B Geotechnical Test Results

Your ref:
Our ref: SKZ_1188/20

Mr Paul Bridgwater
LITTLELINK HOLDINGS LIMITED
Old House Barn, Ardingly Road,
West Hoathly, East Grinstead,
RH19 4RA

Dear Paul,

**REPORT ON GEOTECHNICAL GROUND INVESTIGATION
AT 40 LITTLE PADDOCKS, FERRING, WORTHING, BN12 5NJ**

1. INTRODUCTION

AVZGeoEng Limited have been commissioned by Mr Paul Bridgwater from LITTLELINK HOLDINGS LIMITED ('the Client') to carry out a Geotechnical Investigation at the above site as indicated on the engineering drawings provided by the client and in accordance with the AVZ quotation ref: SKZ_1188/20.

The proposed is for development of two small chalet style bungalows.

2. THE SITE

The site, which may be found by approximate National Grid reference OS Grid Ref: E: 509428 N: 102215, is situated at No 40 Little Paddocks, Ferring, Worthing, BN12 5NJ.

An extract of the Ordnance Survey map showing the location of the site is included in **Figure 1**.

The published 1:50,000 scale geological map of the area indicates that the site is underlain by River Terrace Deposits – Sand, Silt and Clay over New Pit Chalk Formation – Chalk as bedrock geology.

The River Terrace Deposits are remnants of former floodplains and typically comprise a sandy gravel or gravelly sand with a varying proportion of cohesive material. They are characteristically present at higher levels than the current river which has since eroded down to greater depths. River Terrace Deposits will therefore be encountered in the base and lower slopes of river valleys. The deposits have a reasonable degree of variability in clast size and density. They are typically flint and quartz rich gravels with variable amounts of limestone.

The New Pit Chalk Formation is principally blocky, white, firm to moderately hard chalk with numerous marl seams. Flint occurs sporadically in the upper part of the formation in the deeper basin areas of the Southern Province. In some localities flint occurs in seams towards the base of the formation most notably over structural highs, towards the margins of the outcrop. (Hopson, 2005). The marl seams of the New Pit Chalk Formation are attributed to episodic ash deposits and their extensive lateral extent is due to their volcanic origin (CIRIA C574, 2002).

The existing topography and history of development of the site suggest that in addition to these natural strata some made ground may be present on the site.

3. LIMITATIONS

Any opinions and interpretations expressed in this report are based on the ground conditions encountered during the site work and on the results of tests made in the field, together with AVZGeoEng conjectural interpretation between exploratory holes. There may, however, be other conditions prevailing at the site which have not been revealed by the investigation and which have therefore not been taken into account in this report. While the report may offer opinions on the possible configuration of strata, both between the excavations and below the maximum depth achieved by the investigation, these comments are for guidance only. It should also be noted that groundwater levels vary due to seasonal or other effects and may at times differ to those measured during the investigation. For investigations, which include environmental issues, the data obtained relate to the conditions which are relevant at the time of the investigation.

This report is not an engineering design and the figures and calculations enclosed to the report should be used by the Structural Engineer taking note that variations may apply depending on design loading, in techniques used, and in site conditions. Our recommendations should therefore not supersede the Engineer's design.

AVZGeoEng Limited prepared this Report for our Client. Any third parties using this Report do so entirely at their own risk. AVZGeoEng makes no warranty or representation whatsoever, express or implied, with respect to the use by a third party of any information contained in this Report or its suitability for any purpose. AVZGeoEng assumes no responsibility for any costs, claims, damages or expenses (including any consequential damages) resulting from the use of this Report or any information contained in this Report by a third party.

4. GROUND INVESTIGATION

The site work was carried on 28th February 2020, aimed to obtain geotechnical parameters in regards to the proposed development. The investigation and soil descriptions were carried out in general accordance with BS5930:2015 – Code of Practice for Site Investigations.

The ground investigation comprised the following works:

- 4No boreholes advanced by drive-in sampler techniques to a max 6.0m depth;
- Installation of a single Ø35mm standpipe for further groundwater monitoring;
- In situ testing and logging;
- Two rounds of groundwater monitoring after completion of the main site work.

The location of the boreholes was determined approximately by reference to physical features present on the site at the time of investigation and the ground level at the borehole locations was not determined.

The location of the exploratory holes is presented on **Figure 2**, the exploratory hole logs and the geotechnical testing results are presented in the **Appendix A** and **Appendix B**, respectively.

5. GEOTECHNICAL TESTING

The programme of geotechnical tests undertaken on samples obtained from the intrusive investigation is presented in **Table 1**, the main purpose of which was to classify the ground beneath the site and assist in determining its physical and mechanical properties. Where appropriate, testing was undertaken in accordance with BS 1377:1990 & EN ISO 14688-2 2004+A1:2013 Method of Tests for Soils for Civil Engineering Purposes and was carried out by the AVZGeoEng Ltd in-house laboratory.

Tests carried out in order to classify the concrete class required on site have been undertaken following the procedures within BRE SD1:2005 by a UKAS accredited laboratory (The Environmental Laboratory Ltd).

Table 1 – Summary of Geotechnical Testing Programme

Strata	Tests undertaken	No of Tests
Brickearth	Natural Moisture Content	2
	Plasticity Index	2
	pH & Water Soluble Sulphates	2
River Terrace Deposits	Natural Moisture Content	3
	Particle Size Distribution	2
	Plasticity Index	1
	pH & Water Soluble Sulphates	1

6. GROUND CONDITIONS

The exploratory holes revealed that the site is underlain by layer of Made Ground with limited thickness over stratum likely to be classified as Brickearth and River Terrace Deposits superficial deposits followed by White Chalk Formation at depth.

This appears to generally confirm the stratigraphical succession suggested by the published geological records.

The ground conditions are summarised in **Table 2** below.

Table 2 - General succession of strata encountered

Brief Description	Depth to top of stratum m.bgl	Thickness (m)
Made Ground	G.L	0.25 to 0.4
Brickearth	0.25 to 0.4	1.1 to 1.95
River Terrace Deposits	1.5 to 2.2	3.0 in BH2 Not proven in other BH
White Chalk Formation	4.5 Only disclosed in BH2	Not proven

The Made Ground encountered during the site investigation comprised sand and gravel with brick rubble and light brown clayey sandy silt with occasional roots - topsoil.

The stratum revealed under the made ground is likely to be classified as Brickearth, recovered as soft to firm, brown grey slightly orange mottled sandy silty clay.

The measured and inferred soil parameters for the stratum are listed in **Table 3** below.

Table 3 – Summary of Soil Parameters for Brickearth

Soil Parameters	Range	Results
Liquid Limit (%)	45 to 46	Appendix B
Plastic Limit (%)	17 to 18	Appendix B
Plastic Index (%)	27 to 29	Appendix B
Modified Plasticity Index (%)	27 to 29	Appendix B
Plasticity Term	Intermediate	
Volume Change Potential (NHBC)	Medium	
Moisture Content (%)	22.2 to 25.4	Appendix B
SPT 'N' Values	9 to 17	Appendix A, Figure 3
Undrained Shear Strength (kN/m ²) inferred by SPT ⁽¹⁾	41 to 77	Figure 4

Soil Parameters	Range	Results
Strength Term	Soft to firm	

The stratum revealed under the Brickearth is classified as the River Terrace Deposits containing both cohesive and granular soil. The cohesive River Terrace Deposits were recovered as very soft to firm, light brown and light grey, sandy slightly gravelly clayey silt and silty clay, with chalk fragments.

The granular River Terrace Deposits were found as medium dense to dense, light brown slightly grey, clayey to very clayey sand and gravel.

The measured and inferred soil parameters for the stratum are listed in **Table 4** below.

Table 4 – Summary of Soil Parameters for River Terrace Deposits

Soil Parameters	Range	Results
Liquid Limit (%)	37*	Appendix B
Plastic Limit (%)	17*	Appendix B
Plastic Index (%)	19*	Appendix B
Modified Plasticity Index (%)	16*	Appendix B
Plasticity Term	Intermediate*	
Volume Change Potential (NHBC)	Low*	
Moisture Content (%)	16.2 to 30.4	Appendix B
SPT 'N' Values	1 to 64	Appendix A, Figure 3
Undrained Shear Strength (kN/m ²) inferred by SPT ⁽¹⁾	5 to 72*	Figure 4
Strength Term	Very Soft to Firm	
Density Term	Medium dense to dense	

⁽¹⁾ SPT - Standard Penetration Tests

* Test carried out on sample from cohesive River Terrace Deposits

The White Chalk Formation was encountered at relatively shallow depth, and was recovered as white to grey Chalk sand and gravel in silty matrix, with flints present in the formation.

7. GROUNDWATER CONDITIONS

Groundwater strikes were recorded in all boreholes at levels between 0.4mbgl and 0.5mbgl. The groundwater level measured on completion of the site works was between 0.3mbgl to 0.45mbgl as listed in the table below.

Standpipe was installed in the BH4 to allow for groundwater monitoring after completion of the main site work.

The groundwater monitoring information is presented in the **Figure 6** attached to this Report.

It should be noted that groundwater levels might fluctuate for a number of reasons including seasonal variations.

8. RADON

Indicative Atlas of Radon in the UK indicates that the property is potentially in a Radon Affected Area, with maximum radon potential of 1-3% and as such is recommended that further assessment should be undertaken. For redevelopment sites, a GeoReport provided by the British Geological Survey would give further guidance on the issue.

Additional information about Radon Affected Areas could be obtained from the publication 'Radon - Guidance on protective measures for new buildings BRE211 (BRE and HPA, 2007)' and the "Indicative Atlas of Radon in England and Wales" published by the Health Protection Agency and British Geological Survey, see www.ukradon.org for more details.

9. CHEMICAL ATTACK ON BURIED CONCRETE

The results of chemical tests carried out on soil samples from the made ground and natural soil indicate 2:1 water soil extract sulphate with content of less than 20 mg/l with alkaline pH values.

These results indicate that, in accordance with BRE Special Digest 1:2005 Concrete in aggressive ground, the Aggressive Chemical Environment for Concrete (ACEC) Classification is **AC-1** with a Design Sulphate Class for the site of **DS-1**.

This assumes nominally static groundwater conditions and that no significantly disturbed clay comes into contact with concrete foundations or structures. This would apply for designing the concrete class for shallow foundations and concrete elements.

10. RECOMMENDATION IN RELATION TO FOUNDATIONS

From the results of site investigation, the following recommendations are given in respect to ground engineering and foundation design of the underlying soils:

- The site investigation consisted of four drive-in sampler boreholes up to 6.0mbgl aimed to confirm the ground profile below the site and recover samples for laboratory testing. A groundwater strike was recorded in all boreholes at levels between 0.4mbgl and 0.5mbgl, and standpipe was installed in the BH4 to allow for groundwater monitoring after completion of the main site work.
- The investigation found that site is underlain by Made Ground with limited thickness over stratum that is likely to be classified as Brickearth over River Terrace Deposits followed by White Chalk Formation at depth. The River Terrace Deposits were found with significant lateral and vertical variability of the founding strata and presence of very soft spots up to 1m thick as recorded in the BH3 and BH4.

- Given the nature of the ground and groundwater conditions encountered during the investigation piles are considered to be the most suitable foundation solution for the proposed development.
- For any lightweight structures alternatives to piled foundations may be considered. These would include both low bearing pressure raft foundations and reinforced spread footing foundations. In both cases foundation pressures should be kept to a minimum, i.e. not more than say 25-30kPa for the raft and 50 to 60kPa for beams. Spread footings can be designed to act as beams, with cruciform extensions beyond the perimeter of the structure to span over any soft spots or future subsidence features.
- It should be taken in to the consideration that the groundwater level at the time of investigation was found high so dewatering of the excavations is likely to be required. Pumping from open sumps in non-cohesive soils should be avoided as this can result in instability and general loosening of the soils at the base of the excavation.
- Special Design Consideration:
 1. Due to the presence of shrinkable soils foundations should be designed taking into account all the normal precautions, including minimum depths, to minimise the risk of future foundation movements in accordance with NHBC Standards, or similar. The findings of the ground investigation indicate that foundations should be designed for shrinkable soils of medium-volume change potential.
- The water-soluble soil extract sulphate contents tests indicate that, in accordance with BRE Special Digest 1:2005 Concrete in aggressive ground, the Aggressive Chemical Environment for Concrete (ACEC) Classification is **AC-1** with a Design Sulphate Class for the site of **DS-1**.
- All foundation excavations should be inspected and any made ground, soft, organic or otherwise unsuitable materials removed and replaced with mass concrete.

We trust that the above meets with your requirements, however, if should wish to discuss any of the matters further, please do not hesitate to contact us.

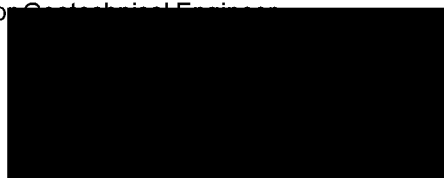
Yours Sincerely,

For AVZGeoEng Ltd

Author:

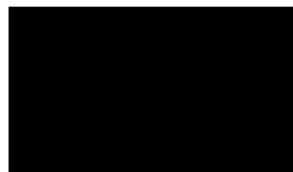
BSc (Hons) Silvanka Kadieva-Zarkovska

Senior Geotechnical Engineer

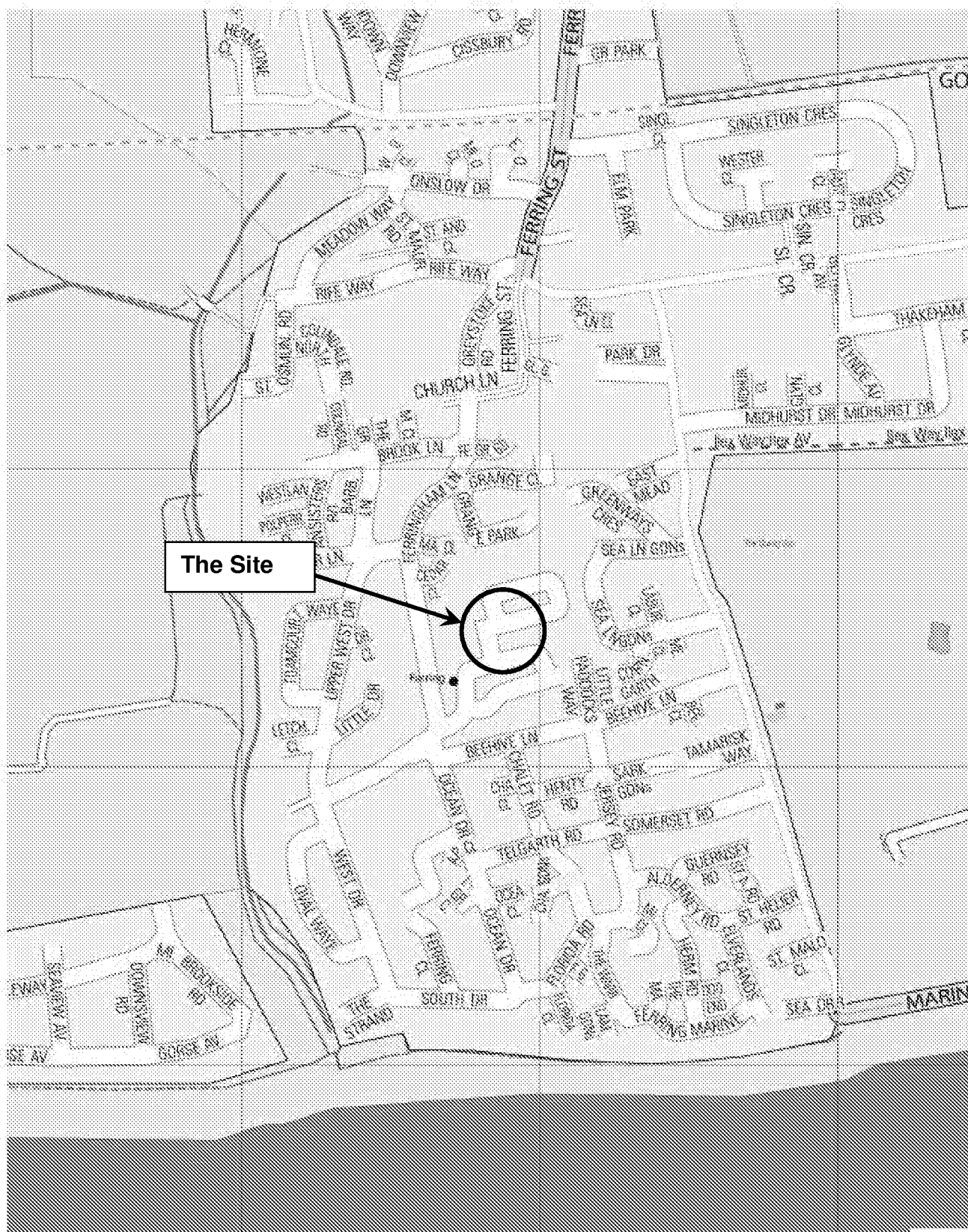


Approved:

Dipl. Ing. Boban Zarkovski CEng MICE



FIGURES



**Client: Mr Paul Bridgwater
(LITTLELINK HOLDINGS LIMITED)**

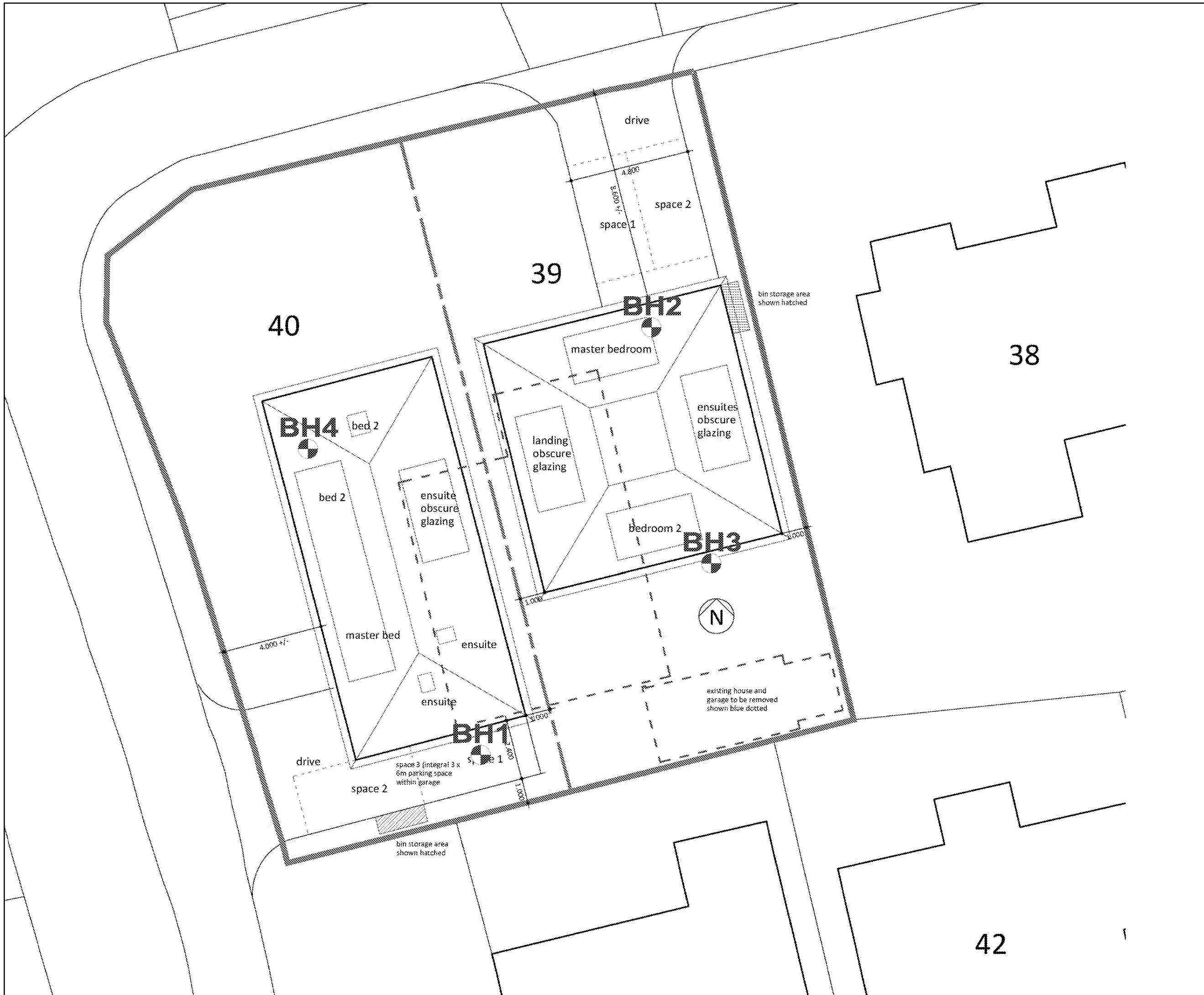
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Site: 40 Little Paddocks, Ferring, Worthing, BN12 5NJ

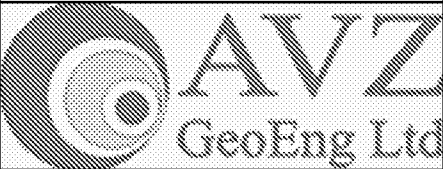
SITE LOCATION PLAN

Job No: 1188/20

Figure No: 1



LEGEND:
BH1 - Borehole



8 Tanyard Avenue
East Grinstead
West Sussex
RH19 4LU
United Kingdom
Email: info@avzgeoeng.co.uk
Web: www.avzgeoeng.co.uk
Mob: 07885977732
Tel: 01342457117

Client
Mr Paul Bridgwater
(LITTLELINK HOLDINGS LIMITED)

Project Title
40 Little Paddocks, Ferring,
Worthing, BN12 5NJ

Drawing Title
Layout Investigation
Points Plan

Drawn	Date	Checked	Date	Approved	Date
SKZ	09/03/20	BZ	09/03/20	BZ	09/03/20

Scale	Orig Size	Dimensions
NTS		M

Project No.	Drawing File
1188/20	

Drawing No.	Rev.
FIGURE_2	

ASUN DISTRICT COUNCIL

	Site	SPT N Vs Depth Profile	
	40 Little Paddocks, Ferring, Worthing, BN12 5NJ	Client: Mr Paul Bridgwater	Job Number 1188/20

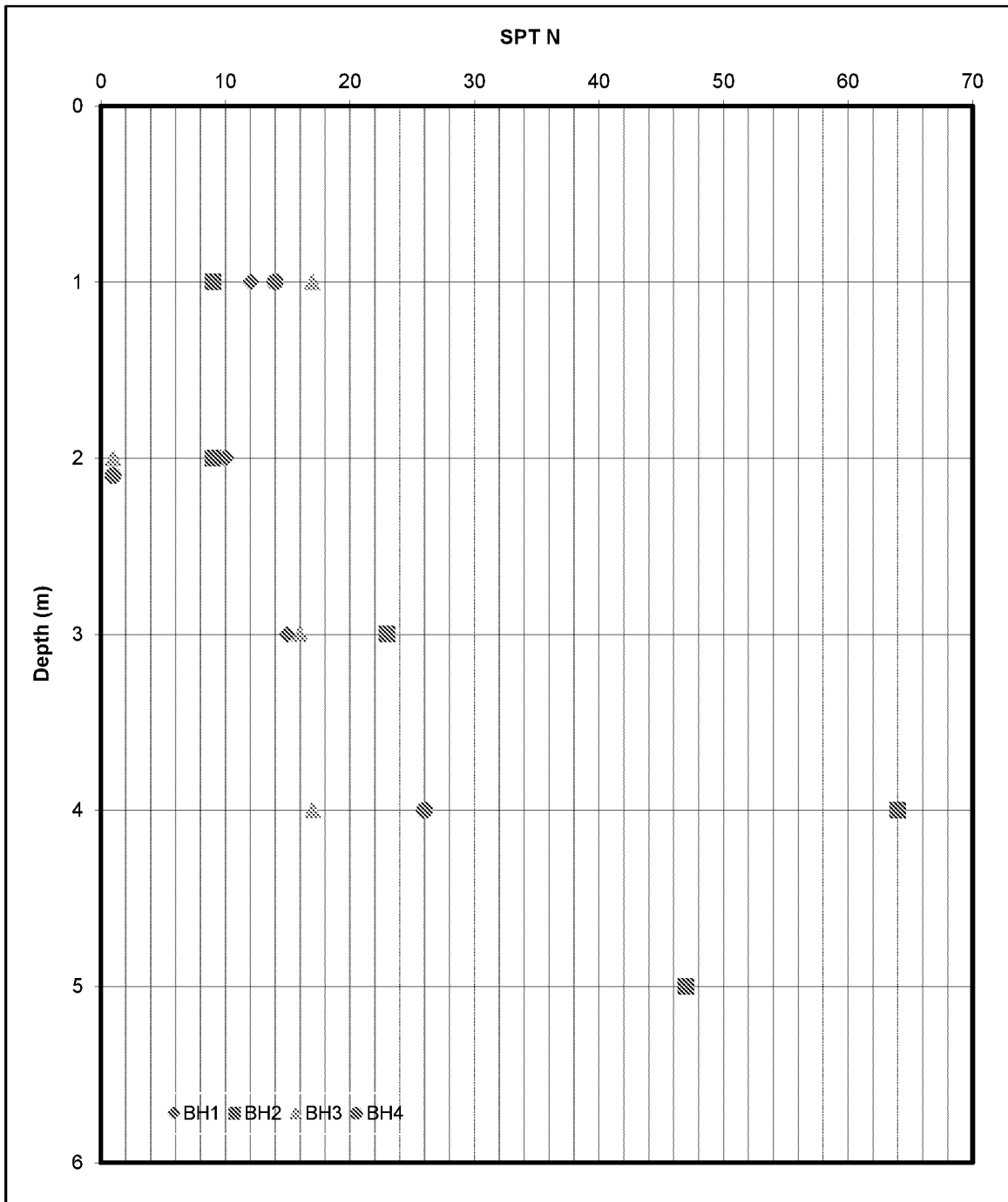


Figure 3_1

	Site	SPT N Vs Depth Profile	
	40 Little Paddocks, Ferring, Worthing, BN12 5NJ	Client: Mr Paul Bridgwater	Job Number 1188/20

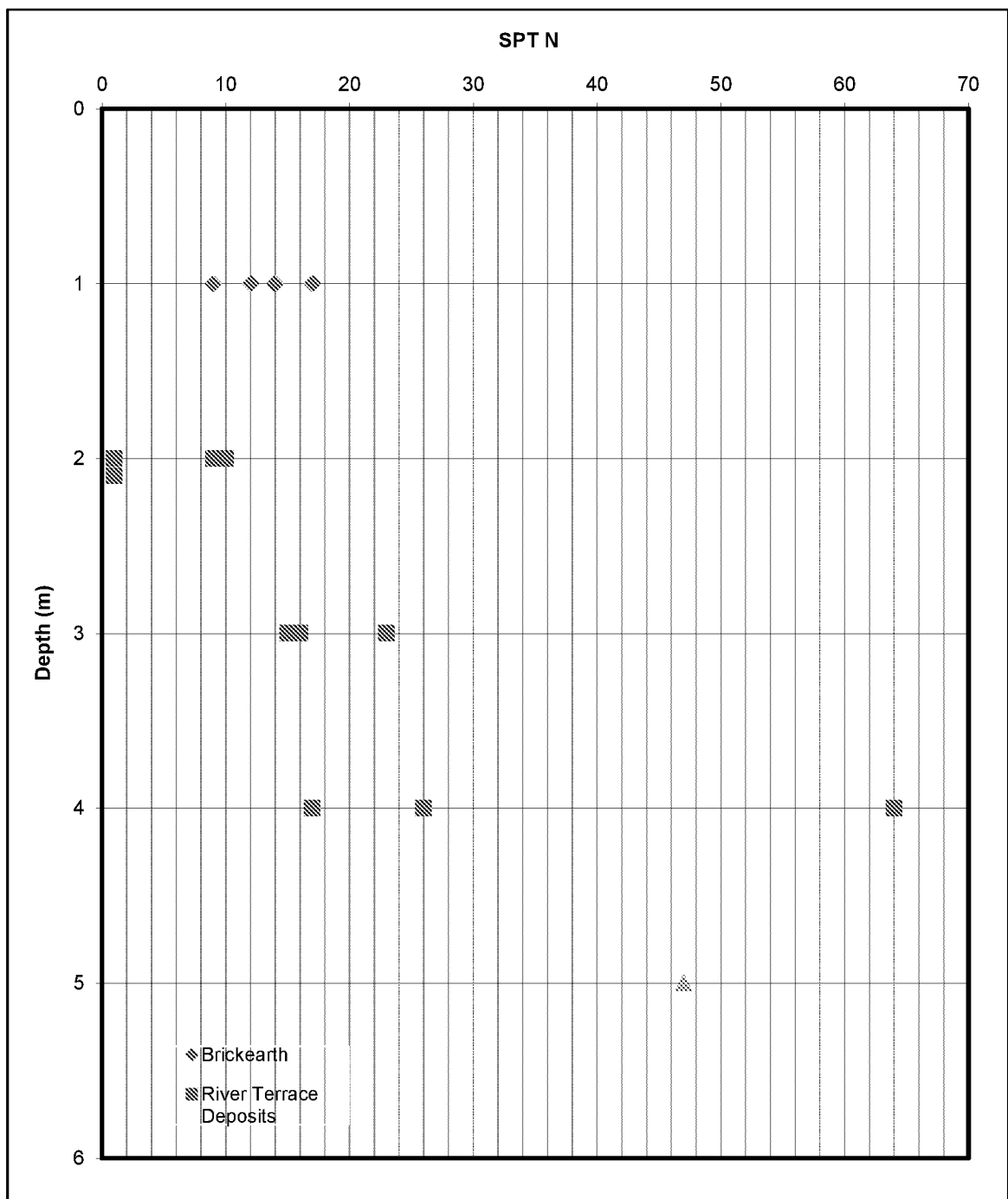


Figure 3_2

	Site	c_u Vs Depth Profile	
	40 Little Paddocks, Ferring, Worthing, BN12 5NJ	Client: Mr Paul Bridgwater	Job Number 1188/20

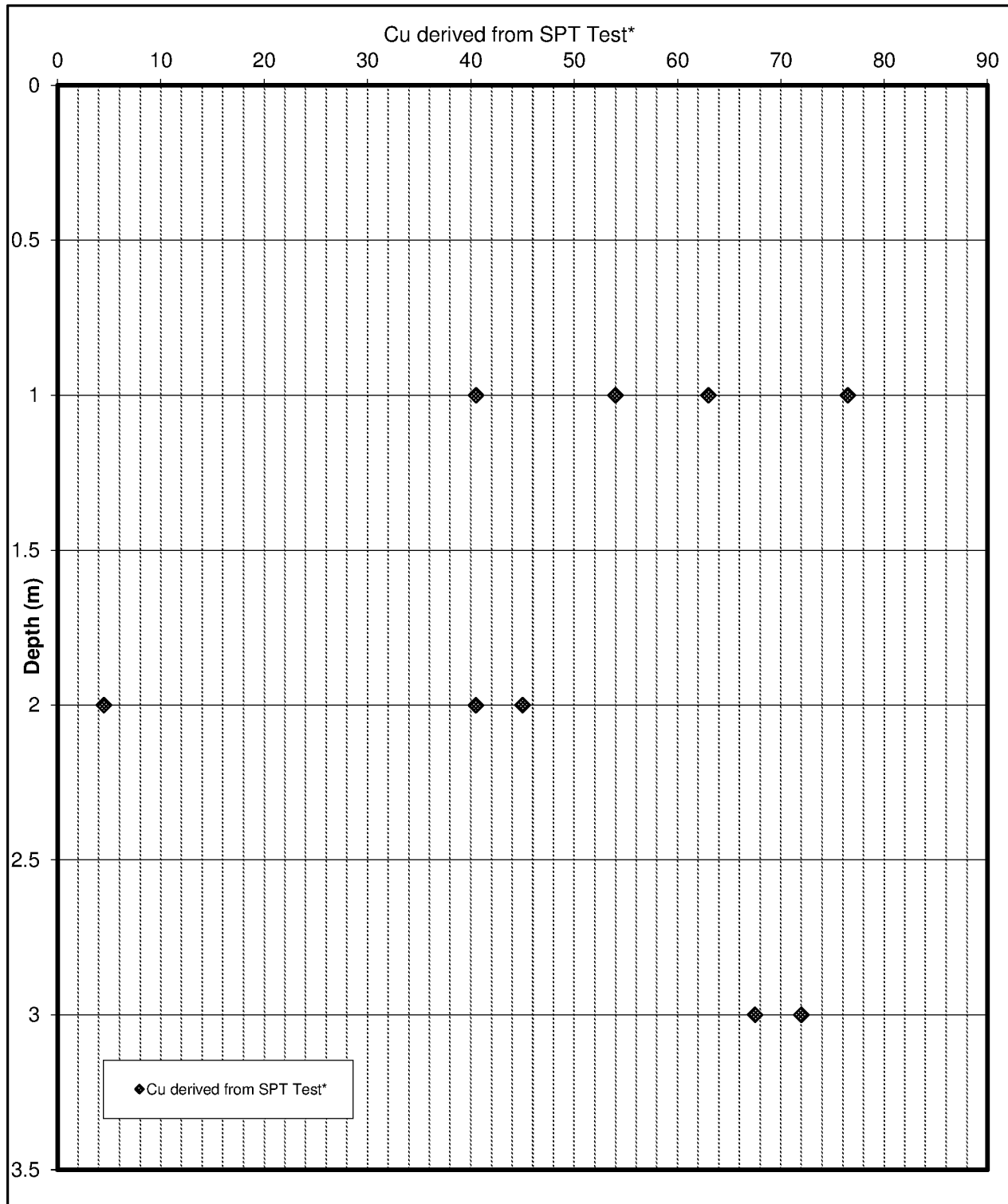


Figure 4

		Factual Report on Ground Investigation		PHOTOGRAPHIC LOG	
Client: Mr Paul Bridgwater (LITTLELINK HOLDINGS LIMITED)		Site: 40 Little Paddocks, Ferring, Worthing, BN12 5NJ		Job No: 1188/20	
Photo No.1	Figure 5				
Description: Terrier Rig Performing Drilling at the location					

Photo No.2	Figure 5	
Description: Core Recovered From BH1		

Photo No.3	Figure 5	
Description: Core Recovered From BH2		

Photo No.4	Figure 5	
Description: Core Recovered From BH3		

Photo No.5	Figure 5	
Description: Core Recovered From BH4		



AVZ GeoEng Ltd
8 Tanyard Avenue, East
Grinstead,
West Sussex, UK
RH19 4LU

Monitoring Record Sheet

Job number: SKZ_1188/20

Site: 40 Little Paddocks, Ferring, Worthing, BN12 5NJ

Operator: DG

Weather: sunny

Instrumentation: Gas Analyser _____

Serial No. _____

Other: Deep meter

Location	Date	Material	CH ₄		CO ₂	O ₂	H ₂ S	Atmos. Pressure	Diff. Pressure	Flow Rate	Water Level	Base of Borehole	Comments
			(% vol)	(%LEL)	(% vol)	(% vol)	(% vol)	(m.bar)	(m.bar)	(l/hr)	(m.bgl)	(m.bgl)	
BH4	06/03/20										0.37	5.00	

Figure 6_1



AVZ GeoEng Ltd
8 Tanyard Avenue, East
Grinstead,
West Sussex, UK
RH19 4LU

Monitoring Record Sheet

Job number: SKZ_1188/20

Site: 40 Little Paddocks, Ferring, Worthing, BN12 5NJ

Operator: DG

Weather:

Instrumentation: Gas Analyser _____

Serial No. _____

Other: Deep meter

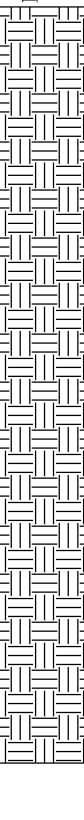
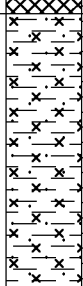
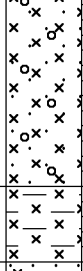
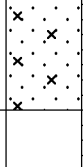
Location	Date	Material	CH ₄		CO ₂	O ₂	H ₂ S	Atmos. Pressure	Diff. Pressure	Flow Rate	Water Level	Base of Borehole	Comments
			(% vol)	(%LEL)	(% vol)	(% vol)	(% vol)	(m.bar)	(m.bar)	(l/hr)	(m.bgl)	(m.bgl)	
BH4	06/03/20										0.37	5.00	
BH4	20/03/20										0.60	5.00	

Figure 6_2

APPENDIX A

BOREHOLE LOG

Project 40 Little Paddocks, Ferring, Worthing, BN12 5NJ				BOREHOLE No BH1	
Job No SKZ_1188/20	Date 28-02-20 28-02-20	Ground Level (m)	Co-Ordinates (Local)		
Contractor				Sheet 1 of 1	

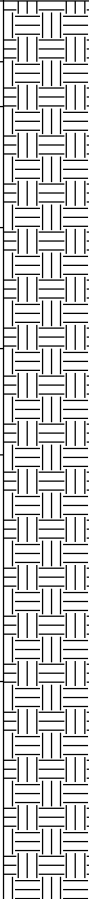
SAMPLES & TESTS			Water				STRATA		Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION			
1,20-1,45 1,20 2,00-2,45 2,00 3,00-3,45 3,00 4,00-4,45 4,00	SPT1	N12			0,25	MADE GROUND: Sand and gravel with brick rubble.				
					(1,95)	Firm, brown grey slightly orange mottled sandy silty CLAY, occasionally slightly gravelly. (Likely Brickearth)				
	SPT2	N10			2,20	Firm, light brown and light grey, sandy clayey SILT and silty CLAY with occasional gravel. (River Terrace Deposits)				
				SPT3	N15		(1,30)			Firm, light grey, sandy clayey SILT or silty CLAY. (River Terrace Deposits)
	SPT4	N26					(0,50)	Firm, light grey, sandy clayey SILT or silty CLAY. (River Terrace Deposits)		
					(1,00)	Stiff/medium dense, light grey clayey silty SAND or sandy SIL. (River Terrace Deposits)				

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											The location was CAT scanned and inspection pit excavated by hand prior the commencement of the drilling. The borehole was backfilled with arisings on completion. Groundwater strike 0.5mbgl. on competition 0.45mbgl.
All dimensions in metres Scale 1:50			Client Mr Paul Bridgwater (LITTLELINK HOLDINGS LIMITED)			Method/ Plant Used Terrier Drive in Sampling			Logged By B Žarkovski		

Report ID: AGS4 UK BH || Project: GINT STD AGS 4.0 A.GLB || Date: 18 March 2020

BOREHOLE LOG

Project 40 Little Paddocks, Ferring, Worthing, BN12 5NJ				BOREHOLE No BH2	
Job No SKZ_1188/20	Date 28-02-20 28-02-20	Ground Level (m)	Co-Ordinates (Local)		
Contractor				Sheet 1 of 1	

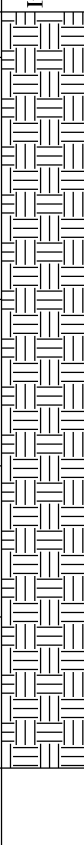
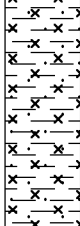
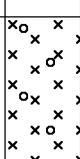
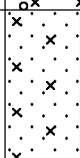
SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill	
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION			
						(0,40) 0,40	MADE GROUND: Light brown to brown, clayey sandy silt with occasional roots - top soil.			
						0,70	Brown slightly grey, gravelly CLAY. (Likely Brickearth)			
1,00-1,45 1,00	SPT1	N9				(0,80) 1,50	Soft, brown grey slightly orange mottled, sandy silty CLAY, occasionally slightly gravelly. (Likely Brickearth)			
2,00-2,45 2,00	SPT2	N9				(0,80) 2,30	Soft, brown grey, slightly sandy to sandy silty CLAY, occasionally gravelly. (River Terrace Deposits)			
3,00-3,45 3,00	SPT3	N23				(0,70) 3,00	Soft to firm, light brown and light grey, clayey sandy SILT and silty CLAY with occasional chalk fragments. (River Terrace Deposits)			
4,00-4,45 4,00	SPT4	N64				(1,50) 4,50	Light grey, clayey silty SAND occasionally gravelly. (River Terrace Deposits)			
5,00-5,45 5,00	SPT5	N47				(1,50) 6,00	Structureless CHALK, composed of white slightly grey gravelly sandy SILT. Gravel is very weak to weak, low density. Occasional fine to medium flints. (Likely Grade Dc)			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											The location was CAT scanned and inspection pit excavated by hand prior the commencement of the drilling. The borehole was backfilled with arisings on completion. Groundwater strike 0.5mbgl. on competition 0.3mbgl.
All dimensions in metres Scale 1:50			Client Mr Paul Bridgwater (LITTLELINK HOLDINGS LIMITED)			Method/ Plant Used Terrier Drive in Sampling			Logged By B Zarkovski		

Report ID: AGS4 UK BH || Project: GINT STD AGS 4.0 A.GLB || Date: 18 March 2020

BOREHOLE LOG

Project 40 Little Paddocks, Ferring, Worthing, BN12 5NJ				BOREHOLE No BH3	
Job No SKZ_1188/20	Date 28-02-20 28-02-20	Ground Level (m)	Co-Ordinates (Local)		
Contractor				Sheet 1 of 1	

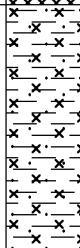
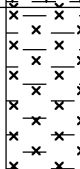
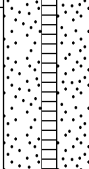
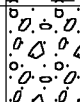
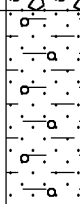
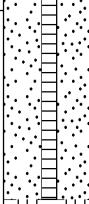
SAMPLES & TESTS			Water	STRATA			Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)		
1,00-1,45 1,00	SPT1	N17				0,30	MADE GROUND: Light brown to brown, clayey sandy silt with occasional roots - top soil.	
						(1,60)	Firm, brown grey slightly orange mottled sandy silty CLAY, occasionally slightly gravelly. (Likely Brickearth)	
2,00-2,45 2,00	SPT2	N1				1,90 (1,10)	Very soft, no recovery 2,00 - 3,00 @ SPT tools sink under self-weight	
3,00-3,45 3,00	SPT3	N16				(1,00) 4,00	Firm, light grey, sandy slightly gravelly clayey SILT and silty CLAY with chalk fragments. (River Terrace Deposits)	
4,00-4,45 4,00	SPT4	N17				(1,00) 5,00	Medium dense/firm, light grey, clayey to very clayey silty SAND with chalk fragments. (River Terrace Deposits)	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											The location was CAT scanned and inspection pit excavated by hand prior the commencement of the drilling. The borehole was backfilled with arisings on completion. Groundwater strike 0.4mbgl. on competition 0.3mbgl.
All dimensions in metres Scale 1:50			Client Mr Paul Bridgwater (LITTLELINK HOLDINGS LIMITED)			Method/ Plant Used Terrier Drive in Sampling			Logged By B Žarkovski		

Report ID: AGS4 UK BH || Project: GINT STD AGS 4.0 A.GLB || Date: 18 March 2020

BOREHOLE LOG

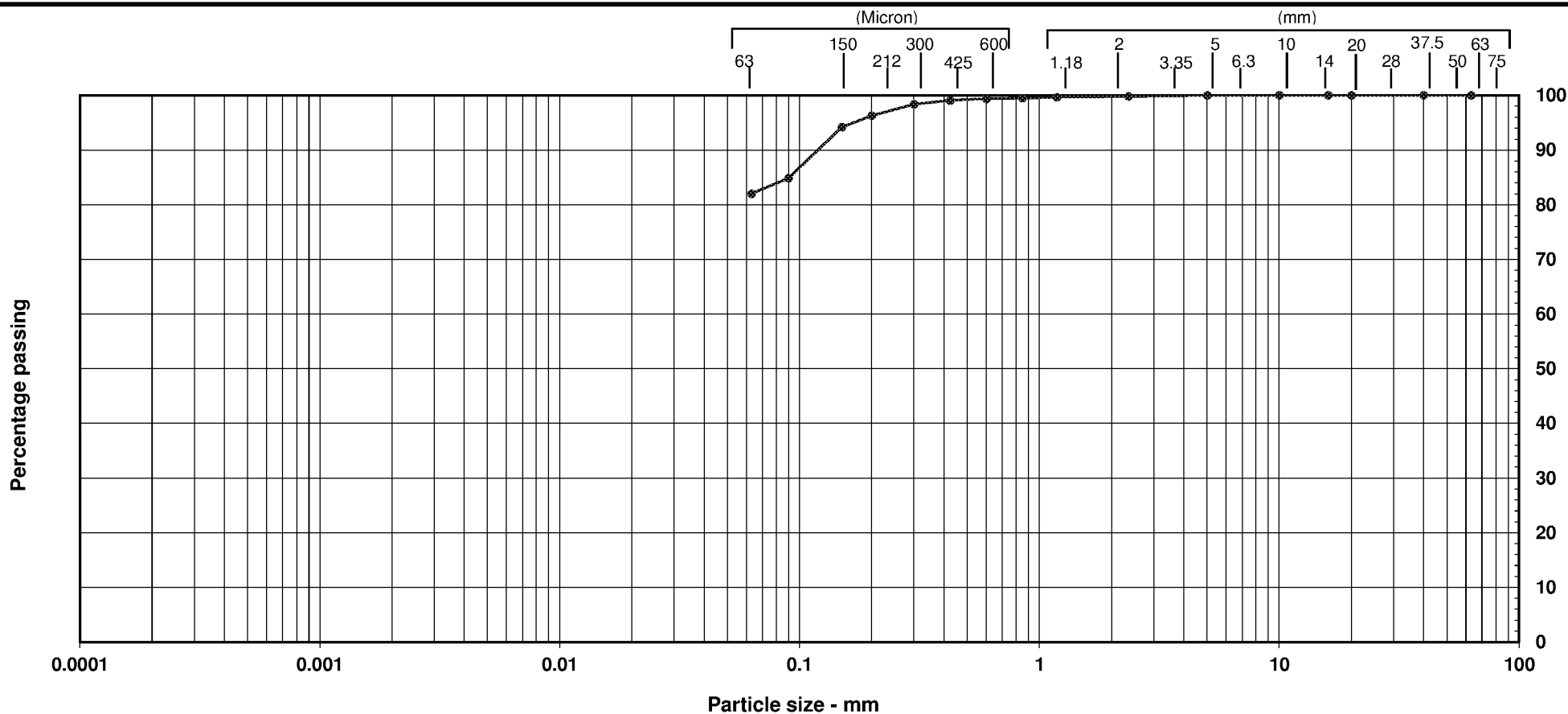
Project 40 Little Paddocks, Ferring, Worthing, BN12 5NJ				BOREHOLE No BH4	
Job No SKZ_1188/20	Date 28-02-20 28-02-20	Ground Level (m)	Co-Ordinates (Local)		
Contractor				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA			Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)		
1,00-1,45 1,00	SPT1	N14				0,25	MADE GROUND: Light brown to brown, clayey sandy silt with occasional roots - top soil.	
						(1,65)	Firm, brown grey slightly orange mottled and with occasional black spots, sandy silty CLAY, occasionally slightly gravelly. (Likely Brickearth)	
2,00-2,45 2,00	SPT2	N1				1,90 (1,10)	Very soft, light grey brown mottled, clayey SILT or silty clay, with occasional chalk fragments. (River Terrace Deposits) 2,00 - 3,00 @ SPT tools sink under self-weight	
3,00-3,45 3,00	SPT3	N23				3,00 (0,70)	Medium dense, light brown slightly grey, clayey to very clayey SAND and GRAVEL. (River Terrace Deposits)	
4,00-4,45 4,00	SPT4	N26				(1,30)	Medium dense, clayey to very clayey chalky SAND and flint gravel. (River Terrace Deposits)	
						5,00		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS	
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To		
											The location was CAT scanned and inspection pit excavated by hand prior the commencement of the drilling. A 35mm standpipe was installed on completion of the work to allow for infiltration test and future monitoring. Groundwater strike 0.5mbgl, on competition 0.45 mbgl.	
All dimensions in metres Scale 1:50			Client Mr Paul Bridgwater (LITTLELINK HOLDINGS LIMITED)				Method/ Plant Used Terrier Drive in Sampling				Logged By B Zarkovski	

Report ID: AGS4 UK BH || Project: GINT STD AGS 4.0 A.GLB || Date: 18 March 2020

APPENDIX B



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
	SILT			SAND			GRAVEL		



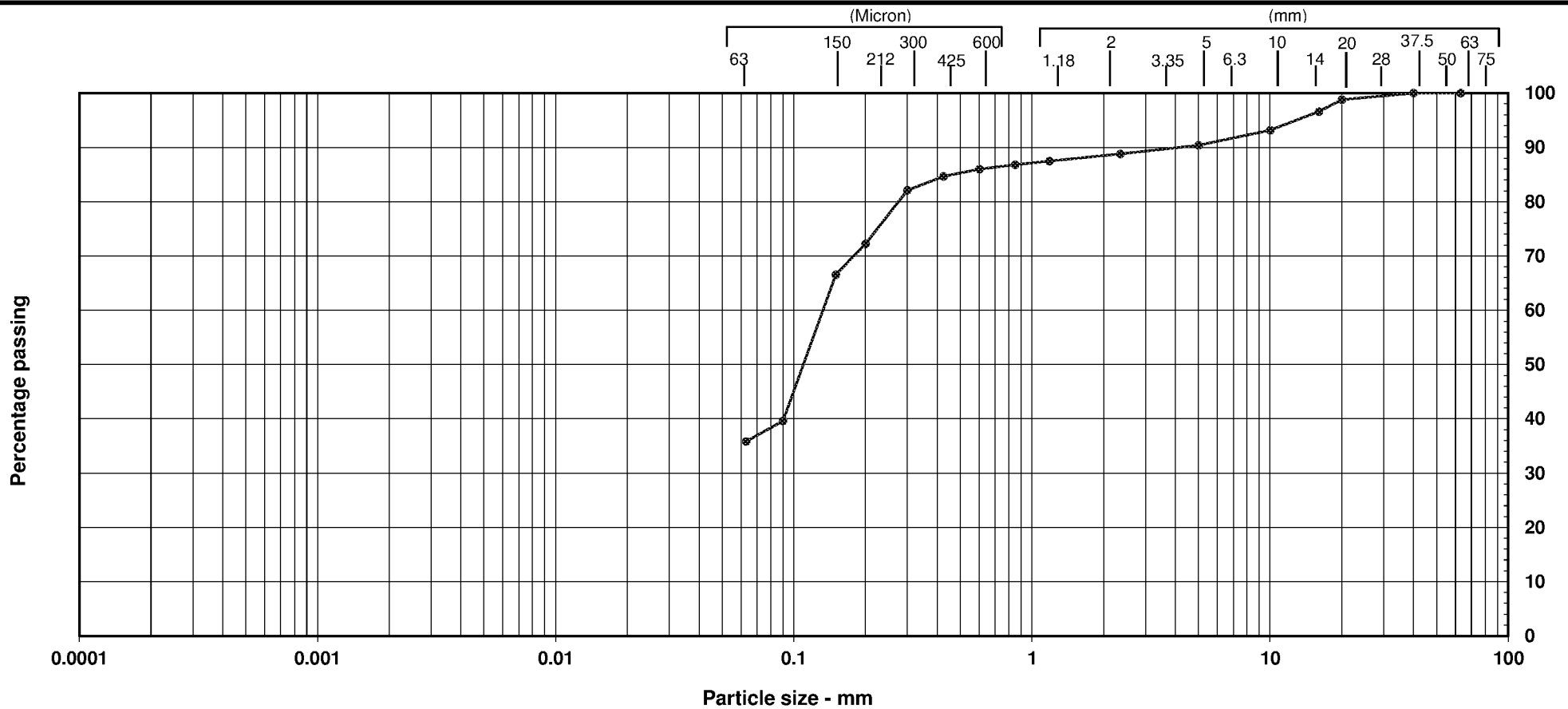
PARTICLE SIZE DISTRIBUTION

Job No: 1188/20
 Client: Mr Paul Bridgwater
 Site: 40 Little Paddocks, Ferring, Worthing, BN12 5NJ
 (Natural Moisture Content) MC = 30.4%

BH/TP No: BH4
 Batch no:
 Depth (m): 1.9-3.0

Notes:

Appendix B_1



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
	SILT			SAND			GRAVEL		



PARTICLE SIZE DISTRIBUTION

Job No: 1188/20
 Client: Mr Paul Bridgwater
 Site: 40 Little Paddocks, Ferring, Worthing, BN12 5NJ
 (Natural Moisture Content) MC = 16.2%

BH/TP No: BH4
 Batch no:
 Depth (m): 3.7÷5.0

Notes:

Appendix B_2



2683



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9PY

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 20-27328

Issue: 1

Date of Issue: 09/03/2020

Contact: Silvanka K. Zarkovska

Customer Details: AVZ GeoEng Ltd
8 Tanyard Avenue
East Grinstead
West Sussex RH19 4LU

Quotation No: Q20-01700

Order No: Not Supplied

Customer Reference: SKZ_1188/20

Date Received: 03/03/2020

Date Approved: 09/03/2020

Details: 40 Little Paddocks, Ferring, Worthing, BN12 5NJ

Approved by:

Tim Reeve, Quality Officer

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 20-27328, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
198834	BH1 0.25 - 2.20	28/02/2020	03/03/2020	Silty clayey loam	
198835	BH4 0.50 - 1.90	28/02/2020	03/03/2020	Silty clayey loam	
198836	BH4 1.90 - 3.00	28/02/2020	03/03/2020	Clayey loam	



Results Summary

2683

Report No.: 20-27328, issue number 1

ELAB Reference	198834	198835	198836
Customer Reference			
Sample ID			
Sample Type	SOIL	SOIL	SOIL
Sample Location	BH1	BH4	BH4
Sample Depth (m)	0.25 - 2.20	0.50 - 1.90	1.90 - 3.00
Sampling Date	28/02/2020	28/02/2020	28/02/2020
Determinand	Codes	Units	LOD
Soil sample preparation parameters			
Material removed	N	%	0.1
Description of Inert material removed	N		0
Anions			
Water Soluble Sulphate	M	g/l	0.02
Miscellaneous			
pH	M	pH units	0.1



Method Summary

Report No.: 20-27328, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
pH	M	Air dried sample	05/03/2020	113	Electromeric
Water soluble anions	M	Air dried sample	04/03/2020	172	Ion Chromatography



Report Information

Report No.: 20-27328, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.

ELAB are unable to provide an interpretation or opinion on the content of this report.

The results relate only to the sample received.

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

-
- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage