

Ground Investigation





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Former Quinn Radiator Factory Site, Newport, Wales

Factual and Interpretative Report

for Pinnacle Consulting Engineers Limited

Project Number: PN224395

February 2023

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For

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I.0 INTRODUCTION

A supplementary geotechnical and geo-environmental ground investigation was carried out by Geotechnics Limited at the site of a former radiator manufacturing facility on the outskirts of Newport. The investigation was carried out to the instruction of Pinnacle Consulting Engineers Limited (Pinnacle), the Client.

An initial ground investigation was undertaken by Geotechnics Limited, in August 2021 and reported previously (reference: PN214233 Former Quinn Radiator Factory, Factual and Interpretative Report, September 2021) and this report should be read in consultation with the previous report.

This report describes the work undertaken and presents the data obtained.

2.0 **OBJECT AND SCOPE OF THE INVESTIGATION**

The object of the investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works within the limitations posed by trial hole numbers, locations, depths, methods adopted and the scope of approved in situ and laboratory testing. The Brief for the project is included in Appendix I. The investigation comprised cable percussive and rotary boreholes, in situ and laboratory testing and reporting. A geotechnical interpretation and evaluation of the data obtained was also commissioned. No geoenvironmental interpretation and assessment of the data was instructed by the Client. The investigation supplements the previous 2021 ground investigation.

3.0 PRESENTATION

A description of the site and a summary of the procedures followed during the investigation process are presented in Sections 4 to 6. The factual data so obtained are presented in Appendices 2 to 14 of this report.

A desk study (Phase I Desk Study) has been undertaken by Geotechnics Limited (reference: PN214233 Newport Quinn Preliminary Risk Assessment, May 2021) which summarises the site, its history, geology and ground conditions and provides a preliminary risk assessment and geotechnical risk assessment for the site (see also Section 7). An interpretation of the data obtained is presented in Section 8 and an evaluation of its significance in relation to proposals available at the time of preparation of this report is presented in Section 9.

This ground investigation supplements a previous investigation (referred to in this report as the initial phase ground investigation) also undertaken by Geotechnics Limited, in August 2021 and reported previously (reference: PN214233 Former Quin Radiator Factory, Factual and Interpretative Report, September 2021). The findings are summarised in Section 7. However, the 2021 report should be read in combination with this report for a complete understanding of the ground conditions encountered.

Attention is drawn to the Investigation Techniques and General Notes presented in Appendix 15 to aid an understanding of the procedures followed and the context in which the report should be read.

The report is presented in pdf format and in addition, data in electronic format in accordance with "The Electronic Transfer of Geotechnical Data from Ground Investigations" published by the AGS (the AGS Format) are presented separately.



4.0 THE SITE

4.1 Location

The site is located approximately 5km south-west of the centre of Newport and approximately 1km south of junction 28 on the M4 motorway. The approximate Ordnance Survey National Grid Reference for the centre of the site is ST 278 841 and an extract from the relevant 1:25,000 Scale O.S. Map is included as Appendix 1.

4.2 Description

The site is approximately rectangular in shape and covers an area of approximately 16.59 ha. It comprises a disused radiator manufacturing site with associated areas of hardstanding for roads and parking and areas of soft landscaping comprising mostly short field grass, bushes and mature and semi-mature trees around the perimeter. Most of structures remain in situ with the internal manufacturing infrastructure largely removed to allow access for the drilling rigs. The structures include a large L-shaped warehouse type building with another similar but smaller structure to the south and a concrete slab between. A two storey office building is located to the south-east. Asphalt roads and vehicle parking and grassed areas with shrubs and scattered trees are present towards the periphery of the site mainly to the south and east.

The site has an elevation of approximately 10m OD and slopes gently from north-west to south-east.

There are no water features located on-site, but a pond is located approximately 70m south and a drainage ditch is located approximately 20m to the west.

Several storage vessels were observed including oil and propane bottles, former paint storage tanks, liquid oxygen and liquid argon tanks and gas bottles. Numerous service access chambers were observed including storm and foul drains.

5.0 **PROCEDURE**

5.1 Commissioning

The current phase of work was awarded following submission of a proposal for ground investigation of the site in accordance with the Client's requirements. An initial phase of ground investigation was undertaken in 2021 as referenced above. The scope of the investigation is summarised below and is detailed within the Brief presented as the offer letter in Appendix I.

5.2 General

The procedures followed in this site investigation are based on BS 5930:2015+ A1:2020 – Code of Practice for Site Investigations and BS 10175:2011+A2:2017 - Investigation of Potentially Contaminated Sites. The soils and rocks encountered have been described in accordance with BS5930:2015+A1:2020, BS EN ISO 14688-1:2018 and BS EN ISO 14689:2018. The Cable Percussive Borehole, Rotary Borehole and Dynamic Sample Borehole positions are shown on the Exploratory Hole Location Plan in Appendix 14.

The Exploratory Hole locations were specified by Geotechnics Limited, and were located to supplement the previous limited initial ground investigation to provide more detailed information across the area of interest and coverage where data was sparse.

The co-ordinates and levels shown on the Exploratory Hole Records were measured using a GPS survey device. Positions within the buildings were surveyed using taped measurements from GPS located positions. The depths quoted on the exploratory hole records are in metres below ground level (bgl).



Prior to the investigation, a survey was carried out by Midland Survey Limited utilising Ground Penetrating Radar (GPR) techniques to check for the presence of buried services at the proposed exploratory hole locations. At each exploratory hole location an inspection pit was excavated using hand tools to a depth of 1.20m below ground level to check for the presence of underground services. Prior to and on completion of the excavation, the location was scanned using a cable avoidance tool (CAT). At those locations where concrete was present at ground level, 300mm diameter coring was used to advance the exploratory hole through the concrete and facilitate the excavation of the inspection pit. Details of the concrete coring is included on the appropriate exploratory hole records.

5.3 Cable Percussion Boreholes

Thirty (30 No.)150mm diameter boreholes (BH01 to BH30) were sunk by Cable Percussion Tool techniques to depths of between 1.20m to 11.40m bgl. The work was carried out between 27^{th} July and 2^{nd} September 2022.

Three holes (BH04, BH14 and BH17) had to be moved a short distance from the original location due to concrete obstructions being encountered at shallow depth. The revised locations were numbered BH04A, BH14A and BH17A.

Representative disturbed (D and B) and driven open-tube thin-walled (UT) samples of the soils encountered were obtained at regular intervals. Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the borehole records in accordance with BS EN ISO 22476-3:2005+AI:2011 to obtain a measure of the engineering properties of the proved strata. In addition, environmental soil samples (ES) were recovered at the depths indicated on the Borehole Records which are presented in Appendix 3 and 4.

On encountering groundwater, boring operations were suspended for 20 minutes in order to record any rise in water level. Full details of groundwater observations during site work are included on the Borehole Records.

On completion, ten boreholes were continued by rotary coring drilling techniques (see Section 5.4).

On completion, standpipes were installed in several of the boreholes as detailed in Section 5.6. Those boreholes without an installation were backfilled with bentonite and the surface reinstated.

5.4 Rotary Cored (follow-on) Boreholes

Ten (10 No.) boreholes (numbered BH01, BH04A, BH07, BH10, BH14A, BH17A, BH23, BH27, BH28 and BH30) were extended using rotary coring techniques through the base of the cable percussion boreholes which had been left open and cased to facilitate rotary drilling. The rotary core boreholes were 120mm in diameter producing 90mm diameter core and were taken to depths ranging between 19.50m and 21.00m bgl. The work was carried out between the 27th July and the 26th August 2022.

The drilling equipment on this particular contract utilised air mist as the flushing medium.

Rock cores were extruded horizontally in transparent liners and placed into suitable core boxes. Borehole records and photographs of the core are included in Appendices 4 and 5 respectively.

Groundwater observations are included on the Borehole Records where appropriate. It should be noted that the addition of air mist to the borehole as part of the drilling process may have masked the presence of groundwater in the borehole. On completion, standpipes were installed in most of the boreholes (see Section 5.6).

5.5 In Situ Plate Load Tests

Seventeen (17 No.) Plate Load Tests were carried out at the locations marked on the Exploratory Hole Location Plan (see Appendix 14) and numbered PLT1 to PLT5 and PLT7 to PLT18 at depths ranging between 0.15m and 0.45m bgl. Where necessary the concrete floor slab was broken out using a hydraulic breaker attachment to an excavator. The incremental loading tests were carried out in accordance with BS 1377-9:1990 and the Design Manual for Roads and Bridges IAN 73/06 Revision 1 (2009) using a 300mm diameter plate. The reaction for the test was provided by a backhoe excavator (JCB 3CX). The test loads were selected by Geotechnics Limited and the results



are presented in Appendix 6 and summarised in the table below;

Location	Depth (m)	Equivalent CBR (%)	Modulus of Subgrade Reaction (kN/m ²)	Strata Tested (see Results Sheets for full description)
I	0.23	24	90	MG: Reddish brown gravelly slightly silty sand.
2	0.44	4.9	36	MG: Reddish brown gravelly slightly silty sand.
3	0.23	8.1	49	MG: Orangish brown gravelly sand.
4	0.22	27	98	MG: Brown gravelly sand.
5	0.19	19	81	MG: Reddish brown sandy gravel.
7	0.20	104	212	MG: Grey sandy gravel of sandstone and aircrete.
8	0.20	58	151	MG: Brown gravelly sand low cobble content.
9	0.24	9.7	54	MG: Reddish brown gravelly sand.
10	0.20	130	242	MG: Brown gravelly sand.
11	0.21	27	97	MG: Brown slightly gravelly clayey sand.
12	0.15	21	84	MG: Dark brown gravelly sand.
13	0.45	70	169	MG: Yellowish brown very gravelly sand.
14	0.20	99	207	MG: Yellowish brown very gravelly sand.
15	0.20	99	207	MG: Black mottled brown gravelly sand.
16	0.20	3.8	31	MG: Brown gravelly sand low cobble content.
17	0.45	13	65	MG: Dark grey brown gravelly sand, cobbs.
18	0.40	17	74	MG: Dark grey to black slightly gravelly sand.

5.6 Instrumentation and Monitoring

Long-term monitoring of the gas and groundwater levels was made possible by the installation of standpipes as follows:

Exploratory Hole	Standpipe Slotted Pipe & Filter	Strata Monitored	
	Zone (m)		
BH01	14.00 to 18.00	Bedrock: Sandstone.	
BH03	3.50 to 5.50	Gravel (River Terrace Deposits)	
BH04A	15.00 to 17.00	Bedrock: Mudstone.	
BH06	1.00 to 2.70	Clay (River Terrace Deposits)	
BH07	13.00 to 20.50	Bedrock: Mudstone.	
BH09	4.50 to 5.50	Peat.	
BHIO	5.00 to 6.50	Bedrock: Mudstone/Siltstone.	
BH13	4.00 to 5.00	Gravel of mudstone and sandstone (probable weathered bedrock).	
BH17A	10.00 to 12.00	Bedrock: Mudstone and sandstone	
BH19	4.00 to 5.00	Gravel (River Terrace Deposits)	
BH23	9.00 to 13.00	Bedrock: Mudstone.	
BH25	3.00 to 4.60	Clay (Alluvium)	
BH28	3.00 to 5.00	Clay (River Terrace Deposits)/ Bedrock (Mudstone).	
BH30	9.00 to 11.00	Bedrock: Sandstone.	

Monitoring of the gas and groundwater levels were undertaken on the 13th (only BH01, BH04A, BH06, BH07), 19th and 26th September 2022.

On each of the manual monitoring rounds a record of the groundwater level in the standpipes was obtained. The following parameters were measured and recorded in each standpipe using a Gas Data Limited GFM435 Gas Analyser.

• Concentrations (% Vol) of CH_4 , O_2 , CO_2 , along with (ppm) H_2S , CO.



- Flow Rate.
- Differential Pressure.
- Barometric Pressure.

The results of the monitoring are presented in Appendix 7.

6.0 LABORATORY TESTING

6.1 Geotechnical

The laboratory testing schedule was formulated by Geotechnics Limited in order to relate to the proposed development plans available at the time of scheduling. The number and type of testing undertaken was constrained by the Client's financial limits, with the investigation being considered as a preliminary phase of the investigation works.

Geotechnics Limited UKAS accredited Laboratory

Unless otherwise stated, the tests were carried out in Geotechnics Limited's UKAS accredited Laboratory (Testing No. 1365 and were undertaken in accordance with the appropriate Standards as indicated below and on the Laboratory Test Certificate in Appendix 8 Any descriptions, opinions and interpretations are outside the scope of UKAS accreditation.

The tests undertaken are summarised as follows:-

Standard	Test Description	Quantity	
BS EN ISO 17892-1:2014	Water Content Determination	32	
BS EN ISO 17892-12:2018	Determination of Liquid and Plastic Limits	20	
Cl. 5.3 & 5.5		29	
BS EN ISO 17892-4:2016	Particle Size Distribution Determination Siguing Method	10	
Cl. 5.2	Farticle Size Distribution Determination – Sleving Method	18	
BS EN ISO 17892-4:2016	Particle Size Distribution Determination Disatte Method	14	
Cl. 5.4	Farticle Size Distribution Determination – Fipette Method	14	
BS EN ISO 17892-8-2018	Shear Strength by Unconsolidated Undrained Triaxial Test	ſ	
B3 EN 130 17672-0:2010	– Single Stage.	2	
BS 1377:1990 Part 4: 1990	Dry Density/Moisture Content relationship determination.	7	
Cl. 3.3	Compaction Test - British Standard (2.5 kg Hammer)	/	
BS 1377:1990 Part 4: 1990	Dry Density/Moisture Content relationship determination.	7	
Cl. 3.5	Compaction Test - British Standard (4.5 kg Hammer)	/	
BS 1377:1990 Part 4: 1990	California Boaring Patio (CBP) Massurament	12	
Cl. 7.2		13	
	Determination of Thermal Conductivity of Soil and Soft	22	
A3111 D3334-14	Rock by Thermal Needle Probe.	22	

Derwentside Environmental Testing Services (DETS) Laboratory

The following testing was carried out at the laboratories of Derwentside Environmental Testing Services (DETS) (UKAS Accredited Laboratory, Number 2139).

BRE Special Digest | Suite

Twenty six specimens, each comprising the following suite of tests; Total Sulphur, Total Sulphate, Water Soluble Sulphate, pH, Magnesium, Ammonia, Chloride and Nitrate.



In addition, two organic content tests were undertaken.

The results of these tests are presented in Appendix 8.

Professional Soils Laboratory (PSL) Limited Laboratory

The following testing was carried out at the laboratories of Professional Soils Laboratory (PSL) Limited (UKAS Accredited Laboratory, Number 4043).

Standard	Test Description	Quantity
BS EN ISO 17892-5:2017	Incremental Loading Oedometer	I
ISRM Testing Methods	Unconfined Compressive Strength Determination	38
ISRM Testing Methods	Point Load Determination	257

The results of these tests are presented in Appendix 8.

6.2 Contamination

Selected samples of soil and groundwater were tested at the laboratories of Derwentside Environmental Testing Services Limited for a number of determinands in order to quantify potential site contamination. The determinands were selected by Geotechnics Limited were based on potential contaminants identified from the findings of the previous desk study and initial phase ground investigation. The laboratory results are detailed on the results sheets in Appendices 9 and 10 together with the test result as well as the test method, accreditation and detection limit.

7.0 SUMMARY OF PREVIOUS INVESTIGATIONS

7.1 General

A desk study for the site has been undertaken by Geotechnics and the results presented and discussed in report "Preliminary Risk Assessment – Newport Quinn SDD RPF, Newport, Wales", Report Number PN214233 dated May 2021. The findings of the desk study are also summarised in the report on the previous (initial phase) ground investigation, reference "Factual and Interpretative Report – Newport, Wales, NP10 8FS", Report Number PN214233, dated September 2021.

Both reports should be read in conjunction with this report. A summary of the pertinent findings of the previous reports is given in the following sections in relation to the geology at the site. The site history, hydrology, hydrogeology, unexploded ordnance and environmental issues are all briefly summarised in the previous factual and interpretative report and discussed in more detail in the desk study and are not repeated in this report.

7.2 Published Geology

Published geological maps indicate that most of the site is underlain by Quaternary River Terrace Deposits comprising mostly sand and gravel deposits. A small area in the central western part of the site is shown to be underlain by Alluvium associated with a former river channel. Made Ground would be expected above the natural superficial deposits, associated with the existing development.

Bedrock geology is shown to be the Devonian St. Maughan's Formation comprising interbedded mudstones and sandstones. The south-eastern corner of the site is shown to be underlain by Triassic Mercia Mudstone deposits.

7.3 **Previous Investigation Data**

A summary of the findings of the initial phase of ground investigation referred to above are presented below.



Details of the initial phase investigation are described and interpreted in the previous report which should be read in combination with this report for a complete understanding of the ground conditions. Exploratory holes were generally located at or outside the perimeter of the existing warehouse building due to access restrictions inside the buildings.

The previous investigation comprised four 200mm diameter boreholes (numbered CP-BH101 to CP-BH103 and WS-BH109) sunk by Cable Percussion Tool techniques to depths of 5.50m (CP-BH101), 8.44m (CP-BH102), 3.45m (CP-BH103) and 9.95m (WS-BH109) below ground level. A fifth borehole (CP-BH105) was terminated on a buried obstruction within the inspection pit at a depth of 0.65m below ground level. Proposed borehole CP-BH104 was cancelled due to time constraints. The work was carried out between 24th May and 1st June 2021.

Five boreholes (numbered RC-BH101 to RC-BH105), up to 100mm in diameter, were sunk utilising a combination of dynamic sampling, rotary open-hole and rotary coring techniques to depths ranging between 7.50m and 15.00m below ground level. The work was carried out between 27th May and 8th June 2021.

Ten Dynamic Sample Boreholes (numbered WS-BH101 to WS-BH108, WS-BH110 and WS-BH111) were undertaken to depths ranging between 1.60m and 4.45m below ground level. The work was carried out between 24th and 27th May 2021. Proposed Dynamic Sample Borehole WS-BH109 was carried out using Cable Percussion techniques due to drilling rig availability.

The locations of the boreholes are shown on Exploratory Hole Location Plan in Appendix 14.

On completion, standpipes were installed in 16 of the boreholes for long term monitoring. Laboratory testing was undertaken on recovered samples (see previous report).

Selected samples of soil and groundwater were tested for a number of determinands in order to quantify potential site contamination (see previous report).

The initial ground investigation encountered Made Ground comprising concrete or asphalt at the surface underlain by sand and gravel with some clay, silt, cobbles, clinker, slag and brick fragments. The Made Ground was found to depths ranging between 0.65m and 4.10m bgl. A number of the exploratory holes were terminated in the Made Ground on encountering obstructions. Standard penetration tests (SPT) indicated the granular material to range between loose and very dense and the cohesive material indicative of high strength clay.

Underlying the Made Ground the exploratory holes encountered clay deposits that possibly represent the Alluvium, River Terrace Deposits and the upper weathered zone of the bedrock. The clay deposits were reddish brown or grey mottled brown in colour and contained a proportion of sand and gravel. They were typically firm and in some places stiff. However, some boreholes encountered layers of soft/very soft clay with some pockets of organic matter that probably comprise the Alluvium. In situ testing indicated the material to range between low to very high strength and with occasional obstructions. The small programme of laboratory testing indicated the clays to be low to high strength and medium to high compressibility. A low to medium (rarely high) classification for volume change potential was indicated.

Bedrock comprising mudstone and siltstone was encountered from depths ranging between 2.80m and 9.40m below ground level (7.80 and 1.35m OD). The material typically comprised extremely weak or very weak brownish red mudstone, occasionally interbedded with very weak grey siltstone. The bedrock was proved to a maximum depth of 15.10m below ground level. Laboratory test results indicated the strength to range from a stiff, high strength clay to extremely weak to moderately weak rock.

Groundwater was encountered within Made Ground deposits in three exploratory holes at 0.90m bgl rising to 0.55m bgl in Borehole WS-BH105. Borehole RC-BH105 encountered groundwater at 2.20m bgl which did not rise. Within the River Terrace Deposits (gravel) Boreholes RC-BH103 and CP-BH102 struck groundwater; at 2.63m bgl rising to 2.00m bgl and at 5.60m bgl with no rise. Within the bedrock, groundwater was encountered in one borehole at 9.00m bgl rising to 4.53m bgl.

Groundwater monitoring undertaken on the 16th June 2021 showed that groundwater was present in all but one of



the monitoring wells varying in depth between 0.71m bgl and 3.00m bgl.

Chemical contamination sampling and testing of soil and groundwater and monitoring of permanent ground gases was undertaken to;

- investigate potential hydrocarbons in shallow Made Ground and its potential migration external to the existing warehouse structure,
- investigate potential sources of contaminants near to existing above ground storage tanks and,
- for general site coverage and characterisation.

The findings from the initial investigation can be briefly summarised as follows:-

- The soil testing undertaken as part of an environmental assessment indicated no heavy metals exceeded any generic assessment criteria (GAC) for a commercial end use. No organic contaminants exceeded the relevant GAC. No other inorganic contaminants exceeded the relevant GAC. All samples were negative for the presence of asbestos.
- Concentrations of phytotoxic metals have been recorded in Made Ground in excess of the guideline values for the protection of plants as presented in the Defra Sewage Sludge Code of Practice. Within the Made Ground one sample had marginally elevated values when compared to the relevant GAC. Geotechnics Limited do not consider any additional consideration is required with regards to risk to plants.
- Groundwater samples from the initial investigation were screened against Environmental Quality Standards (EQS) appropriate for the protection of surface water receptors. Exceedances were encountered in both perched groundwater within Made Ground and deeper groundwater. The majority of EQS exceedances show concentrations marginally above the EQS and exceedances were not shown across the whole site. For heavy metals there are no discernible differences between concentrations in perched groundwater in Made Ground and deeper groundwater in Natural deposits. The concentrations present are considered to be typical of regional background concentrations.
- There was no evidence of gross contaminant impact of perched groundwater or natural groundwater from petroleum hydrocarbons and no light non-aqueous phase liquid (LNAPL) was observed during monitoring and/or purging of groundwater prior to sampling.
- No volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOC) were detected above the laboratory limit of detection.
- The permanent ground gas monitoring results confirmed that there are no significant sources of ground gas.
- The findings of the environmental assessment have shown that the only potential concern is from the presence of hexavalent chrome in localised areas of Made Ground, probably related to the presence of slag. Potential risks to construction workers will be mitigated by the appropriate use of personal protective equipment and standard construction hygiene standards. Following development, even if the Made Ground with hexavalent chromium GAC exceedances remains in-situ, the presence of buildings and hardstanding will break the pathway for exposure to future site users.
- The results of assessment of Waste Characterisation indicated Made Ground from CP-BH102 at 0.5m and Made Ground at WS-BH108 at 1.0m were hazardous due to the concentration of chromium. All of the other the materials encountered during the investigation were classified as non-hazardous. Hazardous material that is excavated would need to be removed from site. In accordance with the Waste Regulations, pre-treatment of hazardous materials is required prior to disposal. Due to the limited size of the site it is recommended that hazardous material be taken to a soil treatment centre for pre-treatment where the soils hazardous properties may be reduced. The site must register as a producer of Hazardous Waste with Natural Resources Wales and appropriate Duty of Care Waste Transfer procedures followed.



- All other Made Ground materials on site are therefore likely to be classified as either inert or non-hazardous waste.
- In conclusion the investigation indicated that there were no significant geoenvironmental risks present at the site, with potential risks to construction workers being mitigated via health and safety procedures. It was recommended that one round of confirmatory groundwater sampling using the low-flow purging and sampling technique should be undertaken during any subsequent geotechnical investigation.

8.0 INTERPRETATION

8.1 Ground Conditions

On the basis of the expected geology discussed in the Desk Study and the findings of the exploratory holes the various strata proved in the investigation has been classified into the following divisions:-

- Topsoil
- Made Ground (incl. asphalt (Tarmacadam) and concrete)
- Alluvium (incl. organic clay and peat)
- River Terrace Deposits Cohesive
- River Terrace Deposits Granular
- St. Maughan's Formation (Upper Clay Layer)
- St. Maughan's Formation (Mudstone / Siltstone)

The ground profile exposed in the exploratory holes represents the conditions at discrete locations. The degree to which they represent conditions between or beyond the exploratory holes is a matter for conjecture and these can only be interpolated and hence, the uncertainties arising from this should be recognised.

Sections through the site are included in Appendix 12 to give an indication of the ground and groundwater conditions at the site. These sections are indicative only and reference should be made to the Exploratory Hole Records for detailed descriptions of the soils and the groundwater conditions encountered.

The table below provides a brief summary of the ground profiles found in the exploratory holes. Reference should be made to the Exploratory Hole Records for detailed descriptions of the soils encountered.

Stratum	Typical Description	Depth to Top (m bgl)	Level of Top (m OD)	Thickness (m)
Topsoil	Brown slightly gravelly sand with rootlets. (Borehole BH28 only).	GL	10.83	0.15
Made Ground - Concrete	Light to dark grey concrete. (Boreholes BH05, BH06, BH08, BH09, BH10, BH11, BH12, BH13, BH14, BH14A, BH15, BH17, BH17A, BH18, BH19, BH20, BH21, BH24, BH25, BH26, BH30).	GL to 0.02m	10.65 to 9.99	0.15 to 0.45
Made Ground - Asphalt	Black tarmacadam. (Boreholes BH01, BH02, BH03, BH04, BH4A, BH05, BH07, BH22, BH23, BH27 and BH29).	GL	12.68 to 10.18	0.02 to 0.25
Made Ground	Light to dark brown, reddish, yellowish, orangish and greyish brown, slightly clayey gravelly, sand.	GL (BH16) to 0.45 (BH20, BH21)	13.12 to 10.03	0.20 (BH20) to 2.85 (BH28)

The ground profile at the site is summarised as follows:-

Former Quinn Radiator Factory Site, Newport, Wales Factual and Interpretative Report Project No: PN224395, February 2023.



	Rarely sandy gravel and rarely sandy gravelly			
	Occasionally with low cobble content of			
	sandstone concrete siltstone granite and brick			
	fragmente Barely with blocks of aircrote			
	Thermolite insulation wood fragments and			
	i nermolite insulation, wood fragments and			
	occasionally metal (including steel			
	reinforcement bar) fragments.			
	Soft to firm, light to dark brown, slightly sandy,			
	slightly gravelly, CLAY occasionally light brown			
	slightly gravelly SAND with a low cobble			
	content. (Boreholes BH09, BH17A, BH26).	1.20 (BH17A,	9 94 to	I.50 (BH09)
Alluvium		BH26) to 3.00	8.01	to 6.40
	Soft to firm dark brown mottled grey or brown	(BH09)	0.01	(BH26)
	slightly sandy slightly gravelly pseudo-fibrous			
	PEAT and organic CLAY with wood fragments.			
	(Boreholes BH09 and BH26).			
	Soft to firm occasionally stiff to very stiff, brown			
	occasionally mottled grey, orangish and			
River Terrace	ellowish, sandy, gravelly, CLAY occasionally 0.36 (BHC			0.24 (BH27)
Deposits -	with low cobble content. (BH01, BH03, BH04A,	to 3.00	12.32 to	to 4.00
Cohesive	BH05, BH06, BH07, BH10, BH11, BH14A,	(BH10, BH28)	7.83	(BH18)
	BH15, BH16, BH18, BH24, BH25, BH28 and			
	BH29)			
	Medium dense to dense brown, occasionally			
	orangish, sandy, clayey, sub-angular to sub-			
River Terrace	rounded GRAVEL, gravelly SAND occasionally	0.30 (BH22)		0.40 (BH18)
Deposits -	with low cobble content.	to 3.00	7.77 to	to 4.40
Granular	(BH01, BH02, BH03, BH07, BH08, BH12, BH13,	(BH01, BH02,	12.08	(BH07)
	BH15 BH18 BH19 BH20 BH21 BH22 BH23	BH03, BH18)		× ,
	BH24 $BH25$ $BH27$ and $BH29$)			
St. Maughan's	Firm to stiff, occasionally very stiff, reddish		0.02	
Formation	brown gravelly sandy CLAY occasionally with a	2.30 (BH30)	9.02 (BUIA) to	
(Upper Clay	low cobble content. Gravel and cobbles are	to 7.60	3 35	BH25) to
(Opper Ciay	mudstone siltstone and sandstone	(BH26)	(BH26)	4.73 (BH18)
	Extremely weak to medium strong reddish		(- /	
	brown MUDSTONE SILTSTONE and			
St. Maughan's	SANDSTONE generally with closely to very		7.52	17.20*
Formation	sands rond, generally with closely to very	3.70 (BH29)	(BH29) to	(maximum
(Mudstone /	discontinuition Occasionally interhedded	(BHOI)	2.86	proven;
Siltstone)	Mudetono occasionally interbedded.		(BH01)	BH28)
	mudstone occasionally recovered as gravelly			
	ciay.			

*Base of stratum not proven

8.1.1 Topsoil

Topsoil was only encountered in Borehole BH28. The material was described as brown slightly gravelly sand with rootlets and was 0.15m thick.



8.1.2 Made Ground

Made Ground was encountered in all of the exploratory holes. The material varied across the site, both in terms of thickness and composition.

The exploratory holes within the main structure and several immediately adjacent to it proved the concrete floor slab at the surface to be between 0.15m and 0.45m thick.

Borehole BH17 was terminated on a probable concrete obstruction at 1.70m depth which was 1.50m below the base of the main concrete slab. Borehole BH04 was terminated due to a concrete obstruction at 1.54m depth and Borehole BH14 also on a concrete obstruction at 1.20m depth.

Exploratory holes undertaken just to the north of the main warehouse building and within car parking areas or roadways near to the building encountered between 0.02m and 0.25m thick asphalt. A thin skin of asphalt overlay concrete in one hole, Borehole BH05.

Beneath the surface materials, Made Ground was encountered in all exploratory holes and, whilst predominantly granular, is variously described as light to dark brown, reddish, yellowish, orangish and greyish brown, slightly clayey gravelly, sand, sandy gravel and rarely sandy gravelly clay, occasionally with ash, clinker and slag, occasionally with a low cobble content of sandstone, concrete, siltstone, granite and brick fragments, rarely with blocks of aircrete, Thermolite insulation, wood fragments and occasionally with metal fragments and including steel reinforcement bar.

The maximum depth of the base of the material varies from between 0.30m (10.40m OD) and 3.00m (7.83m OD). The greatest depth was found in exploratory holes BH09 and BH10, in the north-western quadrant of the site, BH30 near to the south-western corner and BH28 in the south-eastern part of the site. These also correspond to the lowest elevations at which it was encountered. The initial ground investigation found Made Ground to a maximum depth of 4.10m below ground level (RC-BH105; north-eastern part of the site). These deeper areas of Made Ground indicate the variable nature of its depth and likely represent where softer areas of natural ground may have been excavated and replaced in preparation of the construction of the concrete slab for structures.

One water content test indicated a natural value of 9.5% for a sample of clay, see Figure 1 (Appendix 11).

One particle size distribution test classified the made ground as very sandy clayey gravel, with 22% fine material (<63 μ m), 34% sand and 44% gravel fractions, see Figure 3.1 (Appendix 11).

The SPT N values were found to be between 15 and 43 indicating a relative density of medium dense to dense. The results have bene plotted and are shown on Figure 4.1 (Appendix 11). The N values do not shown a clear trend with depth, being variable. Five tests did not achieve the required full penetration and are considered to have encountered gravel or cobbles.

A laboratory CBR test on granular Made Ground provided values of 37% (top) and 58% (bottom) with an average of 48%.

The results of seventeen plate load tests gave equivalent CBR values ranging between 3.8% and 130% with all but 6 of the CBR values being below 27%. The associated Modulus of Subgrade Reaction were between 31 and 242 kN/m².

A table summarising the test results and derived parameters for the Made Ground is presented as Table I in Appendix II.

8.1.3 Alluvium

Below the Made Ground in Boreholes BH09 BH17A, and BH26, soil classified as Alluvium was encountered. It was generally found to comprise soft to firm, light to dark brown, slightly sandy, slightly gravelly, clay occasionally with a slight organic odour. In Borehole BH09 a 1m thick layer of peat from 4.50m bgl was encountered.

The alluvium was encountered from depths ranging between 1.20m and 3.00m bgl (9.84 and 8.01m OD) and was found to be between 1.50m and 6.40m thick. The base was proven at depths ranging from between 3.40m (BH17A)



and 7.60m (BH09). The material was generally present along a north to south trending strip of land in the western third of the site. The soft clay soils found in this area in Boreholes CP-BH101, WS-BH110, and WS-BH130 from the previous investigation and also located in this area may also comprise Alluvium.

The water content was found to be variable and ranged from 10.4 to 141%, see Figure 1 (Appendix 11). The Atterberg Limit test results gave a Plasticity Index (Pl) ranging between 17 and 23% and generally classifying the soil as a clay of intermediate plasticity with one result plotting just into the low category and another plotting as silt (see Figure 2, Appendix 11). Modifying the Pl to take account of the soil particles greater than 425μ m of the sample tested following the procedures in NHBC Standards Chapter 4.2 gives Modified Pls of between 7 and 23% with an average of 15% indicating no volume change to medium volume change potential. The high water content of 141% is indicative of an organic material. A sample of peat was indicated to be non-plastic which is due to the fibrous nature of the material.

The SPT N values were found to be between 0 and 26 and are shown on Figure 4.1 (Appendix 11). Values are scattered and show a slight increase in value down to 3m depth then decrease to 7.00m. Based on the relationship $c_u = f_1 x N (kN/m^2)$ proposed by Stroud & Butler, where $f_1 = 5$ for clay using the mean PI of 19%, the N values are approximately equivalent to undrained shear strengths of 0 to 130 kN/m² (average 59 kN/m²) which are indicative of extremely low to high strength conditions. The SPTs in BH17A at 1.20m (N=15), 2.00m (N=19) and 3.00m (N=26) depth are considered likely to have encountered cobbles which are included in the stratum description.

One compaction test results showed a maximum dry density of 2.19 Mg/m^3 and optimum water content of 6.0%. The natural water content of the material indicates it to be wet of optimum.

The organic content of samples from BH09 (4.50m - 5.00 m depth) and BH26 (4.80m depth) was found to be 0.7% and 21% respectively.

Two samples underwent one dimensional consolidation testing by oedometer. A sample of clay with a slightly organic odour from borehole BH09 at 4.00m depth resulted in a coefficient of compressibility m_v of 0.44 m²/MN over a pressure range of 0-40kPa indicating the material to have a high compressibility. A sample of clayey pseudo-fibrous peat from borehole BH09 at 5.00m depth resulted in a coefficient of compressibility m_v of 1.51 m²/MN over a pressure range of 0-50 kN/m² indicating the material to have a very high compressibility. Results obtained during the initial investigation have been reviewed and tests undertaken in Boreholes CP-BH102 and CP-BH103 in the south of the western half of the site (to the south and west of Boreholes BH26) indicated the clay to be medium to high compressibility.

Two specimens were testing in the laboratory for Thermal Conductivity. Results ranged between 2.54 and 2.57 W/(m.k) (average 2.56 W/(m.k)) with associated Thermal Resistivity of 0.39 (m.k)/W. The temperature of the specimens ranged between 19.3 and 20.3 °C (average 20 °C). Bulk density results taken as part of the testing ranged between 1.66 and 2.24 Mg/m³ (2.01 Mg/m³).

A table summarising the test results and derived parameters for the Alluvium is presented as Table 2 in Appendix 11.

8.1.4 River Terrace Deposits

Soils classified as the River Terrace Deposits were encountered in the most of boreholes below the Made Ground. The soils encountered can be divided into two groups; Cohesive soils and Granular Soils.

Cohesive Layer

Cohesive Layers in the River Terrace Deposits comprising soft to firm occasionally stiff to very stiff, brown occasionally mottled grey, orangish and yellowish, sandy, gravelly, clay occasionally with low cobble content were found in Boreholes BH01, BH03, BH04A, BH05, BH06, BH07, BH10, BH11, BH14A, BH15, BH16, BH18, BH24, BH25, BH28 and BH29. It was encountered from depths ranging between 0.36m (BH07) and 3.00m (BH10 and BH28), at elevations ranging between 7.83 and 12.32 m OD, and ranged in thickness between 0.10m and 4.40m. These deposits were found mainly along the northern edge and the northern half of the eastern third of the site.

The water content was found to be variable and ranged between 8 and 41%, see Figure 1 (Appendix 11). The



Atterberg Limit test results gave a Plasticity Index (PI) ranging between 9 and 23% generally classifying the soil as a clay of low to intermediate plasticity with one result plotting just into the high category and another plotting below the 'A-line as a silt (see Figure 2, Appendix 11). Modifying the PI to take account of the soil particles greater than 425µm of the sample tested following the procedures in NHBC Standards Chapter 4.2 gives Modified PIs of between 4 and 20% indicating a range between no volume change and a low volume change potential.

Three particle size distribution tests showed generally similar curves classifying the material as described above, with between 23 and 59% fine material (<63 μ m), between 24 and 49% sand and between 17 and 44% gravel fractions (see Figure 3.2, Appendix 11).

The SPT N values were found to be between 11 and 46 and are shown on Figure 4.1 (Appendix 11). Values are scattered and do not show a particular change with depth. Based on the relationship $c_u = f_1 x N (kN/m^2)$ proposed by Stroud & Butler, where $f_1 = 6$ for clay using the mean Pl of 15%, the N values are approximately equivalent to undrained shear strengths of 66 to 276 kN/m^2 which are indicative of medium to very high strength conditions. Twelve test failed to achieve full penetration and produced. These tests are considered likely to have encountered gravel or possibly cobbles.

One unconsolidated undrained triaxial test gave an undrained shear strength results of 64 kN/m^2 indicating an undrained strength of medium strength. A plot of shear strength against depth including equivalent undrained shear strength derived from SPT N values is presented on Figure 5 (Appendix 11).

Five compaction test results showed a range of maximum dry density and optimum water content values ranging from 2.03 to 2.20 Mg/m^3 and from 7.5 to 9% respectively. The natural water content of the material indicates it to generally be wet of optimum.

Five laboratory CBR tests provided values of between 0.59 and 47% with an average of approximately 8%.

Seven specimens were tested in the laboratory for Thermal Conductivity. Results ranged between 1.24 and 3.37 W/(m.k) (average 2.29 W/(m.k)) with associated Thermal Resistivity ranging between 0.30 and 0.81 (m.k)/W (average 0.48 (m.k)/W). The temperature of the specimens ranged between 19.3 and 20.3 $^{\circ}$ C (average 19.9 $^{\circ}$ C). Bulk density results taken as part of the testing ranged between 1.66 and 2.23 Mg/m³ (average 2.08 Mg/m³).

A table summarising the test results and derived parameters for the River Terrace Deposits - Cohesive is presented as Table 3 in Appendix 11.

Granular Layer

Granular Layers in the River Terrace Deposits comprising medium dense to dense brown, occasionally orangish brown, sandy, clayey, sub-angular to sub-rounded gravel, gravelly sand in places, with low cobble content were found in Boreholes BH01, BH02, BH03, BH07, BH08, BH12, BH13, BH15, BH18, BH19, BH20, BH21, BH22, BH23, BH24, BH25, BH27 and BH29. The material was encountered from depths ranging between 0.30m (BH22) and 3.00m (BH01, BH02, BH03 and BH18), at elevations ranging between 7.77 and 12.08 m OD, and ranged in thickness between 0.40m (BH18) and 4.40m (BH07). These granular soils are generally present in the southern part of eastern two thirds of the site, as well as in some boreholes in the western third and the eastern edge. There is also the absence of granular soils from the previous investigation boreholes around the edge of the site

Fourteen particle size distribution tests showed generally similar curves classifying the material as described above, with between approximately 3 and 26% fine material ($<63\mu$ m), between 7 and 43% sand and between 36 and 81% gravel fractions, with a cobble content of between 0 and 9%. See Figure 3.2 (Appendix 11).

The SPT N values were found to be between 11 and 51 and are shown on Figure 4.1 (Appendix 11). Values are scattered and do not show a particular change with depth. Eighteen tests failed to achieve full penetration with penetrations of 75 to 265 mm being achieved for 50 blows These tests are considered likely to have encountered gravel or cobbles.

Seven compaction test results showed a range of maximum dry density and optimum water content values ranging from 2.10 to 2.21 Mg/m³ and from 6 to 9% respectively.



Seven laboratory CBR tests provided values of between 1.20 and 55% with an average of approximately 22%.

Ten specimens were tested in the laboratory for Thermal Conductivity. Results ranged between 1.80 and 2.78 W/(m.k) (average 2.37 W/(m.k)) with associated Thermal Resistivity ranging between 0.36 and 0.55 (m.k)/W (average 0.43 (m.k)/W). The temperature of the specimens ranged between 17.8 and 20.6 $^{\circ}$ C (average 19.8 $^{\circ}$ C). Bulk density results taken as part of the testing ranged between 1.93 and 2.84 Mg/m³ (2.19 Mg/m³).

A table summarising the test results and derived parameters for the River Terrace Deposits - Granular is presented as Table 4 in Appendix 11.

8.1.5 St. Maughan's Formation (Upper Clay Layer)

Clay soil classified as the St. Maughans Formation was encountered below the River Terrace Deposits or the Alluvium in the most of exploratory holes and probably comprises the upper weathered zone of the formation. The material is described as firm to stiff, occasionally very stiff, reddish brown gravelly sandy clay, occasionally with a low cobble content. The gravel and cobbles are mudstone, siltstone and sandstone. It was encountered at depths ranging from between 2.30m and 7.60m (3.35 and 9.02 m OD) and ranged in thickness from 1.40m to 4.73m. The level of the surface is generally at lower elevations in a north west to south east strip of land towards the west site.

Whilst the bedrock below this layer will also be weathered to some degree these clay soils have been separated from the underlying rock strata of the St. Maughan's Formation in order to separate the more highly weathered material which is likely to behave more like a clay than a rock and was able to be penetrated using cable percussive boring techniques.

The water content was found to be variable and ranged between 9.5 and 40%, see Figure 1 (Appendix 11). The Atterberg Limit test results gave a Plasticity Index (Pl) ranging between 14 and 34% generally classifying the soil as a clay of low to intermediate plasticity and silt of high and very high plasticity, see Figure 2 (Appendix 11). Modifying the Pl to take account of the soil particles greater than 425μ m of the sample tested following the procedures in NHBC Standards Chapter 4.2 gives Modified Pls of between 10 and 31% indicating a low to medium volume change potential.

The SPT N values were found to range between 7 and 50 and are shown on Figure 4.1 (Appendix 11). A slight increase in the N value with depth can be seen. A general lower bound line to most of the data shows an increase in N from about 17 at 3m bgl to 33 at 10m bgl with a small number of tests with low N values of less than 11 can be seen indicating the presence of low strength zones within the stratum. Based on the relationship $c_u = f_1 x N (kN/m^2)$ proposed by Stroud & Butler, where $f_1 = 5$ for clay using the mean Pl of 22%, the N values are approximately equivalent to undrained shear strengths of 85 to 250 kN/m² for those N values over 11 which are indicative of high and very high strength conditions. The N values less than 11 are approximately equal to undrained shear strengths of 35 to 55 kN/m² indicating zones of low and medium strength. Fourteen test did not achieve full penetration and produced 'Extrapolated N' values of between 78 and 563. These tests are considered likely to have encountered more competent bedrock or gravel and cobble lithorelicts.

One unconsolidated undrained triaxial test gave an undrained shear strength result of 76 kN/m² indicating high strength conditions. A plot of undrained shear strength against depth including the undrained shear strengths derived from the SPT N values is presented on Figure 5 (Appendix 11).

One compaction test results showed maximum dry density and optimum water content values of 1.75 Mg/m³ and from 18% respectively. The natural water content of the material indicates it to generally be wet of optimum.

Two specimens were tested in the laboratory for Thermal Conductivity. Results ranged between 2.60 and 2.71 W/(m.k) (average 2.66 W/(m.k)) with associated Thermal Resistivity ranging between 0.37 and 0.38 (m.k)/W (average 0.38 (m.k)/W). The temperature of the specimens ranged between 17.8 and 20.6 $^{\circ}$ C (average 19.1 $^{\circ}$ C). Bulk density results taken as part of the testing ranged between 1.93 and 2.84 Mg/m³ (average 2.21 Mg/m³).

The range of measured and derived parameters for the clay have been tabulated in Table 4 of Appendix 11.



8.1.6 Mudstone / Siltstone (St. Maughan's Formation)

Below the Upper Clay Layer, bedrock comprising mudstone, siltstone and sandstone was encountered. These were described as

- Extremely weak to weak reddish brown MUDSTONE. Discontinuities are horizontal to inclined (10 to 60 degrees), very closely to closely spaced planar to undulating, smooth with occasional black staining.
- Extremely weak to medium strong light grey and reddish brown SILTSTONE with occasional inclusions of grey siltstone. Discontinuities are horizontal to inclined (30 to 40 degrees), very closely to closely spaced, planar to undulating and smooth with occasional black staining.
- Weak to medium strong reddish brown SANDSTONE. Discontinuities are horizontal, closely spaced, planar to undulating, smooth with occasional black staining.

The material is occasionally interbedded and the mudstone is occasionally recovered as gravelly clay.

The rock layers were encountered at depths ranging between 3.70m and 8.00m bgl (2.86m OD and 7.52m OD). The initial ground investigation encountered the deepest bedrock at 9.40m below ground level (1.35m OD) in Borehole WS-BH109 just west of the middle of the southern edge of the site. The maximum depth proven was 21.00m below ground level. The surface of the bedrock is generally at a lower elevation towards the western third of the site.

Seventeen Standard Penetration Test results (Figure 4.1, Appendix 11) did not achieve the required full penetration with a penetration of 40 to 290 for 50 blows. 'Extrapolated N' values of between 78 and 563 have been estimated and are shown on Figure 4.2. The plot shows a general increase in Extrapolated N value with depth. Twelve tests carried out in the upper sections of the bedrock (Boreholes BH01, BH03, BH16, BH19, BH20, BH21, BH23, BH28, BH29 and BH30) were found to range between 26 and 61. These tests were undertaken on weaker, clay layers and non-intact zones within the bedrock and are probably not representative of the mass bedrock strength.

Unconfined Compressive Strength laboratory tests (Figure 7, Appendix 11) carried out indicate the rock strength for the sandstone to range between 5.31 and 13.00 MN/m^2 (indicating generally weak); for the siltstone 2.03 and 7.72 MN/m^2 (indicating very weak to weak) and for the mudstone 0.84 and 19.60 MN/m^2 (indicating extremely weak to weak). A summary of the results are presented as Table 5 in Appendix 11.

Point load tests were undertaken on samples of the bedrock (mudstone, siltstone and sandstone) and gave $Is_{(50)}$ values ranging between 0.01 and 5.41 MN/m² (Axial 0.03 to 5.41 MN/m², Diametral 0.01 to 4.27 MN/m²). The $Is_{(50)}$ values are shown on Figure 6, Appendix 11. Applying a factor of 20 to the $Is_{(50)}$ values in general accordance with suggestions by Broch and Franklin (1972) provides values ranging between 0.2 and 108.2 MN/m² (indicating extremely weak to very strong) which is generally in accordance with the visual descriptions recorded. Based on the factored values, the sandstone was found to have an estimated strength of between 0.4 and 85 MN/m² (indicating extremely weak to strong), the siltstone between 0.4 and 10 MN/m² (indicating extremely weak to weak) and the mudstone between 0.2 and 108 MN/m² (indicating extremely weak to very strong). The factored point load results correlate fairly well with the UCS test results considering that the UCS tests are likely to have been undertaken on more competent specimens. However, a different correlation factor may be deemed appropriate for design purposes. The factored values and UCS test results are shown plotted against depth on Figure 7, Appendix 11.

Water Content tests carried out produced results ranging from 4.7 to 10.7% for sandstone, 5.8 to 11.8% for siltstone and 3.1 to 22.5% for mudstone.

One specimen was tested in the laboratory for Thermal Conductivity. The result was 1.18 W/(m.k) with associated Thermal Resistivity of 0.85 (m.k)/W. The temperature of the specimen was 19.1 °C. A bulk density result taken as part of the testing was 1.87 Mg/m³.

The range of measured and derived parameters for the bedrock have been tabulated in Table 5 of Appendix 11.



8.2 Groundwater

Groundwater was struck during boring at the depths indicated in the following table together with the level risen to following a 20 minute pause in the drilling operations:-

Exploratory Hole	Depth Struck, m bgl (m OD)	Level after 20mins, m bgl (m OD)	Casing Depth m bgl
BH01	3.00 (7.86)	I.50 (9.36)	3.00
BH02	7.40 (3.48)	3.70 (7.18)	7.00
BH02	8.50 (2.38)	6.10 (4.78)	8.50
BH03	3.50 (7.27)	5.80 (4.97)	3.00
BH04A	4.00 (6.86)	3.90 (6.96)	3.30
BH13	3.45 (7.54)	1.39 (9.60)	3.45
BH17A	5.60 (5.44)	5.50 (5.54)	4.00
BH18	8.45 (2.58)	7.90 (3.13)	-
BH18	10.00 (1.03)	6.00 (5.03)	-
BH23	12.00 (-0.09)	11.00 (0.91)	10.50
BH27	16.00 (-5.82)	6.10 (4.08)	10.10
BH30	10.00 (0.99)	4.30 (6.69)	7.50

It should be noted that the addition of drilling fluid may have masked some groundwater strikes.

The depth to first groundwater strike in each of the above boreholes ranged from 3.00m to 16.00m below ground level, equating to elevations between 7.86m OD and -5.82m OD. The highest standing water level in the boreholes recorded after 20 minutes standing or overnight were measured at 1.39m below ground level (9.60m OD) in Borehole BH13.

Groundwater levels monitored in the morning (start of the shift) following the previous day of drilling are presented as follows:

Exploratory Hole	Date and time	Water depth m bgl (m OD)	Borehole depth m bgl	Stratum at base of hole m bgl	Casing depth m bgl
BH03	02/09/2022	Dry	1.20	Made Ground (Gravel)	-
BH04	10/08/2022	Dry	I.54	Made Ground (Sand)	-
BH05	15/08/2022	Dry	1.20	Made Ground (Gravel)	-
BH06	19/08/2022	Dry	1.20	Made Ground (Sand)	-
BH08	22/08/2022	Dry	1.20	Made Ground (Sand)	-
BH09	30/08/2022	Dry	2.50	Made Ground (Sand)	2.50
BHII	18/08/2022	Dry	5.00	Clay	4.50
BH12	16/08/2022	Dry	1.20	Gravel	-
BH12	17/08/2022	Dry	3.00	Clay (weathered bedrock)	3.00
BH13	09/08/2022	Dry	1.20	Made Ground (Sand)	-
BH13	15/08/2022	Dry	2.30	Sand	2.00
BH13	16/08/2022	5.40	5.50	Gravel (weathered bedrock)	5.50
BH15	02/08/2022	Dry	1.20	Made Ground (Sand)	-
BH16	18/08/2022	Dry	4.10	Clay	4.00
BH17	08/08/2022	Dry	1.70	Made Ground (Clay)	-
BH18	04/08/2022	Dry	6.00	Clay (weathered bedrock)	6.00
BH19	01/09/2022	Dry	1.20	Made Ground (Gravel)	-
BH20	31/8/2022	Dry	1.20	Sand	-



BH21	31/08/2022	Dry	1.20	Made Ground (Sand)	-
BH21	01/09/2022	Dry	3.45	Gravel	3.00
BH22	01/08/2022	Dry	1.20	Gravel	-
BH22	02/08/2022	Dry	2.00	Gravel	2.00
BH24	25/08/2022	Dry	1.20	Made Ground (Sand)	-
BH25	23/08/2022	Dry	1.20	Clay	-
BH26	10/08/2022	Dry	1.20	Made Ground (Sand)	-
BH26	11/08/2022	Dry	3.45	Clay	3.00
BH26	12/08/2022	Dry	8.45	Clay (weathered bedrock)	8.00

As part of the initial phase ground investigation, observations made during progression of exploratory holes and during post-installation monitoring have shown that groundwater occurs both as perched groundwater within Made Ground, and as groundwater in the deeper natural deposits. The table below shows a summary of strata where monitoring wells are installed and the standing groundwater level (m OD) measured on the 17^{th} June 2021:

Exploratory	Slotted pipe and (Filter	Groundw	vater Level	Strata Monitored
Hole	Zone) (m)	Depth	Level	
		(m bgl)	(m OD)	
WS-BH102	1.00 to 2.28 (1.00 to 2.28)	-	Dry	Made Ground
WS-BH103	1.00 to 2.50 (1.00 to 2.50)	2.13	7.76	Made Ground
WS-BH104	0.50 to 2.00 (0.50 to 2.25)	I.88	8.19	Made Ground
WS-BH105	0.50 to 1.00 (0.50 to 1.00)	0.62	9.43	Made Ground
WS-BH106	0.50 to 1.50 (0.50 to 1.50)	I.46	8.94	Made Ground
WS-BH109	0.50 to 2.50 (0.50 to 2.50)	1.13	9.62	Made Ground
WS-BHII0	2.00 to 4.00 (2.00 to 4.45)	2.84	8.11	Made Ground
WS-BHIII	2.00 to 3.00 (2.00 to 3.45)	3.00	7.92	Made Ground
CP-BH103	1.00 to 3.00 (1.00 to 3.45)	1.33	9.27	Made Ground
RC-BH101	1.00 to 3.00 (1.00 to 3.45)	2.54	7.64	Made Ground
RC-BH105	1.00 to 4.00 (1.00 to 4.00)	1.93	8.84	Made Ground
CP-BH101	4.00 to 5.50 (4.00 to 5.50)	2.00	7.65	Superficial deposits
CP-BH102	4.00 to 8.00 (4.00 to 8.44)	3.00	7.28	Superficial deposits
RC-BH102	3.00 to 12.00 (3.00 to 12.00)	2.61	7.74	Bedrock
RC-BH103	2.00 to 8.30 (2.00 to 8.30)	2.21	7.78	Bedrock
RC-BH104	3.00 to 15.00 (3.00 to 15.10)	2.50	8.36	Bedrock

The results of monitoring within the current investigation carried out on the 20th and 26th September, 2022 together with installations from the initial investigation are summarised as follows:

Exploratory	Response	Groundwater Level		Strata Monitored
Hole	Zone (m)	Depth	Level	
		(m bgl)	(m OD)	
BH0I	14.00 to 18.00	2.63 to 2.68	8.23 to 8.18	Bedrock: Sandstone.
BH03	3.50 to 5.50	2.13 to 2.25	8.64 to 8.52	Gravel (River Terrace Deposits)
BH04A	15.00 to 17.00	2.56 to 2.62	8.30 to 8.24	Bedrock: Mudstone.
BH06	1.00 to 2.70	1.77 to 1.80	9.09 to 9.06	Clay (River Terrace Deposits)
BH07	13.00 to 20.50	4.84 to 4.95	7.84 to 7.73	Bedrock: Mudstone.
BH09	4.50 to 5.50	2.28 to 2.29	8.73 to 8.72	Peat.
BH10	5.00 to 6.50	2.79 to 2.83	8.21 to 8.17	Bedrock: Mudstone/Siltstone.
BH17A	4.00 to 5.00	3.44 to 3.56	7.60 to 7.48	Gravel of mudstone and sandstone
				(probable weathered bedrock).
BH19	10.00 to 12.00	3.00 to 3.03	8.01 to 7.98	Bedrock: Mudstone and sandstone
BH23	4.00 to 5.00	4.73 to 4.75	7.18 to 6.26	Gravel (River Terrace Deposits)
BH25	9.00 to 13.00	3.07 to 4.56	7.93 to 6.44	Bedrock: Mudstone.



BH28	3.00 to 4.60	3.45 to 3.50	7.38 to 7.33	Clay (Alluvium)
BH30	3.00 to 5.00	3.22 to 3.25	7.77 to 7.74	Clay (River Terrace Deposits)/ Bedrock
				(Mudstone).
CP-BH101	4.00 to 5.50	1.95 to 2.10	7.70 to 7.55	Clay and mudstone
CP-BH102	4.00 to 8.44	3.92 to 4.69	6.36 to 5.59	Clay and mudstone
CP-BH103	1.00 to 3.45	1.30 to 1.36	9.30 to 9.24	Clay and mudstone
RC-BH101	1.00 to 3.00	2.26 to 2.32	7.92 to 7.86	Made Ground and clay
RC-BH102	3.00 to 12.00	2.64 to 2.66	7.71 to 7.69	Clay and mudstone
RC-BH103	2.00 to 8.30	2.35 to 4.10	7.64 to 5.89	Clay and mudstone
RC-BH104	3.00 to 15.10	2.62 to 2.64	8.24 to 8.22	Clay and mudstone
RC-BH105	1.00 to 4.00	3.08 to 3.12	7.69 to 7.65	Made Ground (sand and gravel)
WS-BH102	1.00 to 2.28	Dry	-	Made Ground (gravel)
WS-BH103	1.00 to 2.50	Dry	-	Made Ground (gravel) and clay
WS-BH104	0.50 to 2.25	Dry	-	Made Ground (gravel) and clay
WS-BH105	0.50 to 1.00	0.73	9.32	Made Ground (sand)
WS-BH106	0.50 to 1.50	1.48 to 1.58	8.92 to 8.82	Made Ground (sand and gravel)
WS-BH109	0.50 to 2.50	1.13 to 1.14	9.62 to 9.61	Made Ground and clay
WS-BHII0	2.00 to 4.45	2.86 to 2.88	8.09 to 8.07	Made Ground, gravel and clay
WS-BHIII	2.00 to 3.45	2.74	8.18	Made Ground (gravel) and mudstone

Groundwater depths during monitoring ranged between 1.13m and 4.69m below ground level and elevations ranging between 6.36m and 9.61m OD.

It is considered that the relatively shallow groundwater encountered within several of the boreholes may represent perched groundwater within the Made Ground. The groundwater below what is likely to be perched water has been measured as shallow as 1.77m below ground level.

It should be noted that groundwater levels can vary both seasonally and after prolonged periods of wet or dry weather.

The results of the monitoring are presented in Appendix 7.

9.0 GEOTECHNICAL EVALUATION

9.1 Proposals

It is understood that proposals for the site include demolition and clearance of the existing buildings/hardstanding followed by the construction of a new data centre comprising two buildings with associated areas of access roadways, hardstanding and car parking. It is also understood that the proposed development will include areas of soft landscaping and a number of ponds.

The three main structures of the proposed development are shown on the Proposed Masterplan (Appendix 13) are the two main data centre buildings (CWL 01 and CWL 02) and the electricity sub-station (structure number 04) The data centre buildings (CWL 01 and CWL 02) are expected to be of steel framed construction with lightweight cladding. The maximum anticipated structural loading at foundation level is understood to be 450kN and the maximum anticipated ground floor loading is $25kN/m^2$. The building and ground floor slab are not expected to be particularly sensitive to settlement. It is understood that some minor retaining structures (1.20m high) will be required for the unloading docks.

At the time of writing the proposed finished floor levels (FFL) for both buildings are understood to be 11.50m above OD. A central, southern area believed to be at the proposed location of an electrical sub-station has a FFL indicated to be 11.15m. As a result of these proposed levels, a degree of cut and fill will be required, the primary cut area being towards the north-eastern corner of the site and primary fill area being towards the central part of the southern boundary.



A plan showing the proposed general arrangement options at the time of preparation of this report is presented in Appendix 14.

9.2 Foundation Design Principles

In formulating proposals for foundation and floor slab design, the two primary controlling factors are soil strength and foundation settlement. In general it is the latter which is the primary determinand of what is perceived to be satisfactory performance. For clay soils, allowable bearing capacity is based on undrained shear strength, although a Factor of Safety of 3 is commonly adopted in order to ensure that the loading is on the sensibly linear component of the stress/strain curve for the soil.

With time, the clays will strengthen under the higher loadings as any excess pore water pressures dissipate. Hence, the worst case is at the time of initial loading and, for gradually applied or static loading, bearing capacity should progressively increase. For eccentric loading, where peak load is at an extremity of the foundation, this can be higher than the allowable load, provided that the mean equivalent stress is within the allowable value.

For granular or essentially free draining soils the frictional characteristics and density will dominate bearing capacity and this is generally much higher than for clay soils. For normal spread foundations conventional design is typically based on the stress which would give rise to 25mm settlement. Actual settlements will depend upon the type, period, load intensity and width of the loaded area and the thickness and compressibility of the soils below.

A further issue for foundations is the degree of variability in the foundation soils. The adoption of a lower bearing pressure than strength criteria would indicate implicitly that a larger foundation is likely to behave more in line with average conditions and hence, for a given load, will result in less differential settlement.

9.3 Geotechnical Classification

The geotechnical classification appropriate for the site development, as defined in BS EN 1997-1:2004+A1:2013, is Category 2 as the anticipated development and construction comprises conventional geotechnical structures and foundations.

9.4 Earthworks

The proposed finished ground and floor levels will require a degree of cut and fill to be carried out. Several samples of soil from exploratory holes in the 'cut' areas were tested in the laboratory and samples of granular material were tested for particle size distribution and moisture content/dry density relationship and cohesive material was tested for water content, Plasticity Limits and moisture content/dry density relationship.

The particle size distributions of the granular materials were all seen to be generally well-graded and the percentage fines (smaller than 63μ m) was generally low, ranging from 3% to 12% and classify as Class IA according to the Specification for Highway Works Series 600. Cohesive samples from this are were of low plasticity and on the boundary between low and intermediate plasticity with a significant amount (32 to 42%) of granular material being retained on the 425 μ m sieve and classify as Class 2A according to the Specification for Highway Works Series 600. For all samples tested, the natural water contents were generally within 1% to 3% of the optimum moisture contents determined from the compaction test curves.

The soil samples tested suggest that the 'cut' soils, although variable in nature could be suitable for re-use in 'fill' areas. However, controls will need to be in place to ensure adequate screening of the soils to ensure separation of different classes of materials. Care will also be needed to ensure that water contents remain close to optimum in order to ensure that materials are placed at or close to maximum dry density.

Areas of soft, medium/high compressibility clay were encountered at depth in some of the exploratory holes. Raising ground levels above such materials will increase the overburden pressure on them and this is likely to result in some long-term consolidation settlement. Based on proposals available at the time of preparation of this report, a maximum 'fill' thickness of around 1.0m is anticipated. This would produce an increase in overburden pressure of



the order of approximately 20kN/m². It is estimated that such an increase in stress on a 2m thick layer of the soft clay (e.g. CP-BH102) could result in consolidation settlements in the soft clay alone of the order of 20mm. It would therefore be advisable to leave final surfacing for as long as possible after the cut/fill operation to minimise any distress to the finished surface or to consider the treatment or removal of such soft areas. Advice should be sought from a lime stabilisation specialist to discuss the potential for using such techniques to improve the condition of the near surface ground. Total sulphate (SO4) values encountered during laboratory testing ranged between 0.01 and 0.29% and should be considered when discussing this potential option.

9.5 Foundation Solutions

The approach to design and selection of suitable foundation options for this site is based on a hierarchy of complexity and expense. If the simplest and cheapest solution case can be shown to be appropriate, then further discussion is considered superfluous. Where such simple and proven techniques are not expected to be suitable, then other options are examined in more detail. The following options have been considered:

- Traditional pad foundations at shallow depth.
- Traditional pad foundations, but using trench fill to transfer loads to soils at greater depths.
- Raft foundation to reduce the intensity of loading.
- Ground improvement prior to foundation construction.
- Piled solution, including selection of suitable pile types and preliminary calculation of carrying capacity.

9.5.1 Pad Foundations

The Made Ground, due to its variable nature and thickness and to avoid unpredictable total and differential settlements, does not form a suitable founding stratum. With Made Ground present to depths of up to 4.10m encountered in the initial ground investigation (3.00m in the most recent investigation), the use of traditional pad foundations is precluded.

9.5.2 Trench Fill Foundations

Consideration has been given to the use of concrete trench fill foundations taken through the Made Ground into the underlying natural soils. The three main structures of the proposed development CWL 01, CWL 02 and electricity sub-station (structure number 04 on the Proposed Masterplan) are discussed separately. Existing shallow foundations would need to be grubbed out to facilitate such foundations and any existing piles would need to be avoided.

Building CWL 01

Ground conditions comprise Made Ground up to 3.00m deep, underlain by cohesive deposits in some areas and granular deposits in other areas. In view of the variable nature of the materials beneath the proposed structure, including instances where the depth to the firm clay strata is up to 4.80m (Borehole BH10), organic material within Alluvium and peat to 5.50m (BH09), that could lead to excessive differential settlements of greater than 25mm and in places significant total settlements the use of trench fill foundations is unlikely to be economically viable. Therefore, trench fill foundations are likely to be precluded for this structure and consideration should be given to the use of ground improvement or piled foundations as discussed below. At the western end the structure may encroach over an area of soft alluvial soils including peat to a maximum depth of 5.50m below ground level (Borehole BH09). Elsewhere, the underlying River Terrace Clay Layers are typically firm and in some places stiff, although some layers of soft/very soft clay were encountered and these would results in long-term consolidation settlements where they are within the zone of influence of the foundation loads. As discussed in Section 9.4 above, settlements from placed fill' materials could be of the order of 20mm or more where they bear onto alluvial soils. Higher structural loadings would therefore increase settlements to levels that would be considered unacceptable. A safe bearing capacity in the order of 80 kN/m² can be anticipated for the lower strength cohesive deposits. River Terrace Granular deposits are also likely to be present under part of the structure and would provide a suitable founding stratum with considerably higher bearing capacity with low settlements compared to those foundations bearing on to the soft clay soils. The probable deep open excavations required are also likely to suffer from instability.



Building CWL 02

Ground conditions comprise Made Ground up to 1.20m deep, underlain by cohesive deposits in some areas and granular deposits in others. Hence as with Building CWL 01, in view of the variable ground conditions the use of trench fill foundations are likely to be precluded for this structure and consideration should be given to the use of ground improvement or piled foundations as discussed below. In the central part of the building footprint, Borehole BH17A encountered Alluvium comprising soft clay to a depth of 3.40m below ground level. Relatively high SPT N values within this stratum in Borehole BH17A are considered to relate to encountering boulders (low cobble content). A safe bearing capacity in the order of 80 kN/m² can be anticipated for the soft cohesive deposits. The variation between low strength cohesive and granular deposits is likely to lead to excessive total and differential settlement of greater than 25mm. In order to reach a suitable bearing stratum excavation up to 3.40m below ground level is anticipated with associated instability of excavation sides.

Electricity sub-station

There are no exploratory holes within the footprint of the proposed structure. However, ground conditions within this region of the site comprise Made Ground up to approximately 2.70m deep, underlain by cohesive deposits in some areas and granular deposits in others. Immediately to the west of the proposed sub-station location Borehole BH26 encountered Alluvium comprising soft and organic clay to a depth of 7.60m below ground level. Borehole WS-BH103 from the previous ground investigation, to the south of the proposed structure, encountered soft clay to its termination depth of 3.38m below ground level. However, Boreholes BH19, BH20 and BH27 to the north and east of the proposed structure indicate the presence of granular soils overlying mudstone bedrock. On the basis of the findings of Borehole BH26 a safe bearing capacity of around 40 kN/m² can be assumed for such material. Given the possibility of soft cohesive deposits to at least 2.70m below ground level and the possible presence of Alluvium to greater depths as described above with the associated total and differential settlement of greater than 25mm then trench fill foundations are likely to be precluded for this structure. However, if additional boreholes were to be undertaken within the footprint of the proposed structure and proved the absence of clay soils then trench fill could potentially be adopted.

9.5.3 Raft Foundations

Consideration has been given to the use of a reinforced concrete raft foundations to reduce the intensity of loading on the Made Ground and underlying low strength cohesive material. However, with the variable thickness of Made Ground and the presence of some soft and very soft clay and organic material, there is a risk that unacceptable differential settlements could occur resulting in cracking and tilting of the rafts. Furthermore, due to the length of the proposed buildings, it is considered unlikely that raft foundations with adequate stiffness to mitigate the effects of potential settlements could be economically designed/constructed without treatment of the Made Ground or soft compressible clay deposits. The use of raft foundations therefore is considered to be precluded.

9.5.4 Ground Improvement

Consideration has been given to the use of the vibratory 'vibro' ground improvement process by which stone columns would be formed through the Made Ground and underlying clay to increase the load bearing capacity.

However, the success of the 'vibro' technique is generally considered to be marginal where very soft clays are present due to the limited lateral restraint provided to the stone columns by the clay. This can result in stone migrating into the adjacent clay when loaded, thus leading to settlement of the foundations. Very soft clay was encountered in borehole CP-BH102 and soft clays/silts were encountered elsewhere below the site such as Borehole BH26. Prior to progressing vibro ground treatment designs the advice of specialist contractors should be sought to confirm the suitability of their methods for the particular ground conditions and to allow development of designs and costings. Any vibro-replacement works should ensure full depth treatment of the fills and should penetrate into the competent underlying strata and could also be suitably designed to accommodate the proposed foundation and floor slab loading subject to suitable settlement behaviour being found (see Section 9.6) and should be undertaken by suitably experienced ground treatment contractors. The presence of old foundations or buried structures if left in place must also be considered in the design. Assurances should also be sought on the likely bearing capacity that would be available for pad foundations and the likely settlements that would occur.



9.5.5 Piled Foundations

With the variable nature and thickness of Made Ground together with variable presence of some soft and occasionally very soft medium and high compressibility clays and granular soils below the building locations and relatively shallow groundwater level, consideration could be given to the adoption of piled foundations. Piles of either the driven or CFA bored type are likely to be suited to the ground conditions. It is recommended that specialist piling contractors are asked for advice on the suitability of their individual piling systems to these ground conditions. They should also be asked for their estimates of the pile size, length and load capacity relationship. For guidance purposes only, it is estimated that a 300mm diameter bored pile socketed 1.00m into the very weak to weak (or stronger) mudstone bedrock should be capable of supporting a safe working load of the order of 250kN. Higher working loads could be achieved by increasing the pile diameter or socket length.

As discussed above, the earthworks operation is expected to cause long-term consolidation settlement of the Made Ground and clay strata in some 'filled' parts of the site. Allowance should therefore be made in the pile design for negative skin friction on the upper part of the pile shaft in those areas of the site where 'fill' is to be placed.

This investigation has not included any investigation of the foundations to the existing buildings. Given the findings of the exploratory holes, it is anticipated that some of the existing buildings may also be supported on piled foundations. If that is the case, it may be possible to re-use these piles to provide support for the proposed buildings. Further investigation would be required, following demolition and clearance of the existing buildings.

9.5.6 Seasonal Ground Movements

NHBC Standards Chapter 4.2, 'Building near Trees' (2022) gives guidance on foundation depths and precautions against heave where foundations are to be constructed within influencing distance of trees and the volume change potential of the foundation soils. There are not believed to be any existing trees in influencing distance of the site. However, any planting which may be planned as part of the development will need to be considered.

The volume change potential of the soils found during the investigation are based on the Modified Plasticity Index l'p, which is calculated as follows:

I'p = PI x <u>% less than 425µm</u> 100

The Modified Plasticity Index for the strata are summarised in Tables I to 4 of Appendix II. The volume change potential for each of the stratum are summarised as follows:-

Strata Type	Volume Change Potential			
Made Ground	Medium (based on initial phase of GI)			
Alluvium	Low			
River Terrace Deposits	Low			
St. Maughan's Formation (Upper Clay Layer	Low			

Tests on samples of clay from the boreholes have shown the clay (Alluvium, River Terrace Deposits and St Maughan's Formation) to typically be of 'low' volume change potential. The initial phase of ground investigation indicated that the Made Ground had a 'Medium' volume change potential. Clays can shrink and swell due to seasonal variations in moisture content or due to variations in moisture content caused by tree root systems. It is therefore recommended that foundations are designed to limit the effects of any seasonal ground movements, especially where any trees are planned, present or have been removed within influencing distance of foundations. For piled foundations this could include sleeving the upper part of the pile shafts and providing compressible materials below any pile caps, ground beams or suspended floor slabs. Guidance on suitable precautions is provided in NHBC Chapter 4.2 'Building near trees'.



9.6 Slab Design

The long term settlement of the floor slab will depend on a number of factors including the structural design of the slab, the duration, intensity and distribution of the applied loading as well as the strength, compressibility and history of the soils beneath slab. The preferred solution for the floor slab will also depend on the type of foundation adopted with a suspended floor slab typically being used where the structural loads are carried on piled foundations.

Due to presence of Made Ground and its thickness and variability, as well the presence of some soft and very soft and organic clays, the adoption of a ground floor slab construction unlikely to be viable due to the risk of unacceptable settlements developing. It is therefore recommended that a fully suspended ground floor slab construction is adopted with all loads carried on the main structural foundations.

A ground bearing could be used following treatment of the Made Ground and the soft clays by extending the use of techniques such as vibro-compaction/replacement, if used for the foundations, beneath the area of the floor slab.

9.7 Retaining Walls

It is understood that some minor retaining structures (1.20m high) may be required for the vehicle unloading platforms. On the building line, it is anticipated that these walls will be supported on the main structural foundations. It is therefore recommended that similar foundations are used to support the retaining walls as they lead away from the buildings, in order to provide uniform support and minimise the risk of differential movements occurring. Testing on samples of the granular Made Ground which is likely to be retained indicates it to be well-graded with a generally low fines (<63µm) content. British Standard BS8002:2015 Code of Practice for Earth Retaining Structures provides suggested values for characteristic weight density (γ_k) and methods of estimating the critical state angle of shearing resistance ($\varphi'_{cv,k}$). Based on the findings of the exploratory holes and laboratory test results, the following values are suggested for retaining wall design purposes assuming that the predominantly granular Made Ground would be the retained material:

$$\gamma_k = 18 \text{ kN/m}^2 \ \varphi'_{cv,k} = 36^{\circ}$$

Design should take into account the ground conditions local to the proposed structure.

9.8 Buried Concrete

The results of the chemical testing on samples from the site during this investigation are summarised and presented in Tables 1 to 4 in Appendix 11.

Based on the procedures outlined in BRE Special Digest 1 : 2005 and the test results for water soluble sulphate the Design Sulphate Class for the strata at the site are shown in the table below together with the Aggressive Chemical Environment for Concrete (ACEC) Class. The results include those of the initial investigation. In view of the potential presence of pyrite that can oxidise to form sulphates, a check for their presence has been undertaken. The Oxidisable Sulphate Content (OS) is determined from the Total Potential Sulphur content and Total Sulphate content for the soils at the site. The oxidisable sulphate contents determined from the results do not indicate that pyrite is present.

The site is unlikely to contain chemical residues produced by or associated with industrial production. However, a "brownfield location" is considered for the Made Ground. For conservatism, groundwater is considered to be "mobile" for the assessment of the ACEC class.

Strata Type	Design Sulphate Class	ACEC Class		
Made Ground	DS-I	AC-I		
River Terrace Deposits	DS-I	AC-I		
St Maughan's Formation	DS-I	AC-I		



Any subsurface concrete or concrete in contact with the fill sourced from these stratum should be designed to meet the requirements of the appropriate classification.

9.9 Excavations

The soils encountered in the boreholes would generally be considered 'easy digging' for normal backhoe excavation plant. However, it should be noted that some buried obstructions were encountered within the boreholes and substructure remains will likely be present following demolition and clearance of the existing buildings. Methods of removal of these obstructions will depend on their size, nature and depth below ground level. It may be possible to remove some using the large buckets of an hydraulic excavator, others may need breaking up using hydraulic breaker attachments to the excavating plant. Allowance should therefore be made for removing such concrete or other buried obstructions using hydraulic breakers where necessary.

Where foundation excavations extend to depths greater than Im they will need to be fully shored if entry by personnel is required. Even for shallow excavations the need for support will still need to be evaluated under CDM regulations. Shallow excavations (less than 1.20m) will likely remain relatively stable in the short-term although some local spalling may occur. Where such excavations are left open for longer periods, it is recommended that the sides are battered back to slopes no steeper than I (vertical) to 2 (horizontal). Alternatively, and for deeper excavations, support should be provided using close boarding or trench sheets with appropriately spaced walings and props.

The exploratory holes have shown the presence of perched groundwater within the Made Ground and monitoring has shown this to produce standing water levels at relatively shallow depths. Monitoring of installations within the natural soils has shown groundwater to be present as shallow as 1.77m below ground level. As a result, groundwater inflows are likely to be encountered in excavations of about 1.50m and deeper (possibly shallower) with accumulations occurring where such excavations are left open. The rate of water inflow will be dependent on the percentage of fine material present within the soils and this appears to vary across the site. Where the rate of inflow is relatively low, inflows are likely to be able to be dealt with by simple filtered pumping from sumps. Where higher rates of inflow are encountered, more specialist dewatering methods, such as well-point dewatering may be necessary.

All plant and machinery will need to maintain an appropriate stand off from the crest of all open excavations.

When exposed, the formation level for the foundations should be kept dry and steps taken to avoid disturbance. Prior to construction the formation should be inspected and any soft / loose spots removed. All formations should be protected from mechanical disturbance and assumed to be frost-susceptible.

9.10 Pavement Design

The conditions prevailing at the time of construction will affect the CBR of the subgrade soil and its strength. Research has shown the importance of the equilibrium moisture content of the subgrade. The relationship between soil suction and the moisture content shows that a soil that becomes wet during construction will retain water and will therefore be weaker under the pavement in the equilibrium condition than a foundation that has remained dry, particularly for soils of low to medium plasticity.

Equilibrium CBR values for various materials for poor and good construction conditions are given in a report by the TRRL (Report 1132) and in CD225 Revision 1 "Design for new pavement foundations" produced by the Highways Agency. The Made Ground materials likely to be exposed at formation level typically comprise sand and gravel with some silt, clay, cobbles, clinker, slag, brick fragments and occasional blocks of aircrete and Thermolite, and wood fragment and metal.

For sands and gravels an equilibrium CBR in excess of 10% is generally indicated. Laboratory testing indicated CBR values ranging between 37% and 58%. However, values as low as 3.8% were obtained for the Made Ground during the plate load testing. Laboratory CBR values on recompacted samples of Alluvium resulted in values of average 11% (two tests) and for the River Terrace Deposits average 17% (ten tests).



Without the benefit of in situ CBR test results on the actual formation surface, it is recommended that a cautious approach to pavement design is taken using a design CBR value of 5%. All formations should be assumed to be frost susceptible.

The exposed surface should be proof-rolled and any soft spots that depress unduly should be removed and replaced with clean crushed stone or similar suitable granular fill. Further testing of the formation surface following the site strip and any re-grading would assist with confirmation of the design CBR value and may allow a higher CBR value to be adopted.

9.11 Geotechnical Risk Register

A geotechnical risk register for the site is presented to reflect the findings of this investigation and above recommendations, as follows:

	Condition	Hazard	Potential	Before Control			Comments / Proposed	After Control		
			impact	Probabi lity	Impact	Risk	Mitigation	Probabi lity	Impact	Risk
RI	Compressible ground	Insufficient bearing capacity leading to potentially increased total and differential settlement problems.	Failure / excessive movement of the foundations / ground bearing floor slabs leading to cracking of buildings. Potential for differential settlement.	3 (P)	4 (H)	12 (Md)	Adopt appropriate foundations to transfer the applied structural loads into the natural soils. Piled foundations bearing into the rock of the St Maughan's Formation likely to be the most suitable option. All foundation excavations to be inspected prior to foundation construction.	ו (VU)	4 (H)	4 (N)
R2	Made Ground	Variable behaviour and thickness leading to variable bearing capacities and unpredictable total and differential settlements.	Failure / excessive movement of the foundations / ground bearing floor slabs leading to cracking of buildings. Potential for differential settlement.	5 (VL)	4 (H)	20 (Sv)	Foundations to be taken below any Made Ground and bear into the natural soils.	ו (עט)	4 (H)	4 (N)
R3	Swelling / Shrinking Soils	Shallow foundation movement due to seasonal shrinkage / swelling of clay soils associated with trees and shrubs.	Excessive movement of the foundations / ground bearing floor slabs leading to cracking of buildings.	2 (U)	4 (H)	8 (Mn)	Foundations within influencing distance of planned, trees should be constructed is stable ground using guidance in NHBC Chapter 4.2 'Building Near Trees'. Requirements for compressible materials/voids adjacent to foundations/below floor slabs should also be followed.	ו (עט)	4 (H)	4 (N)
R4	Obstruction / Hard Strata	Affecting excavations during construction works and potential hard spots below foundations / floor slabs.	Differential movement of the foundations / ground bearing floor slabs leading to cracking of buildings. Delays to excavations during construction.	3 (P)	4 (H)	12 (Md)	Use backhoe excavation plant but have hydraulic breakers available to assist with the removal of any remnant hardstanding, concrete floor slabs, foundations or other substructure remains following the demolition of the previous development. The design needs to take account of any sub- structures and former foundations left in place.	2 (U)	4 (H)	8 (Mn)



R5	High groundwater	Instability of foundation excavations and problems with foundation, floor slab and road / hardstanding formations.	Excessive movement of the foundations / ground bearing floor slabs leading to cracking of buildings and subsidence of roads / hardstanding areas.	2 (U)	4 (H)	8 (Mn)	Shallow groundwater encountered within some exploratory holes. Sump pumping may be suitable.	ו (עט)	4 (H)	4 (N)
R6	Chemically Aggressive Soil	Corrosive attack of buried concrete from soils on the site.	Degradation of concrete foundation and buried concrete structures leading to failure.	2 (U)	3 (M)	6 (Mn)	Provisionally use concrete to AC-I classification of BRE SD1 for subsurface concrete. Further testing is recommended to confirm the above classes as part of future investigation.	1 (VU)	3 (M)	3 (N)
R7	Buried services	Damage during construction works posing risk to Health and Safety of site personnel and public. Evidence of the presence of buried services noted during site walkover.	Increased cost and delay for unplanned diversions, protection or repair.	2 (U)	5 (VH)	10 (Md)	All Statutory Service Plans to be provided to the Specialist Contractors prior to works taking place. Vigilance throughout any excavation work for any indications of unrecorded buried services.	1 (VU)	5 (VH)	5 (Mn)
R8	Slopes	Failure of existing slopes and any slope created during development separating different areas. The site is near flat.	Not expected.	ו (VU)	4 (H)	4 (N)	-	-	-	-
R9	Retaining Walls	Failure or movement of any new retaining walls or structures during development separating the different site areas.	Low retaining walls associated with loading platforms; differential settlement; failure of wall.	2 (U)	4 (H)	8 (Mn)	Use similar foundations to the adjacent structure. Design wall in accordance with current guidance.	ו (VU)	4 (H)	4 (N)
R 10	Solution Features	Potential collapse or settlement of ground affecting buildings, hardstanding and infrastructure.	Not expected.	1 (VU)	4 (H)	4 (N)		-	-	-
R II	Mining Activities	Potential collapse or settlement of ground affecting buildings, hardstanding and infrastructure.	Not expected.	1 (VU)	4 (H)	4 (N)		-	-	-
R 12	Frost Susceptibility	Affecting the subgrade of roads and areas of hardstanding.	Subsidence and cracking of roads and areas for hardstanding and increased maintenance and management costs.	2 (U)	3 (M)	6 (Mn)	For conservatism assume all formation soils are frost susceptible and design accordingly.	1 (VU)	3 (P)	3 (N)
R 13	UXO	Affecting investigation and construction works and posing risk to Health and Safety of site personnel and the public.	Increased costs and delay to the project and potential serious injury or death.	2 (U)	5 (VH)	10 (Md)	Preliminary UXO Threat Assessment carried out and risk assessed as low and no further action required. Vigilance throughout investigation and construction works required.	1 (VU)	5 (VH)	5 (Mn)



10.0 CONCLUSIONS

10.1 Geotechnical

This preliminary ground investigation has shown the site to be underlain by a variable thickness of Made Ground of between 0.50 and 4.10m overlying Alluvium and River Terrace Deposits. Weathered mudstone bedrock (clay) was encountered at depths ranging between 2.30 and 7.60m and more competent bedrock comprising mudstone, siltstone and sandstone of the St. Maughan's Formation was encountered at depths ranging between 3.70 and 9.40m. The Made Ground Alluvial superficial deposits are not considered to be a suitable founding stratum for the proposed structures.

The variable nature, thickness and lateral extent of the Made Ground, Alluvium and cohesive River Terrace Deposits with the presence of some soft, highly compressible, organic clays below the site suggests that this material is not suitable for the anticipated loads from the proposed structures. Trench fill foundations extending below the soft clays may be possible in some areas. However, the possibility of unacceptable total and differential settlement together with excavation instability are likely to make this solution uneconomic. Therefore, the most suitable foundation solution to be adopted is considered to be piled foundations with a suspended floor slab.

To limit the effects of seasonal ground movements especially where any trees may be proposed within influencing distance of the foundations piled foundations may require sleeves over the upper part of the pile shafts.

Minimum foundation depths for any shallow foundations for lightly loaded structures and the requirement for voids or compressible materials against the face of foundations or below floor slabs should be determined in accordance with NHBC Chapter 4.2, 'Building near trees'. As a precaution against heave in the underlying clay soils there are requirements for compressible materials/voids adjacent to foundations/below floor slabs in accordance with NHBC guidelines.

Testing carried out during this preliminary investigation indicates that subsurface concrete should provisionally be designed to comply with the ACEC Class of AC-I of BRE Special Digest I.

It would be prudent to adopt a conservative approach to pavement design, with the adoption of a preliminary design CBR value of 5% for the site. Where weaker zones are present at formation level, the exposed surface should be proof-rolled and any soft spots that depress unduly should be removed and replaced with compacted clean crushed stone or similar suitable granular fill. Further CBR testing of the likely formation surface is advised prior to final design/construction.

The natural material below the site often comprised clayey sand and clayey gravel and clay or mudstone and will likely exhibit poor to negligible infiltration rates. If the possible use of soakaway drainage is to be investigated, it would be necessary to carry out soakaway tests in accordance with BRE Digest 365 'Soakaway Design', 2016.

Significant earthworks are not anticipated on this generally flat-lying site. Surplus spoil will arise from excavations for foundations. These arising's may be possible for re-use, if required, for any landscape mounds, subject to their geo-environmental suitability.

Due to the generally flat topography of the site and the understood construction proposals, it is anticipated that significant retaining walls are unlikely to be required as part of the proposed development. Low retaining walls associated with vehicle loading platforms should be founded on similar foundations to the adjacent structure to avoid differential settlement.

It is recommended that further investigation is carried out once development proposals are further developed to provide information:-

- Confirmation of the design CBR value of the formation once exposed.
- Additional information on the pH and sulphate levels for the design of buried concrete.



11.0 REFERENCES

Environmental Protection Act 1990: Part IIA, Contaminated Land Statutory Guidance, HM Government, April 2012.

BS 8500-1: 2015+A1:2016: Concrete – Complementary British Standard to BS EN 206-1 – Part 1: Method of specifying and guidance for the specifier. British Standards Institution.

BS 8576: 2013: Guidance on investigation for ground gas – Permanent gases and Volatile Organic Compounds (VOCs). British Standards Institution

BS 5930: 2015: Code of practice for site investigation. British Standards Institution.

BS 10175: 2011+A2 2017: Investigation of potentially contaminated sites – Code of Practice. British Standards Institution

BS 3882: 2015: Specification for topsoil and requirements for use. British Standards Institution.

BS 8601: 2013: Specification for subsoil and requirements for use. British Standards Institution.

BS EN 1992: 1992: Design of concrete structures. In 4 parts plus Addendums. British Standards Institution

Building Research Establishment: 2010: Part C.

Building Research Establishment: 2015: Radon: Guidance on protective measures for new buildings. November 2015.

Building Research Establishment: 2016: Report No BR365, Soakaway Design. February 2016.

Card G, Lucas J, Wilson S: 2019: Technical paper: Risk and Reliability in Gas Protection Design – 20 years on: Part 2

CIRIA: 2007: C665: Assessing Risks Posed by Hazardous Ground Gases for Buildings. Authors Wilson, S, S Oliver, H Mallet, H Hutchings & G Card. Construction Industry Research & Information Association, London.

CIRIA: 2009: C682: The VOCs Handbook. Investigating, assessing and managing risks from inhalation of Volatile Organic Compounds (VOCs) at land affected by contamination.

CIRIA: 2014: Good practice on the testing and verification of protection systems for buildings against hazardous ground gases Report C735. Construction Industry Research & Information Association, London.

CL:AIRE / Sustainable Remediation Forum (SuRF): 2011: A framework for assessing the sustainability of soil and groundwater remediation. (Sponsored by the Homes and Communities Agency, March 2011)

CL:AIRE: 2012: A Pragmatic Approach to Ground Gas Risk Assessment, Research Bulletin RB 17. November 2012. Contaminated Land: Applications in Real Environments

CL:AIRE: 2016: CAR-SOIL – Control of Asbestos Regulations 2012. Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials. Industrial Guidance. Contaminated Land: Applications in Real Environments

CL:AIRE: 2020 : Professional Guidance: Comparing Soil Concentration Data with a Critical Value

Coal Authority: 2019: Guidance on Managing the Risk of Hazardous Gases when Drilling or Piling Near Coal. Version 2 (April 2019). Written and published in conjunction with AGS, BDA, HSE and FPS

Department for Environment, Food and Rural Affairs and the Environment Agency: 2002: Toxicological Reports for Individual Soil Contaminants, Reports TOX 1-10.

Department for Environment, Food and Rural Affairs: 2012: Contaminated Land Statutory Guidance, April 2012



Department for Environment, Food and Rural Affairs: 2013: Development of Category 4 Screening Levels for assessment of land affected by contamination - SP1010 (December 2013).

Department of the Environment Transport and the Regions: 2000: A Guide to Risk Assessment and Risk Management for Environmental Protection (also called Greenleaves II)

Defra: 2018: Sewage sludge in agriculture: code of practice for England, Wales & Northern Ireland.

Environment Agency: 2010: GPLC1 – Guiding principles for land contamination. GPLC2 – FAQs, technical information and references. GPLC3 – Reporting checklists.

Environment Agency: 2020: Land Contamination Risk Management

Environment Agency: 2000. Monitored Natural Attenuation Vapour Transfer of Soil Contaminants, R&D Technical Report P5-018/Tr.

Environment Agency: 2002. Collation of Toxicological Data and Development of Guideline Values for Explosive Substances, R&D Project Record P5-036/01.

Environment Agency: 2002. In-Vitro Methods for the Measurement of the Oral Bioaccessibility of Selected Metals and Metalloids in Soils: A Critical Review, Technical Report P5-062/TR/01.

Environment Agency: 2003: Consultation On Agency Policy: Building Development On or within 250m of a Landfill Site. Background information, July 2003.

Environment Agency: 2003: Review of the Fate and Transport of Selected Contaminants in the Soil Environment Draft Technical Report P5-079/TR1

Environment Agency: 2004: LFTGN-03. Guidance on the Management of Landfill Gas.

Environment Agency: 2004: Water Quality Consenting Appendices to Guidance, Dangerous Substances in Discharges to Surface Waters.

Environment Agency: 2005: The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils. P5-080/TR3, February 2005.

Environment Agency: 2005. Review of Building Parameters for Development of a Soil Vapour Intrusion Model, Report P5-079/PR.

Environment Agency: 2005. International Workshop On The Potential Use of Bioaccessibility Testing In Risk Assessment Of Land Contamination, Science Report SC040054.

Environment Agency: 2006: Remedial Targets Methodology – Hydrogeological Risk Assessment for Land Contamination. Carey, M.A., P.A. Marsland, & J.W.N. Smith.

Environment Agency: 2008: Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values Science report SC050021/SR7

Environment Agency: 2008: Updated Technical Background to the CLEA model Science Report SC050021/SR3 and CLEA Model 1.071 (2014)

Environment Agency: 2008: Human Health Toxicological Assessment of Contaminants in Soil SC050021/SR2

Environment Agency: 2008: A review of Bodyweight and Height Data Used within the Contaminated Land Exposure Assessment model (CLEA) SC050021/Technical Review I

Environment Agency: 2008: Guidance for the Safe Development of Housing on Land Affected by Contamination. EA/NHBC/CIEH R & D Publication 66.

Environment Agency: 2009: Petroleum Hydrocarbons in Groundwater. Supplementary Guidance for Hydrogeological Risk Assessment



Environment Agency: 2010: Evidence, Verification of Remediation of Land Contamination. Report SC030114/R1

Environment Agency: 2010: GPLC1 – Guiding principles for land contamination. GPLC2 – FAQs, technical information and references. GPLC3 – Reporting checklists.

Environment Agency: 2021: Waste Classification – Guidance on the classification and assessment of waste. Technical Guidance WM3 1st Edition, v1.1 GB January 2021.

Environment Agency: 2017: The Environment Agency's Approach to Groundwater Protection. November 2017 Version 1.01

Highways Agency, "Interim Advice Note 73/06: Design guidance for road and pavement foundations (HD52)," Highways Agency, London, 2009.

Highways Agency, Manual of Contract Documents for Highway Works (MCHW) Vol I Series 600, Highways Agency, London, 2016.

HMSO: 1995: Part 2A of the Environmental Protection Act 1990, as inserted by Section 57 of the Environment Act 1995, was brought into force on 1 April 2000

HM Government: 2013: The Building Regulations 2010. Part C. Site Preparation and resistance to contaminants and moisture. 2004 Edition with Amendments 2010 & 2013.

Ministry of Housing, Communities & Local Government: 2019: National Planning Policy Framework, February 2019.

Nathanail et al: 2015 The LQM/CIEH S4ULs for Human Health Risk Assessment

NHBC & RSK Group: 2007: Guidance on the Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present. Report No 10627-R01 (04). Authors Boyle, R. & P. Witherington, National House Building Council.

NHBC: 2020: NHBC Standards, including Part 4 - Standards for Foundations and Part 5 - Substructure and ground floors

State of NSW and Office of the Environment and Heritage: 2019: Human health soil screening criteria for PFOS, PFHxS and PFOA -Calculation protocols and draft values for potential inclusion in the PFAS National Environmental Management Plan

Statutory Instruments: 2012: Environmental Protection, England. Contaminated Land (England) (Amendment) Regulations 2012 No. 263 coming into force 6th April 2012.

Statutory Instruments: 2015: The Construction (Design and Management) Regulations 2015 (CDM 2015) coming into force 6th April 2015.

Stroud, M.A. and Butler, F.G.: 1975: "The SPT and the Engineering Properties of Glacial Materials." Proc. Engng Behaviour of Glacial Materials, Birmingham.



APPENDIX I

Client Brief


 Our ref:
 MM/QN220354

 Date:
 18th March 2022

For the attention of Mr. Ed Coupe

Dear Sir

Ground Investigation Quotation: Newport Quinn

We refer to your enquiry of December 2021 and respond with our quotation based upon a scope of works recommended by our principle geotechnical engineering team. All work will be re-measured on completion and Geotechnics Ltd will advise you verbally and subsequently in writing should site and/or ground conditions dictate that additional or amended works be considered necessary, the impact on costs and whether the contract period is likely to be exceeded.

Geotechnics Limited will be responsible for undertaking:

- 20 Nr. cable percussion boreholes to rockhead.
- 10 Nr. cable percussion boreholes with rotary follow-on to 20m depth.
- 18 Nr. plate load tests up to a maximum depth of 0.50m below ground level.
- Concrete coring of all positions in hard standing to facilitate inspection pits.
- Breaking out 1.50m by 1.50m area at each plate load location.
- GPR service clearance at all exploratory hole locations.
- Provision of welfare and storage facilities.
- Provision of full time supervision.
- Installation and monitoring of 15 Nr. 50mm HDPE standpipes.
- Sampling and geotechnical/geochemical testing.
- Interpretative geotechnical reporting.
- A return visit to site once the demolition and leveling of the site has taken place to undertake resistivity testing and plate load testing at formation level.

Pinnacle shall be responsible for providing:

- Up to date design drawings for the proposed development and cut and fill plan.
- Unrestricted access to the site.
- Secure site.

We have also assumed the following:

- a) Undisturbed samples, including Class I samples or Standard Penetration Tests (SPT's) at 1m intervals to 5m depth and 1.5m thereafter.
- b) Access by a Land Rover towed cable percussion boring rig and rubber tracked rotary rig (Comacchio 205 or similar) is available, together with unlimited headroom. No allowance has been made for access facilitation such as tracked dumpers or ground protection, as this would be dependent on conditions at the time of the ground investigation.

www.geotechnics.co.uk | mail@geotechnics.co.uk

Coventry Office The Geotechnical Centre

The Geotechnical Centre 203 Torrington Avenue Tile Hill Coventry CV4 9AP 2 024 7669 4664 Chester Office The Geotechnical Centre Unit 1, Borders Industrial Park River Lane, Saltney Chester CH4 8RJ © 01244 671 117

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Yorkshire Office

The Geotechnical Centre Unit 1, Bypess Park Estate Sherburn-In-Elmet Yorkshire LS25 6EP © 01977 525 037

Registered in England and Wiles No. 1757790

- c) We recommend that the insitu resistivity testing (Wenner probe) be undertaken once the existing buildings have been removed and the site has been leveled as any metallic objects will cloud the resolution of the survey leading to inaccurate data.
- d) Item 23 and 26 has been provided for geochemical testing and reporting in the event that contamination is encountered on site as per BS10175. Assuming no contamination is encountered, this rate will not be applied.
- e) No allowance cleaning the areas around exploratory hole locations. All excavation will be backfilled with arising and any excess arising's will be stockpiled onsite to be removed during demolition.

We ask you to note that it is company policy to excavate service inspection pits to 1.2m depth at all borehole locations unless instructed in writing by the Client/Engineer not to do so. Any such written instruction shall relieve Geotechnics Ltd of any responsibility for damage to underground apparatus.

According to our present commitments we could commence the fieldwork within about three weeks from receipt of your written instruction. We estimate that the fieldwork would take about five weeks and our draft report would be submitted to you within five to six weeks of the end of site work, assuming geotechnical testing is commissioned. Preliminary information would be made available to you throughout.

Should you require any other information in the meantime or wish to discuss the scope of the work proposed, please do not hesitate to contact the undersigned.

Yours faithfully

Matthew McLaughlin – Estimator for GEOTECHNICS LIMITED – North West Office e-mail: MMclaughlin@geotechnics.co.uk



APPENDIX 2

Site Location Plan



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PN224395

Ground Investigation

Former Quinn Radiator Factory Site for Pinnacle Consulting Engineers Limited



APPENDIX 3

Cable Percussion Borehole Records

DATA SHEET - Symbols and Abbreviations used on Records

DATA	A SHEET - Symbols a	nd Abbreviations u	sed on Re	cords	G
Sample	e Types	Groundwater		Strata, Continued	
В	Bulk disturbed sample	Water Strike	∇	Mudstone	
BLK	Block sample	Depth Water Rose To	Y		
С	Core sample			Siltstone	* * * * * *
D	Small disturbed sample (tub/jar)	Instrumentation		Sitstone	× × × × × × × × × × × × × × × × × × ×
E	Environmental test sample		22	Metamorphic Rock	* * * * *
ES	Environmental soil sample	Seal		Fine Grained	~~~~~
EW	Environmental water				******
G	Gas sample			Medium Grained	~~~~
L	Liner sample	Eilean	-		\sim
LB	Large bulk disturbed sample	Filter	1	Coarse Grained	$\sim \sim$
Р	Piston sample (PF - failed P		- -	Igneous Rock	$\sim\sim$
тw	Thin walled push in sample			Fine Grained	~~~~~
U	Open Tube - 102mm	Seal			+ + + +
	diameter with blows to take sample. (UF - failed U sample)			Medium Grained	+ + + + + + + + + + + + + + + + + + + +
UT	Thin wall open drive tube	Strata	Legend	Coarse Grained	
	with blows to take sample.	Made Ground			
V	(UTF - failed UT sample)	Granular			
Ŵ	Water sample	Made Ground		Backfill Materials	
#	Sample Not Recovered	Cohesive		A	Č.
Insitu T	Lesting / Properties	Topsoil		Arisings	
		10000			Ň
CBRP	CBR using TRL probe	Cobbles and Boulders	.0.8	Bentonite	
СНР	Permeability Test		0.0		A .
COND	Electrical conductivity	Gravel		Concrete	0 + P
тс	Thermal Conductivity				
TR	Thermal Resistivity				
HV	Strength from Hand Vane	Sand		Sand	[.
	CBR Test				2
	Resistivity Test	Silt	× * * *	Grout	
MEX	CBR using Mexecone		* * *		
	Probe Test	Clav	× × ,	Gravel	00000
	Packer Permeability Test	Clay		Graver	00
	Plate Load Test Strongth from Pocket				
FF	Penetrometer	Peat	Ma.	Asphalt/Tarmacadam	
Temp	Temperature		N/C		-
VHP	Variable Head Permeability Test		NZ.	Rotary Core	
VN	Strength from Insitu Vane	Note: Composite soil typ	es shown	RQD Rock Quality D	esignation
w%	Water content	by combined symbols		(% of intact con FRACTURE INDEX	e >100mm)
(All othe	er strengths from	Chalk		Fractures/metre	2
S	Standard Penetration Test			NR No core re	covery
~	(SPT)	Limestone		AZCL Assumed zo loss	one of core
	SPT Popula				
IN _/_	SFI Result Blows/penetration (mm)	Sandatara			
-/-	after seating drive	Sandstone			
-*/- (mm)	Total blows/penetration				
()	Extrapolated value	Coal			



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			Jinsuiting		Ennice	и 	Coordina	ates	18420	1.7 N			Gr	ound	Level	10.88 m O[)
Sampling		Sample		Propertie	25		Strata									Scale 1:	50
Depth	۱	Туре	& (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth	Legend	(m OD)
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0.25		D					MADE G	ROUND: F	Reddish brov	vn gravel	ly fine to c	oarse sand	d. Gravel is		-		
0.25		– ES – D					anuglar	to subang	ular fine to o	oarse of	sandstone	e and limes	stone.	I	- 0.50 -		10.38
0.55		– ES					Light bro	own slight	lv gravelly fi	ne to me	dium SANI	D with a lo	w subrounde	/	-		100
0.55 - 1.20)	В					cobble c	ontent of	siltstone. Gr	avel is su	ıbangular	to subrour	nded fine to		-		111
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1.20 - 1.65			1.20			S34	RIVER I Below 1	20m den	DEPOSITS-GR	ANULAR]				-		
		_	(DRY)				Delow 1	.2011, acti	130.						_		
1.20 - 1.65		– D													-		111
1.20 - 1.70	′	_ D															8.88
2.00 - 2.45		_	2.00			S23	Medium fine to c	dense or	angish brow	n slightly	clayey sar	ndy angula	r to subangul	ar	_		100
2.00			(DRY)				content	of siltston	ne and sands	tone.	Jgies. Low	Subiounu			_		
2.00		_ ES					[RIVER T	ERRACE D	DEPOSITS-GR	ANULAR]				_		1002
2.00 - 2.50	,	В													_		
2.80		– D													- 3 00		7 99
3.00 - 3.45		_	3.00			S40	Dense o	rangish br	rown sandy s	lightly cl	ayey GRAV	EL with a	low subround	led	- 3.00		7.00
3.00 - 3.45		– – D	(DRT)				cobble c	ontent of	sandstone.	Gravel is	angular to	subround	ed fine to coa	irse	_		11
3.00 - 3.50)	— B					[RIVER T	ERRACE D	DEPOSITS-GR	ANULAR	1				_		200
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4.00 - 4.45		_	4.00			S18	Below 4	.00m, me	dium dense.						_		202
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		-													-		
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6.80		- - D			12		grev fine	to coarse	nd 9.45m, od e sand.	casional	pockets o	r orange m	lottled bluish		-		
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11.40	0.15	Cable Pe	rcussion		WN/JB	11.40	11.40	6.10	18/08/22	17:00	8.50	8.50	6.10	20		Moderate infl	ow.
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explained or	s are n the ng kov																	06/01	/2023	
sheets. All dimension	ing Key															Geo	יוכ	CC⊦	N	ICS
metres.	di e III	Logged in a	accordance w	vith BS5930:2	2015 + A1	:2020										geotechnica	il and g	nosivneos	ental	specialists

Project	Ne	ewport Q	uinn Phas	e 2			Enginee	r	Pinnac	cle Cons	ulting En	gineers	Pr	roject l	No.	PN224395	
Client	Pir	nnacle Co	onsulting (ngineers	Limite	ł	Nationa	l Grid	Limite 32781	d 6.5 E			Bo	orehol	e 	BH03	
					Ennices	4	Coordin	ates	18421	9.4 N			Gi	round	Level	10.// m	
Samplin	ng nth	Sample	Depth Cased	Strength	w(%)	SPT N	Strata			Descri	ntion				Denth	Scale	1:50 Level
	501	Type	& (to Water)	kPa	••(70)	51114	MADE G	ROUND: I	Black tarmac	adam.	ption				-	Legend	(m OD)
0.30		- - D					[MADE		TARMACAD	AM]	ulu cliabth	, ciltu fino i	to 000150 500	4	0.25	******	10.52
0.30	40	E ES					Gravel is	s subangu	lar to subrou	inded fin	e to coarse	e of siltsto	ne and	u.	-		
0.50 - 0.	40						sandsto	ne						/	_ 0.65		10.12
0.60	75	- ES					MADE	ROUND: I	Brown sandy	angular	to subang	ular fine to	o coarse grav	el of	-		
1.00	/5	E D					limestor	ne, sandst	one and grar	nite.					-		
1.00	10	– ES – B					Below 0	.90m, clay	vey.						-		
1.20 - 1.	65		1.20			C21								-	-		
1.20 - 1.	70	В	(DRY)														8 77
2.00 - 2.	45	_	2.00			C22	Firm rec	ldish brow Ided fine t	n slightly gra o coarse of s	avelly sar	ndy CLAY. (and sands	Gravel is su tone.	ıbangular to		-		
2.00 - 2.	50	- в	(DRT)		11		[RIVER 1	ERRACE D	DEPOSITS-CO	HESIVE]					-		
2.00 - 2.	50	D												-	-		
		-												-	-		
3.00 - 3.	45	-	3.00 (DRY)			C30	Medium	dense to	dense brow	n very sa	ndy clayey	/ subangul	ar to	-	- 3.00		7.77
3.00 - 3.	50	В	. ,				subroun [RIVER 1	ided fine t FERRACE E	o coarse GR/ DEPOSITS-GR	AVEL of s ANULAR	iltstone ar]	nd sandsto	ne.	-	-		
		-					Below 3	.50m, higl	n subrounde	d to roun	ided cobbl	le content	of siltstone a	ind	-		· .
							sandsto	ne. Pocket	ts of firm clay	y.					-	· · · · · · · ·	•
4.00 - 4.	45	-	4.00			C35									-	· · · · · · · ·	•
4.00 - 4.	50	- в	(DRT)											-	-	· · · · · · · ·	•
															-	· · · · · · ·	•
		-													-		•
5.00 - 5.	45	-	5.00			C29								-	-	· · · · · · ·	•
5 00 - 5	50	Б	(DRY)												-		•
5.00 5.	50	-													-		•
E 00					22									-	- - 		4.07
6.00 - 6.	45	Ē	6.00		32	C29	Extreme	ely weak re	eddish browi	n MUDST	ONE. Reco	overed as s	slightly sandy	'	- 5.80		4.97
		-	(DRY)				[ST MAL	JGHANS F	ORMATION]						-		
6.00 - 6.	50	- в													-		
		_												-	-		
7 00 7	40	-	7.00			CE 0 /									- 7.00		
7.00 - 7.	42	Ē	7.00 (DRY)			275mm									- 7.00		3.77
		-								Ford of D					-		
										End of B	orenoie				-		
		_													-		
		-												-	-		
		E													-		
		_													-		
		-													-		
		-													-		
		F												-	-		
															-		
		-												-	-		
		-												-	-		
						Du											
Boring Denth	Hole Dia	Technicy	IP		Crew	Depth of	Depth Cased	Depth to	Date	Time	Groundy	Depth Cased	Rose to ir	n Mine	Depth Sealo	d Remarks on (Groundwater
1.20	0.30	Inspectio	on Pit		0,040	Hole 0.00	- cpui caseu	Water	15/08/22	08:00	3.50	3.00	5.80	20	5.80	Medium inf	low.
7.43	0.30	Cable Pe	rcussion		TI/OW	1.20			15/08/22	17:00							
						7.43	7.00	DRY	02/09/22	17:00							
Remarks		Inspection	n pit hand e	kcavated to	1.20m c	lepth and	no services	were four	l nd.		I				Logged b	by TL	
Symbols and	<u>Kenta</u> H	ES sample A 50mm s	= 1 x 60ml tandpipe w	glass vial, 2 as installed	2 x 258m to 5.50r	l amber gla n with a ge	ass jars and cowrapped	1 x 1L pla slotted se	stic tub. ction from 3	50 to 5.50	Om with a f	flush cover	installed.		Checked Figure	by JN	t 1 of 1
abbrevation explained or	s are n the	Backfill de	tails from b	ase of hole	: benton	ite seal up	to 5.50m,	gravel filte	r up to 3.50n	n, benton	ite seal up	to 0.20m,	concrete up t	0		06/01,	/2023
accompanyi sheets.	ng key	At 7.42m	cable percu	ssion borel	nole term	ninated on	encounter	ing bedroc	k.						Geo	אספר	NICS
All dimensio metres.	ins are in	Logged in a	accordance w	ith BS5930:	2015 + A1	:2020									geotechnica	al and geoenvironm	ental specialists

Project	Ne	wport Q	uinn Phas	ie 2			Engineer		Pinnac	le Cons	ulting En	gineers		Project	No.	ΡN	1224395)	
Client	Pir	nacle Co	nsulting (Engineers	Limiter	4	National	Grid	Limite 32787	d 5.9 E				Borehol	e	BH	104		
					Linnee		Coordina	ites	18421	7.4 N				Ground	Level	10	.77 m	OD	-
Samplin	ig oth	Sample	Depth Cased	Strength	w(%)	SPT N	Strata			Descrit	ntion				Denth		Scale	1:50) Level
		Type	& (to Water)	kPa		5	MADE G	ROUND: E	Black tarmac	adam.					-		Legenu	88	(m OD)
0.20 0.20 - 0.4 0.40 - 0.4 0.50 0.50 1.20 - 1.4	40 60 54	- D - ES - B - D - ES 	1.20 (DRY)			C50/ 245mm	[MADE G MADE G fine to co [MADE G Subround Subround [MADE G	ROUND - ROUND: E barse of sa ROUND] ROUND: E ded cobbl ded fine to GROUND]	TARMACAD Brown gravel andstone. Brown slightl e content of o coarse of s	AM] ly fine to y gravelly sandstore	medium s r fine to m ne. Gravel s.	edium san is subanug	el is suban; nd with a lo glar to	gular ww	- 0.21 - 0.46 				10.56
3.00 - 3.1	50									End of Bo	prehole				1.54 				9.23
Boring		Tocheie			Crow	Progress Depth of	Donth Correl	Depth to	Data	Time	Groundv	ater	Porota	in Mine	Donth CI		markeer	Grow	ndwatar
1.20 1.54	0.30 0.15	Inspectic Cable Pe	n Pit rcussion		AC/RW WO/JT	Hole 0.00 1.54	vepth Cased	Water DRY	10/08/22 10/08/22	08:00 17:00	vepth Struck	Depth Cased	KUSE TO		veptn Sealed	No Sti ha Wa	ground rikes note ve been ater adde	wate ed - r mask d.	nay ked by
Remarks Symbols and abbrevations explained or accompanying	I s are n the ng key	Inspection Cable Perc to location ES sample Borehole b	pit hand e ussion bore BH4A. = 1 x 60ml packfilled w	xcavated to ehole termi glass vial, 2 vith bentoni	1.20m d nated at x 258m ite pellet	epth and 1.54m de amber gla s and topp	no services oth on enco ass jars and red with aris	were foun ountering a 1 x 1L plas sings on co	d. concrete ob stic tub. ompletion.	struction	and the C	able Percus	ssion rig wa	s moved	Logged b Checked Figure	y by	AC JN Shee 06/01	et 1 o /2023	of 1
sheets. All dimensio metres.	ns are in	Logged in a	ccordance w	vith BS5930:2	2015 + A1	2020									GCC			N	ICS specialists

Project	Newpor	t Quinn Pha	se 2			Engineer	r	Pinnac	le Cons	ulting Enន្	gineers		Project	No.	PN224	395	
Client	Pinnacle	Consulting	Engineers	Limitor	4	National	Grid	Limite 32800	d 0.0 E				Boreho	le	BH05		
	Tinnacio	consulting		Linnee	а 	Coordina	ates	18424	2.0 N				Ground	Level	10.76	m OE)
Sampling	Samp	le Depth Cased	Propertie Strength	es	SDT N	Strata			Descri	ntion				Depth	Scal	e 1:	50 Level
0.25 0.25 0.25 - 0.50 0.50 0.50 0.50 - 1.20	- D - ES - B - D - ES - B - D - ES		KPd			MADE G [MADE C MADE G [MADE G MADE G siltstone [MADE C	ROUND: B GROUND - ROUND: G GROUND - ROUND: R and sands GROUND]	lack tarmac TARMACAD Grey concret CONCRETE] reddish brov stone.	adam. AM] e. vn sandy	subangula	r fine to co	Darse grave	el of	- 0.02 - 0.18 - 0.43 			(m 00) 10.74 10.58 10.33
1.00 1.00 1.20 - 1.70	_ D - ES _ B -					PROBAB coarse g [MADE C Stiff to v	ELE MADE (gravel of sa GROUND] ery stiff br	GROUND: Bi	rown san d siltston v sandy sl	dy subang e. Low sub ightly grav	ular to sub rounded c elly CLAY. (orounded f obble cont Gravel is	ine to tent.	- - - - - - 1.60			9.16
2.00 - 2.28 2.00 - 2.50	– – – B	2.00 (DRY)			C50/ 125mm	[RIVER T	ERRACE D	EPOSITS-CO	HESIVE]			nustone.		- - - -			
2.60	- D - -	2.00		40	626	Firm red bands of sandstor	ldish brow f silt. Grave ne probabl	n slightly sa el is subrour le weathere	ndy sligh nded fine d bedroc	tly gravelly to mediun k).	CLAY with n of siltsto	n occasiona ne and	al	- 2.50 - - - -			8.26
3.00 - 3.45	- B	(DRY)			C30	[ST MAU Below 2. bluish gr Below 3.	JGHANS FC .60m, stiff. rey (10-20r .00m, very	DRMATION- Black orgar mm). 9 stiff.	UPPER CI	LAY] ng (up to 3)	Omm) and	pockets of	F	- - - - - - -			
4.00 4.30		(DRY)			230mm				End of B	orehole				- - - 4.38			6.38
Boring				Crew	Progress Depth of	Denth Cased	Depth to	Date	Time	Groundw	rater Denth Cased	Rose to	in Mins		Bemark	s on Gro	
0.18 0.1	30 Conc	rete Core		Crew D-Drill	Hole 0.00	Depth Cased	Water DRY	Date 10/08/22	13:01	Depth Struck	vepth Cased	кose to	in Mins	Depth Seale	No gro	s on Gro undwat	undwater er
1.20 0. 4.38 0.	30 Inspe 15 Cable	ection Pit Percussion		AC/RW WO/JT	1.20 1.20 4.38	3.00	DRY DRY DRY	10/08/22 15/08/22 15/08/22	17:00 08:00 17:00						strikes have b water	noted - een ma added.	may sked by
Remarks Symbols and abbrevations are explained on the	ES sam Slow p Chisell	tion pit hand e ple = 1 x 60m rogress: 1.60- ing: 3.70-4.00	excavated to glass vial, 2 2.50m for 15 m for 60 mir	1.20m d x 258ml 50 minut nutes.	lepth and I amber gla es.	no services ass jars and	were found 1 x 1L plas	d. tic tub.						Logged b Checked Figure	y by	TL JN Sheet 1 06/01/202	of 1
accompanying key sheets. All dimensions are metres.	y Boreho At 4.38 e in	ble backfilled v Bm cable percu	vith bentoni ission boreh	ite pellet iole term 2015 + A1	s and topp inated on :2020	ed with ari encounteri	isings on co ing bedrock	mpletion. «.						GCC	ກອ	CH	

PRELIMINARY

Project	Ne	wport Q	uinn Phas	e 2			Enginee	r	Pinnac	le Consi	ulting En	gineers	Pr	roject	No.	PN2	224395		
Client	D:	nacla Ca	ngulting (- ngino oro	Limitor	J	National	Grid	Limite 32813	d 16 F			Bo	orehol	e	BHO	06		
Client	PI	inacie Co	nsulting i	ngineers	Limited	1	Coordina	ates	18423	9.8 N			G	round	Level	10.	86 m (DD	
Samplin	g	1		Propertie	s	1	Strata									5	Scale	1:50)
Dep	oth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descrip	otion				Depth	L	egend		Level (m OD)
0 20 - 0	45	- B					MADE G	ROUND: L	ight grey co	ncrete.					- 0.20				10.66
0.20 - 0.	+J						MADE G	ROUND -	Dark brown a	ind grey g	gravelly fir	e to coars	e sand. Grav	vel is	- 0.20	8		30	10.00
0.25	20	ES					subangu	lar to sub	rounded fine	to coars	e of sands	tone and	concrete.	ļ	_ 0.45 -	Š		30	10.41
0.45 - 0.3	80	- D					Occasio	nal fragme GROUNDI	ents of meta	•				/	-	X		36	
0.50		ES					MADE G	ROUND: Y	ellowish bro	wn grave	elly fine to	coarse sa	nd with a low	v	-	8	****	10	
0.80 - 1.1	20	Б					subangu	lar cobble	e content of s	andston	e. Gravel i	s subangu	lar to roto		- 1.20	\otimes			9.66
1.00		ES					[MADE (GROUND]		intstone,	sanustone		rete.	/	-	÷		Ŷ	
1.20 - 1.0	65	_	1.20 (DRV)			C22	Stiff ligh	t brown sl	ightly gravel	ly sandy (CLAY. Grav	el is subar	ngular to		-			°	
1.20 - 1.	70	в	(DRT)		9		Subroun	er ane t ERRACE D	o coarse of s DEPOSITS-CO	HESIVE	and sandst	one.			-			•	
2.00 - 2.4	45	_	2.00			C31	Below 2	.00m, very	y stiff.						-				
2.00 - 2.	50	- в	(DRY)												-				
2.00 - 2.	50	_ D												-	-	-			
2.70		- D					Vory stif	f roddich k	arown mottle	od grov d	ightly grou	ully candy	CLAV Gravo	lic	- 2.70	1. 4. 1. 4. 1. 1.			8.16
2 00 0		-	2.00			624	subangu	ilar to sub	rounded fine	to coars	e of muds	tone and s	sandstone	:115	-				
3.00 - 3.4	45	-	3.00 (DRY)			\$31	(probab	le weathe	red bedrock)		_				-	<u>.</u>			
3.00 - 3.4	45	E D	. ,				IST MAU	JGHANS F	ORMATION-	JPPER CL	.AY]			[-	<u>.</u>			
3.00 - 3.	50	_ В													-				
		_													-				
4.00 - 4.4	40	-	3.00			C50/									-				
		-	(DRY)			250mm									-				
		-								End of Br	orobolo				- 4.40]]]	6.46
		-									Jienole				-				
		-													-				
		E													_				
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Boring					1	Progress	I				Groundw	/ater							
Depth I	Hole Dia.	Techniqu	e		Crew	Depth of Hole	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to in	n Mins	Depth Seale	d Ren	narks on G	iroun	dwater
0.15	0.30	Concrete	Core		D-Drill	0.00		waldi	01/08/22	08:00						No	groundw	ater	
1.20	0.30	Inspectio	n Pit		JZW/AC	1.20		DRY	01/08/22	18:00						stri	kes note	d - m	nay od by
4.40	0.12		003510[1		11/0/11	4.40	3.00	DRY	19/08/22	17:00						wat	ter addeo	азкі І.	cuby
		Inspection	nit hand o	vcavated to	1 20m d	enth and	n services	were four	 d						Loggedh		17\\/		
Remarks	AGS	ES sample	= 1 x 60ml	glass vial, 2	x 258ml	amber gla	is services ass jars and	1 x 1L plas	stic tub.						Checked	by	JN		
Symbols and abbrevations	are	Chiselling:	3.80-4.00n	n for 60 mii	nutes.	n with a co	owrannod	slotted co-	tion from 1	10 to 2 70)m with a f	lush cover	installed		Figure		Shee	t 1 o	f1
explained or accompanying	i the ng kev	Backfill de	tails from b	ase of hole	: benton	ite seal up	to 2.70m,	gravel filte	r up to 1.00n	, bentoni	ite seal up	to 0.20m,	concrete up t	to			00/01/	2023	
sheets. All dimensio	ns are in	ground lev	el. able porcu	ssion harak	ole torm	inated on	encountor	ing hadros	k						Gec	אכ	£C⊢	N	CS
metres.		Logged in a	ccordance w	/ith BS5930:2	2015 + A1	:2020	cheounten	ing beuroc	n.						geotechnica	r and g	ecenvironme	etal s	pecialists

Proiect	N	ewport C)uinn Phas	e2			Engineer		Pinnad	le Cons	ulting Fn	gineers	Pr	oject	No.	PN224395	
		enporte	canno i nao	02					Limite	d		8	Вс	orehol	e	BH08	
Client	Pi	nnacle C	onsulting l	Engineers	Limite	d	National	Grid	32770	9.8 E			Gi	round	Level	10.95 m O	D
Samplir	าย			Propertie	s		Strata	tes	10415	0.1 N						Scale 1	:50
Der	oth	Sample	Depth Cased	Strength	w(%)	SPT N	btrata			Descri	ntion				Denth	Logond	Level
	500	Туре	& (to Water)	kPa		51111	MADE GI		Strong grov o		ption				Deptil	Legend	(m OD)
0.20 - 0	50						[MADE G	ROUND	- CONCRETE]	oncrete.					0.23		10.72
0.30 - 0.	50	E D					MADE GI	ROUND: I	Brown gravel	lly slightly	y silty fine	to coarse	sand with a le	ow	-		3
0.40		– ES					to coarse	ontent (<	80mm) of gr one_sandsto	anite. Grand gr	avel is sub ranite	angular to	subrounded	fine	-		8
0.60 - 0.	75	Ев					[MADE G	ROUND]	Sinc, Sundsto	ine unio Bi	iunice.				-		3
0.65							Below 0.	95m, cob	bles are >10	0mm.					_		3
0.90		- D					Madium	danca br	awa gravallu	finata			Cravalia		- 1.20		9.75
0.95 - 1.	10	В					subangul	ar to sub	rounded fine	e to coars	se of siltsto	one and sa	indstone.		-		3
1.10	65	ES	1 20			C17	[RIVER TI	ERRACE D	DEPOSITS-GR	ANULAR]				-		8
1.20 1.	05	-	(DRY)												-		3
1.20 - 1.	70	В														-	3
2.00 - 2.	45	F	2.00			C21									_		3
2.00 - 2.	50	В	(DKT)												-		3
2.10		D													-		3
		-													-		3
3.00 - 3.	45	<u> </u>	3.00			C21									-		3
		F	(DRY)				Below 3.	00m, wit	h low cobble	content	•				-		3
3.00 - 3.	50	– В													-		
		-													-		3
		E													_		8
4 00 - 4	45	L	4 00			C32											3
		F	(DRY)			001	Firm to s	tiff reddis	sh brown slig	htly sand	dy slightly	gravelly CL	AY with a lov	N	4.10	· · · · · · ·	6.85
4.00 - 5.	00	В					cobble co	ontent of	subangular	siltstone.	Gravel is	subangula	r to subround	ded	-		3
		F					fine to co	barse of s	iltstone and	sandstor	ne (probab	le weathe	red bedrock).	•	-		3
		_						GHANS F	URIVIALIUN-	UPPER CI	LAYJ				-		3
5 00 - 5	15	-	5.00			\$50										· · · · · ·	3
5.00 5.	45	L	(DRY)			550									_		3
5.00 - 5.	45	D			28										_		3
		_								End of B	orehole				- 5.50		5.45
		_													_		
		_													-		
		E													_		
		E													_		
		F													-		
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		F													-		
		F													-		
		F													-		
		F													-		
		Γ													_		
Boring						Progress	1				Groundy	vater					1
Depth	Hole Dia	. Technia	ue		Crew	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to in	n Mins	Depth Sealer	d Remarks on Gr	oundwater
0.23	0.30	Concret	e Core		D-Drill	Hole 0.00	.,	Water	16/08/22	08:00		, in Subcu			.,	No groundwa	ter
1.20	0.30	Inspecti	on Pit		AC/JM	1.20		DRY	16/08/22	17:00						strikes noted	- may
5.45	0.15	Cable Pe	ercussion		TL/OW	1.20	4.50	DRY	22/08/22	08:00						have been m	asked by
						5.45	4.50	UKY	22/08/22	17:00						water added.	
Remarks		Inspectio	n pit hand e	cavated to	1.20m c	lepth and	no services	were four	nd.						Logged b	y TL	
Symbols and	in and the second s	LS sample Chiselling	e = 1 x 60ml :: 4.70-5.00n	giass vial, 2 1 for 60 mi	x 258m nutes.	i amber gla	ass Jars and	т х тг ріа	SUC TUD.						Checked Figure	DY JN Sheet	1 of 1
abbrevation	s are n the	Borehole	backfilled w	ith benton	ite pellet	s and topp	ed with aris	sings on c	ompletion.						- Baic	06/01/20	123
accompanyi	ng key	At 5.45m	cable percu	ssion boreł	ole term	ninated on	encounterir	ng bedroc	k.						<u> </u>		
sneets. All dimensio	ins are in														geotechnica		
metres.		Logged in	accordance w	ith BS5930:	2015 + A1	:2020									-		

Project	Ne	wport Q	uinn Phas	e 2			Enginee	r	Pinnac	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Pir	nacle Co	nsulting F	ngineers	Limiter	4	Nationa	l Grid	Limite 32777	d 1.6 E				Borehol	e	BH09	_
					Linnee	4	Coordin	ates	18414	1.0 N				Ground	Level	11.01 m O	
Samplin	ig oth	Sample	Depth Cased	Strength	es w(%)	SPT N	Strata			Descri	otion				Depth	Scale 1	:50 Level
0.23 - 1 0.30 0.30 0.50 0.50 1.00 1.00 1.20 - 1 1.20 - 1	20 65 70	- B - ES - D - ES - D - ES - ES - ES - B - B	(DRY)			C34	MADE G [MADE G subangu and tarr [MADE G Below 0 Betwee	ROUND: I GROUND: ROUND: Ilar to sub nacadam. GROUND] .60m, low n 0.80-0.9	ight grey co <u>CONCRETE</u>] Reddish brov rounded fine subroundec 0m, band of	ncrete. wn gravel e to coars I cobble c tarmacad	lly fine to o e of siltsto content of dam.	coarse san one, sands sandstone	d. Gravel i tone, lime 2.	s stone	0.23		10.78
2.00 - 2.4 2.00 - 2.4	45 50	- - - - - - - - - - -	2.00 (DRY)			C43											
3.00 - 3.4 3.00 - 3.4 3.20 3.60 - 4.4 3.80	45 50 50	- B - D - B - D - B - D	3.00 (DRY)		27	C31	Firm to subangu [ALLUVI Firm rec towards	stiff light k ular to sub UM] Idish brow	prown slightl rounded fine n slightly sa el is subangu	y sandy s to coars ndy slight lar fine to	lightly gra e of siltsto tly gravelly o coarse o	velly CLAY one and sa / CLAY occ f sandstor	Gravel is indstone. asionally to be. Slight o	ending			8.01 7.41
4.00 - 4.4 4.00 - 4.4 4.45 - 4.4 4.50 - 5.6	45 45 50 00	- U11 - UT - D - B	4.00 (DRY)		33		odour. [ALLUVI Dark bro	UM]	ed grey claye	ey pseudo	o-fibrous F	PEAT with	many fragr	nents	 4.50	2 2 2 2 3 1 2 3 2 3	6.51
5.00 - 5.4 5.45 - 5.5	45 45 50	U15 U15 UT D	5.00 (DRY)		141		[PEAT]	dich brow	n clightly cor	dy clight	h gravalh		vol is suba	agular	- - - - - - - - - - - - - - - - - - -	3162 3162 31 3 3162 3162 3 3	5.51
6.00 - 6.4 6.00 - 6.4	45 50	- - - - - - - - - - - - - - - - - - -	6.00 (DRY)			C26	to subro	JGHANS F	e to coarse o ORMATION-	of mudsto	ne (proba .AY]	able weath	ered bedr	ock).			
7.00 - 7.4	40 40		6.00 (DRY)			S50/ 245mm				End of Be	orehole				 7.40		3.61
Boring		Tocheia			Crow	Progress Depth of	Donth Correct	Depth to	Data	Time	Groundv	vater	Poro to	in Mine	Dopth 5	d Remarks on C	oundwater
0.23 1.20 7.40	0.30 0.30 0.15	Concrete Inspectic Cable Pe	e Core on Pit rcussion		D-Drill PO/JT PO/JT	Hole 0.00 2.50 2.50 7.40	2.50 2.50 6.00	Water DRY DRY DRY DRY	26/08/22 26/08/22 30/08/22 30/08/22	08:00 17:00 08:00 18:00	Depth Struck	Depth Cased	KUSE TO		Pepth Sealed	No groundwa strikes noted have been m water added	ater - may asked by
Remarks Symbols and abbrevations explained or accompanyin	s are the ng key	Inspection ES sample A 50mm st Backfill de ground lev	pit hand ex = 1 x 60ml tandpipe wa tails from b vel.	cavated to glass vial, 2 as installed ase of hole	1.20m c x 258m to 5.50r : benton	lepth and I I amber gla n with a ge ite seal up	no services ass jars and cowrapped to 5.50m,	were four 1 x 1L pla slotted se gravel filte	nd. stic tub. ction from 4. r up to 4.50n	50m to 5. n, benton	50m with a seal up	a flush cov to 0.20m,	er installed concrete u	p to	Logged b Checked Figure	y AC by JN Sheet 06/01/2	1 of 1 ³²³
sheets. All dimensio metres.	ns are in	вогећоје t Logged in a	erminated	at 7.40m de ith BS5930:2	epth upc 2015 + A1	n encount	ering bedr	OCK.							geotechnica		NICS tal specialists

Project	Newport Q	uinn Phas	e 2			Engineer	r	Pinnac	le Cons	ulting En	gineers	F	Project	No.	PN224	395	
Client	Pinnacle Co	onsulting I	Engineers	Limited	ł	National	Grid	Limite 32788	d 4.0 E			E	Borehol	e	BH11	05	
Compliant			Durantia			Coordina	ates	18415	9.6 N			(srouna	Level	10.97	m OL	50
Depth	Sample	Depth Cased	Strength	w(%)	SPT N	Strata			Descri	ption				Depth	Lege	 nd	Level
0.21 - 0.30 0.25 0.30 0.40 0.40 - 0.50 0.60 0.70 0.90 - 1.10	- B - D - ES - D - B - D - B - D - ES - B					MADE G [MADE G subangu [MADE G MADE G Gravel is [MADE 0 Below 0	ROUND: C GROUND - ROUND: E Ilar to sub GROUND] ROUND: C subangul GROUND] .75m, low	Grey concret <u>CONCRETE</u> Grown slightl rounded fine Drangish gre lar to subrou cobble cont	e. y gravelly e to coars en gravel nded fine ent (up to	y clayey fir se of siltsto ly slightly e to coarse o 100mm)	ne to coars one and gra silty fine to of siltstor of granite	e sand. Gra anite. o coarse sar ne and gran	nvel is nd. nite.	- 0.21 - 0.30 			10.76 10.67 9.77
1.10 1.20 - 1.40 1.20 - 1.40 1.20 - 1.70 1.80 2.00 - 2.35 2.00 2.00 - 2.50	- ES - D - D - D - D - D - ES - B	1.20 (DRY) 2.00 (DRY)		11	S50/ 45mm S50/ 200mm	Firm ligh of siltsto and sand [RIVER T	it brown s one and sa dstone. ERRACE D	andy gravell indstone. Gr DEPOSITS-CO	y CLAY w avel is sul HESIVE]	ith a low s	ubrounded fine to coa	d cobble co	ntent cone				8.17
2.00 - 2.50 2.80 3.00 - 3.45 3.00 - 3.45 3.00 - 3.50 3.80 4.00 - 4.38	- D - D - D - B - D	3.00 (DRY) 4.00 (DRY)		36	S26 S50/ 225mm	Firm to s occasior of muds [ST MAL	stiff reddis nal bands o tone and s JGHANS Fo	sh brown slig of silt. Grave sandstone (ρ ORMATION-	htly sanc l is suban robable v UPPER CI	ly slightly ; ngular to si weatherec .AY]	gravelly CL ubroundec I bedrock).	AY with l fine to coa	arse				
4.00 - 4.38 4.00 - 4.50 4.80 5.00 - 5.43 5.00 - 5.45	- D - B - D - D D 	5.00 (DRY)			S50/ 280mm									- - - - - - - - - - - - - - - - - - -			
Boring					Progress				End of B	Groundw	vater						5.54
Depth Ho 0.21 (1.20 (5.43 (le Dia. Techniqu 0.30 Concreto 0.30 Inspectio 0.15 Cable Pe	ue e Core on Pit ercussion		Crew D-Drill WN/JB WN/JB	Depth of Hole 0.00 5.00 5.00 5.43	Depth Cased 4.50 4.50 5.00	Depth to Water DRY DRY DRY	Date 17/08/22 17/08/22 18/08/22 18/08/22	Time 08:00 17:00 08:00 17:00	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	Remarks No grou strikes i have be water a	on Gro Indwat Ioted - en ma dded	undwater er may sked by
Remarks Symbols and abbrevations ar explained on th accompanying I sheets. All dimensions a metres.	Inspection ES sample Slow prog e Chiselling e Borehole At 5.43m are in Logged in a	n pit hand e = 1 x 60ml ress: 2.00-3 : 5.00-5.430 backfilled w cable percu	xcavated to glass vial, 2 0.00m for 60 0m for 60 m vith benton ssion boreh vith BS5930:2	1.20m d 2 x 258m 0 minute inutes. ite pellet nole term 2015 + A1	lepth and l amber gla s. s and topp inated on :2020	no services ass jars and bed with ari encounteri	were foun 1 x 1L plas sings on co ng bedrocl	nd. stic tub. ompletion. k.	_					Logged b Checked Figure	y T by J S C D C C	L N heet 1 6/01/202	of 1 3 NICS

Project	Ne	wport Q	uinn Phas	e 2			Engineer		Pinnac	le Cons	ulting En	gineers		Project	No.	PN224395	
Client	Dir	naclo Co	nculting	Enginoorg	Limito	4	National	Grid	Limite 32794	d 5.1 E				Boreho	le	BH12	
	PII		Jisuiting	Engineers	Linited	4	Coordina	ites	18417	0.6 N				Ground	Level	10.99 m O	D
Samplin	g	Sample	Death Ground	Propertie	es		Strata									Scale 1	:50
Dep	ith	Туре	& (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth	Legend	(m OD)
0.20		- - D					MADE G	ROUND: 0 GROUND -	CONCRETE	е.				/	0.17		10.82
0.20	10	E ES B					MADE G	ROUND: D	ark brown g	gravelly n	nedium to	coarse sai	nd. Gravel	is	0.47		10.52
0.50		D					fragmen	ts.	COALSE OF SA	nustone		nagments	. Nale lile	Lai	-		
0.50 0.50 - 1.2	20	– ES – B					[MADE C	GROUND]	sandy clave		I with a lo	wsubrour	ded cobb]	-		
1.00		- D					content.	Gravel is	subrounded	fine to c	oarse of si	Itstone an	d sandsto	ne.	-		
1.00 1.20 - 1.4	46	_ ES	1.20			S50/	[RIVER T Below 1.	ERRACE D 20m, clay	EPOSITS-GR ey.	ANULAR]				-		
1 20 - 1 4	16		(DRY)			110mm											
1.20 - 1.7	70	В													-		
1.80 2.00 - 2.4	45	- D	2.00			533									-		
2.00		-	(DRY)												-		
2.00 2.00 - 2.4	45	ES D													-		
2.00 - 2.5	50	В					Stiff to v	erv stiff re	ddish browr	slightly	sandy slig	htly gravel	Iv CLAY. G	ravel is	2.80		8.19
3.00 - 3.3	37	-	3.00			S50/	subangu	lar to sub	rounded fine	to coars	se of muds	tone and	sandstone		-		
3.00		– FS	(DRY)			220mm	(probabl	e weathei GHANS F	red bedrock) DRMATION-I	JPPER CI	LAY]				-		
3.00 - 3.3	37	D															
3.00 - 3.5 3.80	50	_ В - D													-		
4.00 - 4.3	34		4.00			S50/									_		
4.00 - 4.3	34	– – D	(DRY)			190mm									- 434		6.65
		_								End of B	orehole				_		0.00
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Boring						Progress	<u> </u>				Groundw	/ater					1
Depth H	lole Dia.	Techniqu	Je		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Gr	oundwater
0.17	0.30	Concrete	e Core on Pit		D-Drill	0.00		DRY	11/08/22 11/08/22	08:00 17:00						No groundwa	ter - may
4.34	0.15	Cable Pe	rcussion		WN/JB	1.20		DRY	16/08/22	08:00						have been ma	asked by
						3.00	3.00	DRY	16/08/22	17:00						water added	
Remarks	AGS	Inspection ES sample	n pit hand e = 1 x 60ml	xcavated to glass vial	1.20m c 2 x 258m	lepth and I amber øl:	no services ass jars and	were foun 1 x 1L place	d. itic tub.						Logged b Checked	y AC by IN	
Symbols and abbrevations	are	Slow prog	ress: 1.20-1		0 minute	s.	. , uu	p.d.							Figure	Sheet	1 of 2
explained on accompanyin	the ng key	Borehole	backfilled w	ith benton	ite pellet	s and topp	ed with ari	sings on co	mpletion.							U6/01/20	123
sheets. All dimensior	ns are in	At 4.34m	cable percu	ssion borel	nole term	ninated on	encounteri	ng bedrocl	κ.						GGC	NGCH	VIC5
metres.		Logged in a	accordance v	ith BS5930:	2015 + A1	:2020											

Project	Ne	ewport Q	uinn Phas	ie 2			Engineer		Pinnac	cle Cons	ulting En	gineers		Project	No.	PN	1224395	;	
			1.1				National	Crid	Limite	d 5 1 F				Boreho	e	Bŀ	112		
Client	PI	nnacle Co	onsulting I	Engineers	Limite	d	Coordina	ites	18417	0.6 N				Ground	Level	10).99 m	OD	
Sampli	ng			Propertie	s		Strata										Scale	1:5	0
De	pth	Sample Type	Depth Cased & (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth		Legend		(m OD)
		F													-				
		-													-				
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Boring		L				Progress	I				Groundv	water						<u> </u>	
Depth	Hole Dia	Techniqu	ie		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Case	ed Rose to	in Mins	Depth Seale	d Re	emarks on	Grou	ndwater
						3.00	3.00	DRY	17/08/22	08:00									
						4.34	4.00	DRY	17/08/22	17:00									
Remarks							1		1		I	1	1	1	Logged b	y	AC		
Symbols an	d d														Checked Figure	by	JN	ot o	of 2
abbrevation explained o	ns are n the														IBUIE		06/01	/2023	3
accompany	ing key														ദ്ദ	T)		N	
All dimensio	ons are in	Logarda		Jak percess :	015	.2020									geotechnica	and and	geoenvironn	ental	specialists
		Logged in a	iccordance w	uru 822830:5	2015 + Al	.2020													

Project	Ne	wport Q	uinn Phas	e 2			Enginee	r	Pinnac	le Cons	ulting En	gineers	Р	roject	No.	PN224395	
0	р.		1				National	Grid	Limite	d 11 F			В	orehol	e	BH13	
Client	Pir	nnacle Co	onsulting I	ngineers	Limited	1	Coordina	ates	18417	9.7 N			G	iround	Level	10.99 m (DD
Samplin	ıg			Propertie	s		Strata									Scale	1:50
Dep	oth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	ption				Depth	Legend	Level (m OD)
Samplin Dep 0.15 0.15 0.15 0.50 0.60 - 1.1 1.20 - 1.1 1.20 - 1.1 1.20 - 1.1 1.20 - 1.1 1.20 - 1.1 2.00 - 2.1 2.00 - 2.2 2.00 - 2.1 2.80 3.00 - 3.1 3.00 - 3.3 3.00 - 3.3 3.00 - 3.4 4.00 - 4.4 4.00 - 4.4 4.80 5.00 - 5.4 5.00 - 5.4 5.00 - 5.4 5.60 - 5.4	ng oth 60 20 35 35 70 15 15 15 45 45 45 45 50 45 45 50 45 45 50 60 45 50 60 45 50 60 60 60 60 60 60 60 60 60 6	Sample Type D ES B D ES B D B D ES D B D B D B D B D B D B D B D B D B D B D B D B D D B D D B D D B D D B D D B D D D D D D D D D D D D D	Depth Cased & (to Water) (DRY) 2.00 (DRY) 3.00 (DRY) 4.00 (1.39) 5.00 (1.39) 5.00 (5.40)	Propertie Strength kPa	21 10	SPT N S50/ 75mm S17 S26 S7 S50/ 15mm	Strata MADE G [MADE G MADE G subangu and bric [MADE G subangu and bric [MADE G is suban [MADE G is suban [MADE G is suban [MADE G is suban [MADE G Dense li subroun [RIVER T Between drilling. Firm ligh content subroun [ST MAL Firm ligh content Subroun weather [ST MAL At 5.00m	ROUND: G GROUND: G ROUND: N IROUND: N Iar to sub k fragmen GROUND] ght brown ded cobbi ded fine t GROUND] ght brown ded cobbi ded fine t cERRACE D stiff dark r gular to su JGHANS F at brown s of sandstone. JGHANS F stiff dark r ded fine t red bedroo JGHANS F.	Grey concret <u>CONCRETE</u> (ellowish bro rounded fine its. htly clayey g (ellowish bro ubrounded fine its. htly clayey g (ellowish bro ubrounded fine is gravelly clay le content of o coarse of s DEPOSITS-GR and 3.00m, dr eddish brow ubrounded fin ORMATION- eddish brow ubrounded find ORMATION- eddish brow o coarse of r ck). ORMATION-	Descrip e. pwm very et o coars ravelly fir wm grave ine to coars yey medi sandstor iltstone a ANULAR] iller note m slightly ine to coa UPPER CL y CLAY w s subange UPPER CL End of Be	ption gravelly fin se of siltsto he to coars elly clayey arse of silts um to coa ne. Gravel and sandst s no flush es no flush erse of mu .AY] gravelly CL e and sand cAY] orehole	ne to coars one, sands se SAND. fine to coa stone and rse SAND v is subangu- tone. returns w ghtly grave dstone an um subrou orounded f	ise sand. Grattone, concre arse sand. Gi sandstone. with a low ular to hilst open -h lly CLAY. Gra d sandstone inded cobbli ine to coarse is subangula bable	vel is ravel nole wel e e of ar to	Depth 0.15 1.00 1.20 3.00 4.50 5.80	Scale Legend	1:50 Image: Im
Boring Progress Groundwater											in Mins		Bemarks on G	roundwater			
	Depth Hole Depth Crew Hole Depth Case Date Time Depth Rose to In 0.15 0.30 Concrete Core D-Drill 0.00 03/08/22 08:00 3.45 3.45 1.39											20	Dehtu zealeo	Modium inf	ow		
1.20 5.80	0.30 0.30 0.15	Inspection Cable Pe	n Pit rcussion		JZW/DG WO/JT	1.20 1.20 2.30	2.00	DRY DRY DRY	03/08/22 03/08/22 09/08/22 09/08/22	17:00 08:00 18:00	3.45	3.45	1.39	20			uw.
Remarks Inspection pit hand excavated to 1.20m depth and no services were found. Es sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars and 1 x 1L plastic tub. Symbols and abbrevations are explained on the accompanying key sheets. Chiselling: 1.50-1.80m for 60 minutes, 1.80-2.00m for 60 minutes, 2.00-2.30m for 60 minutes, 5.50-5.80m for 60 minutes. Somm standpipe was installed to 5.00m with a geowrapped slotted section from 4.00m to 5.00m with a flush cover installed. Backfill details from base of hole: bentonite seal up to 5.00m, gravel filter up to 4.00m, bentonite seal up to 0.20m, concrete up to ground level. All dimensions are metres. At 5.80m cable percussion borehole terminated on encountering bedrock. Logged in accordance with BS5930:2015 + A1:2020											to	Logged b Checked Figure	y AC by JN Shee 06/01/	t 1 of 2 2023 NICS			

Project	Ne	wport Q	uinn Phas	e 2			Engineer		Pinnac	le Cons	ulting En	gineers		Project	No.	P١	V224395		
.	.						National	Crid	Limite	d 1 1 F				Borehol	е	Bł	H13		
Client	Pin	inacle Co	insulting l	Engineers	Limite	d	Coordina	dria tes	18417	9.7 N				Ground	Level	10).99 m (OD	
Sampling	3			Propertie	es		Strata										Scale	1:5	0
Dept	th	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	ption				Depth		Legend		Level (m OD)
		_													-				
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		- -													-				
Boring						Progress		Donth to			Groundy	vater							
Depth H	ole Dia.	Techniqu	e		Crew	Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Re	emarks on (Grou	ndwater
						2.30 5.50	2.00 5.50	DRY 1.39	15/08/22 15/08/22	08:00 17:00									
						5.50	5.50	5.40	16/08/22	08:00									
						5.80	5.80	5.40	16/08/22	17:00									
Remarks	AGS														Logged b	y by	AC		
Symbols and															Checked Figure	ρλ	JN Shee	t 2	of 2
abbrevations a explained on t	are the														-		06/01,	/2023	3
accompanying sheets.	g key														GCC	ת	CL	N	IC5
All dimensions metres.	s are in	Logged in a	ccordance w	vith BS5930:	2015 + A1	:2020									geotechnica	i and	d geoenvironm	ental	specialists

Project	N	ewport Qı	uinn Phas	e 2			Engineer		Pinnac	le Cons	ulting En	gineers		Project	No.	PN2	24395		
C '			1 r				National	Grid	Limite	d 16 F				Boreho	le	BH14	4		
Client	Pi	nnacle Co	nsulting E	ngineers	Limited	1	Coordina	ites	18419	0.6 N				Ground	Level	11.0	3 m C	D	
Samplir	ng			Propertie	s		Strata									Sc	ale	1:50	
Dep	oth	Sample Type	Depth Cased & (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth	Le	gend	~	(m OD)
0.20 - 0. 0.25 0.25 0.50 0.70 - 1.	70						MADE G [MADE G subanug and slag. [MADE C Below 0.	ROUND: I GROUND - ROUND: N Iar to sub GROUND] 70m, grav	Dark grey cou <u>CONCRETE</u> fellowish bro rounded fine vel is subrou	ncrete. wwn very e to coars nded of s End of B	gravelly fi se of siltstone an orehole	ne to coars	se sand. Gi	ravel is rrete					9.83
Boring		1				Progress	; 	Denth to			Groundv	vater			1				
Depth 0.20 1.20	Hole Dia 0.30 0.30	I. Techniqu Concrete Inspectio	e Core n Pit		Crew D-Drill JM/DG	Depth of Hole 0.00 1.20	Depth Cased	Depth to Water DRY	Date 02/08/22 02/08/22	Time 08:00 17:00	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Rema No g strike have wate	arks on G roundw es notec been m er addec	roun ater d - m naske I.	dwater ay ed by
Remarks Symbols and abbrevation explained or accompanyi sheets.	d s are n the ng key	Inspection ES sample At 1.20m d Borehole b	pit hand ex = 1 x 60ml lepth on er backfilled w	xcavated to glass vial, 2 ncountering vith bentoni	1.20m d x 258ml a concre te pellet	epth and amber gl ete obstru s and topp	no services ass jars and ction the Ca bed with aris	were four 1 x 1L pla: ble Percu: sings on co	nd. stic tub. ssion rig was ompletion.	moved to	o location E	3H14A.			Logged b Checked Figure	by	JWZ JN Sheet 06/01/2	: 1 o 2023	f1 CS
metres.	us are in	Logged in a	ccordance w	vith BS5930:2	015 + A1:	2020									geotechnica	i and geo	environme	etal sp	ecialists

PRELIMINARY

Project	Ne	ewport Q	uinn Phas	e 2			Engineer		Pinnac	le Cons	ulting En	gineers		Project	No.	PN224395	
C1	р.		1 r				National	Grid	Limite	d 85 F				Boreho	le	BH15	
Client	Pir	nnacle Co	insulting E	ngineers	Limited	1	Coordina	ates	18419	3.1 N				Ground	Level	10.65 m (DD
Samplin	ng	I .		Propertie	s		Strata									Scale	1:50
Dep	oth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	ption				Depth	Legend	(m OD)
0.20 - 0. 0.25 0.25 0.35 - 0. 0.50 0.70 - 1. 1.00 1.20 - 1. 1.20 - 1. 1.20 - 1. 1.20 - 2. 2.00 2.00 - 2. 2.00 2.00 - 2. 2.80 3.00 - 3. 3.50 - 3. 3.50 - 4. 4.00 - 4. 4.00 - 4.	35 70 20 60 65 45 45 00 38 38 50		1.20 (DRY) 2.00 (DRY) 3.00 (DRY) 4.00 (DRY)	64	22	\$50/ 255mm \$11 \$50/ 230mm	MADE G [MADE G MADE G subangu [MADE C Below 0. Very den pockets. [RIVER T Firm red subangu [RIVER T At 3.00m Below 4.	ROUND: I <u>I</u> ROUND: F ROUND: F lar to sub <u>I</u> ROUND: F lar fine to <u>G</u> ROUND] <u>70m, slig</u> lise light b <u>G</u> ravel is ERRACE D dish brow lar fine to ERRACE D n, medium 00m, verv	ight grey col CONCRETE] Black mottled rounded fine Reddish brow o coarse of sa htly silty. rown slightly subrounded DEPOSITS-GR In slightly sai o coarse of m DEPOSITS-CO	End of B	gravelly fir se of sands ly fine to c , limestono clayey SA oarse of si] tly gravelly (probable	e to coarse itone and i oarse sand e and conc ND with lo Itstone and (CLAY. Gra weathere	ve sand. Gr concrete. d. Gravel is rrete. vcalised cla d sandstor vvel is angu d bedrock)	avel is			6.05
Boring					1	Progress					Groundw	/ater					
Depth	Hole Dia.	Techniqu	e		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on G	roundwater
0.20 1.20 4.60	0.30 0.30 0.15	Concrete Inspectio Cable Per	e Core on Pit rcussion		D-Drill RW/AC WN/JB	0.00 1.20 1.20 4.60	4.50	DRY DRY DRY DRY	26/07/22 26/07/22 02/08/22 02/08/22	08:00 17:00 08:00 17:00						No groundw strikes noted have been n water added	ater d - may nasked by I.
Remarks Symbols and abbrevation: explained or	d s are n the	Inspection ES sample Chiselling: Borehole b At 4.60m c	pit hand ex = 1 x 60ml 4.50-4.60n backfilled w cable percus	kcavated to glass vial, 2 n for 60 mir ith bentoni ssion boreh	1.20m d x 258m nutes. ite pellet nole term	epth and r amber gla s and topp inated on	no services ass jars and ed with aris encounterin	were four 1 x 1L plas sings on con ng bedroc	id. stic tub. ompletion. k.						Logged b Checked Figure	y AC by JN Shee 06/01/	1 of 1 2023
accompanyi sheets. All dimensio metres.	ng key ns are in	Logged in a	ccordance w	ith BS5930:2	2015 + A1	:2020		5							GCC	DECH	NICS ntal specialists

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Den	<u>g</u> ith	Sample	Depth Cased	Strength	w(%)	SPT N	Strata			Descri	otion				Depth		Legend	1:50	Level
0.20 0.20 - 0.6 0.50 0.60 - 1.1 1.00 1.20 - 1.6 1.20 - 1.3	50		(DRY)			C15	MADE G [MADE C MADE G cobble c and conv [MADE G is angula [MADE G [MADE G [MADE G [MADE G [MADE G [MADE G	ROUND: C <u>3ROUND</u> : I ontent. G crete. Son <u>3ROUND</u> : I ROUND: I ROUND: F <u>3ROUND</u> : <u>3ROUND</u> :	Grey concret <u>CONCRETE</u> Dark greyish ravel is angu- ne fragments Dark greyish ngular fine to irm brownis tion. Probab	e. brown gr lar to sub o f meta brown slip o coarse e h grey sli le concre End of Be	ravelly me prounded 1 i. ightly grav of sandsto ite. orehole	dium sand fine to coa	I with a low arse of sand um sand. G ncrete. gravelly cla	v dstone iravel ay.					10.86 10.35 9.86 9.36
Depth I	Hole Dia.	Techniau	ie		Crew	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Re	marks on	Groui	ndwater
0.20 1.20 1.70	0.30 0.30 0.15	Concrete Inspectic Cable Pe	e Core on Pit rcussion		D Drill AC/RW PO/JT	Hole 0.00 1.70		Water DRY DRY	08/08/22 08/08/22	08:00 17:00						No sti ha wa	o groundv rikes note ive been i ater adde	vater d - n nask d.	r nay æd by
Remarks Symbols and abbrevations explained on accompanyir sheets. All dimension	are the ng key ns are in	Inspection ES sample At 1.70m o Borehole I	pit hand e = 1 x 60ml depth on er backfilled w	xcavated to glass vial, 2 ncountering vith benton	1.20m d 2 x 258m 3 a concre ite pellet	epth and amber gla ete obstrue s and topp	no services ass jars and ction the Ca bed with ari	were foun 1 x 1L plas able Percus sings on co	id. stic tub. ssion rig was ompletion.	moved to	location E	3H17A.			Logged b Checked Figure	by	AC JN Shee 06/01	t 1 c /2023	of 1
metres.		Logged in a	iccordance w	vith BS5930:	2015 + A1	2020									gestechnica	ar and	Provinition II	ental I	pre-ransits

Project	Nev	vport Q	uinn Phas	e 2			Enginee	r	Pinnac	le Cons	ulting En	gineers	Pro	oject	No.	PN224395	
.	. .						National	Crid	Limite	d 1 8 F			Во	rehol	e	BH18	
Client	Pinr	nacle Co	onsulting I	ngineers	Limited	d	Coordina	ates	18408	1.0 N			Gro	ound	Level	11.03 m OD)
Sampling				Propertie	S		Strata									Scale 1:5	50
Depth		Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	ption				Depth	Legend	Level (m OD)
0.25 0.25 0.25 - 0.60 0.50 0.50 0.60 - 1.20 1.00		D ES D ES - B D FS					MADE G [MADE G MADE G Gravel is Sand con [MADE G Below 0 Occasion Below 1	GROUND: I GROUND: I s subangu ntains ash GROUND] .80m, low nal fragme .00m. poo	- <u>CONCRETE</u>] Dark grey to lar to subrou . Some fragn angular to s ents of plasti :kets of reddi	black slig nded fin nents of ubangula c, rubber	shtly grave e to coarse metal. ar cobble c r and wire. n sandy cla	lly mediun e of sandst content of av.	n to coarse sau one and clinke sandstone.	nd. er.	0.22		10.81 9.83
1.20 - 1.65 1.20 - 1.65 1.20 - 1.70 1.80		D B D	(DRY)			S34	Very stif subangu [RIVER T	f light bro Ilar to sub ERRACE D	wn slightly s rounded fine DEPOSITS-CO	andy slig e to coars HESIVE]	htly gravel se of sands	ly CLAY. Gr stone and s	avel is siltstone.				
2.00 - 2.45 2.00 2.00 - 2.45 2.00 - 2.50 2.80		ES D B D	2.00 (DRY)			S12	Below 2	.00m, firn	n.								
3.00 - 3.38 3.00 3.00 - 3.38 3.00 - 3.50		ES D B	3.00 (DRY)			S50/ 225mm	Very der pockets. [RIVER T Firm ligh subroun	nse light b Gravel is ERRACE D It brown s ded fine t	orown very sa angular to su DEPOSITS-GR slightly sandy to coarse of s	andy clay ubangula ANULAR v slightly andstone	ey GRAVEI Ir fine to m] gravelly Cl e and siltst	with occa nedium of s AY. Gravel	sional clay sandstone. is subangular	to			8.03 7.63
4.00 - 4.45 4.00 - 4.45 4.00 - 4.45 4.00 - 4.50 4.80		ES _ D _ D _ D	4.00 (DRY)		12	S16	[RIVER T	ERRACE E	DEPOSITS-CO	HESIVE]							
5.00 - 5.45 5.00 - 5.45 5.00 - 5.50 5.60 - 5.80 5.80		D - B B D	5.00 (DRY)			S16	Stiff bec	oming stil	ff dark reddis lar fine to me	h brown	slightly sa	ndy slightl	y gravelly CLA weathered	Y.	 5.60		5.43
6.00 - 6.45 6.00 - 6.45 6.00 - 6.50		D B	6.00 (DRY)			S29	bedrock [ST MAL). JGHANS F	ORMATION-	UPPER CI	LAY]						
6.80 7.00 - 7.45 7.00 - 7.45 7.00 - 7.50 7.50		D - B D	7.00 (DRY)			S11	Below 7	.00m, firn	ı.								
8.00 - 8.45 8.00 - 8.45 8.00 - 8.50		– 	8.00 (DRY)			S34	Below 8	.00m, ver	y stiff.								
9.00 - 9.45 9.00 - 9.45 9.00 - 9.45 9.00 - 9.50		D D B	9.00 (7.90)			S28	Below 9	.00m, stifl	f.						- 		
9.80 10.00 - 10.33		- D	10.00 (6.00)			S50/ 180mm											
Depth Hole	Dia	Technico	le		Crew	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to in	Mins	Depth Sealer	Remarks on Gro	undwater
0.22 0.3 1.20 0.3 10.33 0.1	0 0 5	Concrete Inspectio Cable Pe	e Core on Pit ercussion		D-Drill RW/AC WN/JB	Hole 0.00 6.00 6.00 10.33	6.00 6.00 10.00	Water DRY DRY 6.0	03/08/22 03/08/22 04/08/22 04/08/22	08:00 18:00 08:00 17:00	8.45 10.00		7.90 6.00	20 20		Seepage. Seepage.	
Remarks Symbols and abbrevations are explained on the	E E C B A	nspection S sample hiselling orehole t 10.33m	n pit hand e = 1 x 60ml : 9.80-10.00 backfilled w n cable perc	xcavated to glass vial, 2 Im for 60 m rith benton ussion bore	1.20m d x 258m inutes. te pellet hole ter	lepth and r l amber gla s and topp minated ດາ	no services ass jars and ed with ari n encounte	were four 1 x 1L pla isings on c ring bedro	nd. stic tub. ompletion. ock.						Logged b Checked Figure	y RW by JN Sheet 1 06/01/202	of 2 3
accompanying Key sheets. All dimensions are metres.	in L	ogged in a	accordance w	vith BS5930:2	2015 + A1	:2020		- ···							GCC	DECH	

Project	Ν	ewport C	uinn Phas	e 2			Enginee	r	Pinna	cle Cons	ulting En	gineers		Project	No.	PN22439	5	
Client	P	innacle Co	nsulting l	ngineers	limite	4	National	Grid	Limite 32778	ed 31.8 E				Boreho	le	BH18		
				Ingineers	Ennice		Coordina	ates	18408	31.0 N				Ground	Level	11.03 m	OD	
Samplii	ng			Propertie	es		Strata									Scale	1:50)
Dej	pth	Type	Depth Cased & (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth	Legend		(m OD)
10.00 - 3	10.33	– D					Below 1	0.00m, ve	ry stiff.						-			
		E								End of B	orehole				10.33		.000	0.70
		-													-			
		-													-			
		E													_			
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		F													-			
		F													-			
L																		
Boring						Progress		Denth to		1	Groundv	vater			1			
Depth	Hole Dia	a. Techniq	ue		Crew	Hole	Depth Cased	Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on	Grour	ndwater
Remarks	MS	1		I			1	L	1	1		1	1	1	Logged b	by RW		
Symbols and	d														Figure	She	et 2 d	of 2
explained o	n the															06/0	1/2023	
sheets.	nig key														Gee	JOCH	-N	ICS
metres.	siis are III	Logged in	accordance w	vith BS5930:	2015 + A1	:2020									geotechnica	al and geoenviron	mental s	specialists

Project	Ne	wport Q	uinn Phas	se 2			Engineer		Pinna	acle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Pin	nacle Co	nsulting I	Engineers	Limiter	4	National	Grid	Limit 3278	ed 37.4 E				Borehol	e	BH19	_
				Linginieers	Linnee	<i>.</i>	Coordina	ites	1840	90.8 N				Ground	Level	11.01 m C	D
Sampling	g	Sample	Depth Cased	Propertie Strength	S (ac)	007.11	Strata								I	Scale 2	L:50 Level
Dep	th	Type	& (to Water)	kPa	w(%)	SPIN			iaht arou o	Descri	ption				Depth	Legend	(m OD)
0.25		D					[MADE G	GROUND: I	- CONCRET	E]					0.23	××××××	10.78
0.25		- ES					MADE G	ROUND: I	Dark brown	gravelly f	ine to coa	rse sand. G	iravel is		-		
0.25 - 0.6	50	_ B - D					limestor	iar to sub ie. Some f	fragments of	of metal.	se of slitste	one, sands	tone and		_		
0.50		ES					[MADE C	GROUND]	U						_		
0.60 - 1.2	20	— в					Below 0	60m, loca	ally silty.	ho (150m)	m diamoto	ar)			-		
1.00		- ES					Brown v	ery sandy	subangula	r to subro	unded fine	e to coarse	clayey GR/	AVEL	- 1.20		9.81
1.10 - 1.2	20	D					of siltsto	ne and sa	andstone. N	1edium su	ıbangular t	to subroun	ded cobble	2	-		
1.20 - 1.6	5	-	1.20 (DRY)			C32	[RIVER T	ERRACE E	DEPOSITS-G	RANULAR]				-		
1.20 - 1.7	70	_ В	(,														
2.00 - 2.4	15	_	2.00			C38									_		
2.00 - 2.5	50	В	(DI(I)												_		
		_													_		
		-													-		
3.00 - 3.4	15	_	3.00			C32									_		
2 00 2 5		- - D	(DRY)												_		
3.00 - 3.5	50	- - в													_		
		_													_		
		_													_		
4.00 - 4.4	15	_	4.00 (DRY)			C30									-		i i
4.00 - 4.5	50	- - В	(5111)												_		,
4.50 - 4.8	30	– D					Below 4	50m. ver	v clavev.						_	▼	°
		_						,	,,.,.						- 480		6.21
5.00 - 5.4	15		5.00			C30	Extreme	ly weak re clav	eddish brov	vn MUDST	FONE. Rec	overed as	slightly sar	ndy			
		-	(DRY)				[ST MAU	GHANS F	ORMATION]					_		
5.00 - 5.5	50 M	- B	5 50			CE0/									-		
5.50 - 5.9	94	-	5.50 (DRY)			290mm									- 5.50 -		5.51
		_													_	•	•
		-								End of B	lorehole				-		
		_													_		
		_															
		_													-		
		_													-		
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		_													-		
Boring					<u> </u>	Progress					Groundy	water					
Depth H	lole Dia.	Techniqu	Je		Crew	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	d Remarks on G	roundwater
0.23	0.30	Concrete	e Core		D-Drill	0.00		waldi	03/08/22	08:00	4.50	4.00			5.00	Slow inflow.	
1.20 5.94	0.30	Inspection	on Pit reussion		RW/AC	1.20 1.20		DRY DRY	03/08/22	18:00 08:00							
5.54	0.13	cable Pe	100331011		10/31	5.94	5.50	DRY	01/09/22	17:00							
Bornaulur		Inspection	ı pit hand e	xcavated to	1.20m d	epth and i	no services	were four	l nd.		L				Logged h	y RW	
Remarks	MSS	ES sample	= 1 x 60ml	glass vial, 2	x 258m	amber gla	ass jars and	1 x 1L pla	stic tub.		00	م ال ا	au (u-t-1) - 1		Checked	by JN	
abbrevations	are	ч эотт s Backfill de	tails from b	as installed base of hole:	: gravel f	ilter up to	owrapped 4.00m, ber	solited se	al up to 0.20	i.uum to 5 Im, concre	te up to gr	a nush cov ound level.	er installed		⊦ıgure	Sheet 06/01/2	1 Of 1 023
explained on accompanyin	une g key	At 5.94m (cable percu	ssion boreh	ole term	inated on	encounteri	ng bedroc	k.						~~~	DTC	
sneets. All dimension	ns are in														geotechnica	i and geoenvironme	tal specialists
metres.		Logged in a	accordance w	vith BS5930:2	015 + A1	:2020											

Project	N	ewport Q	uinn Phas	e 2			Engineer		Pinnad	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Di	nnaclo Co	onculting (nginoors	Limitor	4	National	Grid	Limite 32795	d 0.9 E				Boreho	le	BH20	
	FI			Ingineers	Linne		Coordina	ites	18411	.3.7 N				Ground	Level	11.01 m (D
Samplin	ng	Sample	Depth Cased	Propertie Strength	S (0()	CDT N	Strata									Scale	1:50 Level
Dep	oth	Туре	& (to Water)	kPa	W(%)	SPIN	MADEG		ight grov co	Descri	ption				Depth	Legend	(m OD)
0.45 - 0. 0.50 0.50 0.65 - 1. 0.80 1.00 1.20 - 1. 1.20 - 1. 2.00 - 2. 2.00 - 2. 3.00 - 3. 3.80 4.00 - 4.	65 20 65 70 45 50 45 50 45 50	Type Type B D ES D ES D ES B B B B B B B B B B B B B	1.20 (DRY) 2.00 (DRY) 3.00 (DRY) 4.00 (DRY)	kPa		C51 C36 C26 C29	MADE G [MADE G of siltsto [MADE C Medium with a lo to round [RIVER T Below 1. Below 2. subangu	ROUND: I SROUND - ROUND: I ne and sa <u>SROUND</u> dense to w subrou led fine to ERRACE D 20m, clay 00m, very lar to sub	ight grey co CONCRETE] Dark greyish indstone. Oc dense brow nded cobble ocarse of si DEPOSITS-GR rey. y clayey, poc rounded silt	ncrete.	andy subar metal frag avelly fine of sandsto] ay. Mediuu d sandstor	ngular fine ments. to coarse one. Grave m cobble o re.	to coarse ; clayey SAN l is subroui content of	gravel/ ID nded dy	- 0.45 - 0.65 		(m OD) 10.56 10.36 7.01
5.00 - 5.	40 45		5.00 (DRY)			\$50/ 250mm				End of B	orehole						6.01
Boring		Technicu			Crow	Progress Depth of	Danth Canad	Depth to	Data	Time	Groundv	ater	Dece to	in Mine	Darath Carola	l Domorius on C	roundurator
0.45 1.20 5.40	0.30 0.30 0.15	Concrete Inspectio Cable Pe	e Core on Pit rcussion		D-Drill AC/JM WO/JT	Hole 0.00 1.20 1.20 5.40	5.00	Water DRY DRY DRY DRY DRY	Date 10/08/22 10/08/22 31/08/22 31/08/22	08:00 17:00 08:00 17:00	Depth Struck	uepth Cased	KUSE TO		veptn Seale	No groundw strikes note have been n water addec	ater d - may hasked by l.
Remarks Symbols and abbrevations explained or accompanyin sheets.	i s are n the ng key	Inspection ES sample Chiselling: Borehole I At 5.40m	n pit hand e: = 1 x 60ml = 1.40-2.00n backfilled w cable percu	kcavated to glass vial, 2 n for 90 mir ith bentoni ssion boreh	1.20m d x 258m nutes. te pellet nole term	epth and amber gla s and topp inated on	no services ass jars and eed with ari encounteri	were foun 1 x 1L plas sings on co ng bedroc	id. stic tub. ompletion. k.						Logged b Checked Figure	y AC by JN Shee 06/01/	1 of 1 2023
All dimensio metres.	ns are in	Logged in a	accordance w	ith BS5930:2	2015 + A1	2020									geotechnica	I and geoenvironme	ntal specialists

													•				
Client	Dinnada Ca	neulting (- n gin o o ro	Lingitor	J	National	Grid	Limite 32800	d 84 F				Borehol	e	BH21		
Client	Pinnacie Co	onsulting E	Ingineers	Limited	1	Coordina	ates	18412	3.8 N				Ground	Level	11.03 m	OD	
Sampling	Comple		Propertie	s		Strata									Scale	1:50	C
Depth	Туре	& (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth	Legend		(m OD)
Depth 0.50 0.50 - 0.80 0.80 - 1.20 1.00 1.20 - 1.62 1.20 - 1.70 2.00 - 2.45 2.00 - 2.50 3.00 - 3.45 3.00 - 3.50 4.00 - 4.45	Sample Type	Depth Cased & (to Water) 1.20 (DRY) 2.00 (DRY) 3.00 (DRY) 3.00 (DRY)	Strength kPa	w(%)	C50/ 265mm C33 C36 C30	MADE G [MADE G fine to c [MADE G Dense to coarse c [RIVER T Below 2.	ROUND: C SROUND - ROUND: E oarse of si JROUND] o very den layey GRA ERRACE D .00m, poc .00m, poc	Grey concret CONCRETE] Brown gravel Itstone and se brown ve VEL of siltsto EPOSITS-GR kets of clay.	Descrip e. ly fine to sandstom ry sandy one and s ANULAR	ption p medium s angular to sandstone.]	subround	el is suban	gular	Depth			Level (m OD) 9.83 7.23
5.00 - 5.42 5.00 - 5.45	D - 4.45 D - 4.50 B 0 - 5.42 0 - 5.45 D 0 - 5.45 D C C C C C C C C C C C C C								End of B	orehole							6.03
Boring	Dia Terel i			C	Progress Depth of		Depth to	D-+-	T/	Groundw	vater	Derri	in M		Derrar		
0.45 0.5	Via. Techniqu	e Core		Crew D-Drill	Hole	vepth Cased	Water	Date 29/07/22	08.00	Depth Struck	Depth Cased	кose to	in Mins	Depth Sealer	No ground	uroui wate	nawater r
1.20 0.3 5.42 0.1	10 Inspectio 15 Cable Pe	on Pit rcussion		JM/DG WO/JT	1.20 1.20 3.45	3.00	DRY DRY DRY	29/07/22 31/08/22 31/08/22	17:00 08:00 17:00						strikes not have been water adde	ed - r mask ed.	nay œd by
Remarks Symbols and abbrevations are explained on the accompanying key sheets. All dimensions are metres.	Inspection ES sample Chiselling: Borehole b At 5.42m c	pit hand es = 1 x 60ml 1.50-2.00n backfilled w cable percus	xcavated to glass vial, 2 n for 60 mir vith bentoni ssion boreh	1.20m d x 258ml nutes. te pellet: ole term	epth and n amber gla s and topp inated on o	io services ss jars and ed with ari encounteri	were foun 1 x 1L plas sings on co ng bedrocl	d. stic tub. ompletion. k.		<u>.</u>		L		Logged b Checked Figure	y RW by JN She 06/0	et 1 d 1/2023	of 2

Project	Ne	ewport Q	uinn Phas	e 2			Engineer		Pinnad	le Cons	ulting En	gineers		Project	No.	PN	1224395	5	
Client	D:-				1 : :+	-1	National	Grid	Limite	d 84 F				Boreho	le	Bł	H21		
Client	PI	nnacie Co	onsulting E	ngineers	Limite	3	Coordina	ates	18412	3.8 N				Ground	Level	11	L.03 m	OD	
Sampli	ng	Germalia		Propertie	s		Strata										Scale	1:5	0
De	pth	Type	& (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth		Legend	_	(m OD)
		-													-				
		-													-				
		E																	
		-													-				
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Boring		I			1	Progress	I				Groundv	water			. <u> </u>				
Depth	Hole Dia.	Techniqu	ie		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cas	ed Rose to	in Mins	Depth Seale	d Re	emarks on	Grou	indwater
						3.45 5.42	3.00	DRY	01/09/22	08:00 17:00									
						3.42	5.00	DI	01/03/22	17.00									
Remarks	Miss														Logged b Checked	y bv	RW		
Symbols an abbrevation	d 15 are														Figure	~ Y	She	et 2	of 2
explained o accompany	n the ing key																06/01	/2023	5
sheets. All dimensio	ons are in														Geo	ת	GCH	N	ICS
metres.		Logged in a	accordance w	ith BS5930:2	2015 + A1	:2020									geotechnica	and	geoenvironn	entai	specialists

Project	Newport Q	uinn Pha	se 2			Engineer		Pinnac	le Cons	ulting Eng	gineers		Project	No.	PN2	24395		
Client	Pinnacle Co	nsulting	Engineers	Limiter	4	National	Grid	Limite 32814	d 1.9 E				Boreho	le 	BH2	2		
		Jilsuiting	Lingineers	Linnee	<i>.</i>	Coordina	ates	18414	4.1 N				Ground	Level	10.7	0 m 0	D	
Sampling		1	Propertie	es		Strata								1	So	ale	1:50)
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	ption				Depth	Le	gend		Level (m OD)
0.08 - 0.30	– B					MADE G	ROUND: E	Black tarmac	adam.					- 0.08	\sim	2322	8	10.62
0.20								- TARMACAD	AM] un gravel	ly medium	to coarse	sand with	/	- 0.30	\sim	<u></u>		10.40
0.30 - 1.20	В					subroun	ded cobbl	le content of	sandsto	ne. Gravel i	s angular	to subang	gular	E	2 4.7 1941 1941		9	
0.50	- D					medium	to coarse	of siltstone,	sandsto	ne, quartz a	and occas	ional con	crete	E	4 <u>00</u> - 40 - 40			
0.50	L ES					fragmen	ts. SROUNDI							-				
1.00	E ES					Dense d	ark brown	very sandy	fine to co	oarse subro	unded cla	ayey GRAV	/EL	E	10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -		1	
1.20 - 1.65	E	(DRY)			C37	with a lo	w subrou	nded cobble	content	of siltstone	e and sand	dstone.		L	نيمي من ا	_		
1.20 - 1.70	B					IRIVER I	ERRACE D	DEPOSITS-GR	ANULAR]				-		÷.,	9	
	_										<u> </u>							
2 00 - 2 45	_	2 00			C31				-			9						
2.00 - 2.45	E	(DRY)			0.51									L	<u>ه م</u> معنیا معنیا			
2.00 - 2.50	00-2.50 В								_		-	9						
														_			1	
	-								_	نيمي رونية								
2 00 2 45	-	2 00			C 22									_		<u> </u>	9	
5.00 - 5.45	E	(DRY)			C32									E	2 4 1 1 4 1 1 4 1	- 		
3.00 - 3.50	В														<u>نې</u> د مر سو		9	
	_													_				
	E													-	1			
3.90	- D					Stiff darl	reddish l	hrown mottl	ed grev s	lightly sand	ly slightly	gravelly (3.90			1	6.80
4.00 - 4.45	E	4.00			S35	with loca	al pockets	of soft clay.	Gravel is	s angular to	subangu	lar fine to		E				
4.00	_ D					medium	of mudst	one (Weathe	ered calc	areous muo	dstone).			_			9	
4.00 - 4.50	6.00 - 4.50 B						IGHANS F	URMATION-	UPPER CI	LAYJ				_				
															2			
5.00 - 5.45	E	4.00			\$35									-			1	
	-	(DRY)												-				
5.00	F .													-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		9	
5.50 - 5.90		4.00			C50/	Extreme	ly weak d	ark reddish k		5.50				5.20				
	F	(DRY)			245mm	[ST MAU	IGHANS F		-			9						
	<u> </u>								End of B	orehole				- 5.90			200	4.80
	F													-				
	F													-				
	F													-				
	F													-				
	E													-				
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	F													F				
	F													E				
	F													E				
	F													E				
	F													E				
	-																	
Boring					Progress					Grounder	ater							
Depth Hole	Depth Hole Dia. Technique Crew Depth				Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Rema	arks on G	roun	dwater
1.20 0.3	1.200.30Inspection PitRW/AC0.0				Hole 0.00		Water	27/07/22	08:00						No a	roundw	ater	
0.3	Cable Percussion PO/JT 1.20				1.20		DRY	27/07/22	17:00						strik	es note	1 - m	nay
1.20					1.20	J DRY 01/08/22 08:00 D 2.00 DRY 01/08/22 17:00									have	been n	nask	ed by
2.00					2.00	2.00	DKI	01/08/22	11:00						wate	addec		
Remarks	ES cample	pit hand e	excavated to	1.20m d	epth and r	no services	were foun	nd.	_		_	_	_	Logged b	y by	AC	-	
Symbols and	Borehole l	backfilled v	vith benton	ite pellet	s and topp	ed with ari	sings on co	ompletion.						Figure	υy	Sheet	:10	f 2
abbrevations are explained on the	At 5.90m (cable percu	ission boreh	ole term	inated on	encounteri	ng bedroc	k.						2		06/01/2	2023	
accompanying key sheets.														GCC	ກດ	Ύ	N	CS
All dimensions are metres	neets. II dimensions are in leftres. Logged in accordance with BS5930-2015 + A1-2020													geotechnica	i and get	environme	ntal s	pecialists
	roggen in a	iccor uarice V	vicii 000930[.	LU T AI	.2020													

Project	Ne	wport Q	uinn Phas	e 2			Engineer		Pinnad	le Cons	ulting En	gineers		Project	No.	P	122439	5	
									Limite	d	0	0		Boreho	le	Bł	H22		
Client	Pir	nacle Co	onsulting I	Engineers	Limited	ł	National	Grid	32814 18414	1.9 E 4.1 N				Ground	Level	10).70 m	OD	
Sampli	ng			Propertie	es		Strata										Scale	1:5	0
De	pth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	ption				Depth		Legend		Level (m OD)
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		-													-				
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Poring						Drogross					Groundy	votor							
Denth	Hole Dia	Technicu	le		Crew	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Caser	Roseto	in Mine	Depth Seale	d R4	emarks on	Grou	ndwater
Deptil		reeninge				Hole 2.00	2.00	Water DRY	02/08/22	08:00	Beptilotidei	, beptil cusee			Deptil beale			0.00	
						5.90	4.00	DRY	02/08/22	17:00									
Bomari															Logged h)y	AC		
Remarks	MGS														Checked	by	JN		<i>.</i>
symbols an abbrevation	u ns are														Figure		She 06/01	et 2 /2023	ot 2
explained o accompany	n the ing key														<u> </u>	-		•	
sneets. All dimensio	ons are in														geotechnica	1	geoenviron	1 N	specialists
metres.		Logged in a	accordance w	ith BS5930:2	2015 + A1	2020													

Project	Newpo	ort Quii	nn Phase	e 2			Engineer		Pinnac	le Cons	ulting En	gineers	F	Project	No.	PN224395	
Client	Pinnac	cle Cons	sulting E	ngineers	Limited	ł	National	Grid	Limite 32773	d 1.1 E			E	Borehol	e	BH24	
Sampling				Droportio	<u></u>		Coordina	ites	18400	0.5 N				Ground	Levei	11.06 m (1.50
Depth	Sar	imple c Type 8	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N	Stidid			Descri	ption				Depth	Legend	Level (m OD)
Depth 0.20 - 0.50 0.25 0.25 0.50 - 0.80 0.60 1.00 1.20 - 1.29 1.20 - 1.70 2.00 - 2.14 2.00 2.00 - 2.14 3.00 - 3.45 3.00 - 3.50 4.00 - 4.45 4.00 4.00 - 4.50		mple s fype s B D ES B D ES D ES B D B B B B B B B B B B B B B	(DRY) (DRY) 2.00 (DRY) 3.00 (DRY) 3.50 (DRY)	Strength kPa	9	C50/ 50mm C50/ 65mm C42 C30	MADE G [MADE G is subang fragmen [MADE G subangu subangu [MADE G MADE G Subangu [MADE C MADE G low suba fragmen sandstor [MADE C Soft to fi cobble c subroun [RIVER T Firm red subroun subroun subroun subroun subroun	ROUND: G ROUND: E ROUND: E gular to sub- ROUND: R ROUND: R Iar to sub- Iar to sub- GROUND: R ROUND: C ROUND: C ROUND: C ROUND: C ROUND: C ROUND: C ROUND: C C ROUND: C C ROUND: C C C C C C C C C C C C C C	Grey concret CONCRETE] Dark greyish bibrounded fi rounded col rounded col rounded me Dark greyish subrounded is subangula crete fragme rown slightly siltstone and p coarse of s EPOSITS-CO se SAND an lithologies. EPOSITS-GR n slightly sa e content of p coarse of r k). DRMATION-	Descri e. bine to coa ine to coa ine to coa bine to coa bine to coa bine to coa bine to coa bine to sub- ents. y gravelly d sandston HESIVE] d subang <u>ANULAR</u> ndy sligh i mudston udstone	ption ightly grav arse of sam coarse of s ightly gravelly i ent of sam coarse of s ightly gravelly rounded m / sandy CL/ one. Gravel iular to sub ity gravelly ne. Gravel and sand LAY]	elly mediu dstone, m medium sa dstone. Gr. andstone. elly mediu sandstone ledium to o AY with a le i s subang prounded f r CLAY with is subangu stone (pro	im sand. Gr etal and air and with a l avel is im sand wit and aircre coarse of ow subrour ular to ine to coar- îne to coar- îne to coar- în a low ilar to ibable	avel ccrete ow th a te nded se	Depth - 0.21 - 0.66 - 0.81 - 1.20 	Legend	Level (m OD) 10.85 10.40 10.25 9.86 8.56 8.06
5.00 - 5.40			3.50 (DRY)			C50/ 255mm	At 5.00m	n, stiff.		End of B	orehole				- - - - - - - - - - - - - - - - - - -		5.65
Boring	· - · ·			1		Progress		Depth to	_		Groundw	/ater				· · ·	•
Depth Hol 0.21 0 1.20 0 5.41 0	DepthHole Dia.TechniqueCrewHole0.210.30Concrete CoreD-Drill0.001.200.30Inspection PitJM/DG1.205.410.15Cable PercussionPO/JT1.20				Hole 0.00 1.20 1.20 2.50	Depth Cased	DRY DRY DRY DRY	Date 28/07/22 28/07/22 25/08/22 25/08/22	Time 08:00 17:00 08:00 18:00	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	d Remarks on G No groundw strikes note have been n water addeo	roundwater rater d - may nasked by l.	
Remarks Inspection pit hand excavated to 1.20m depth ar ES sample = 1 x 60ml glass vial, 2 x 258ml amber Symbols and abbrevations are explained on the explained on the accompanying key sheets. Slow progress: 1.40-2.50m for 270 minutes Borehole backfilled with bentonite pellets and to All dimensions are in metres. Sorehole backfilled with bentonite pellets and to At 5.41m cable percussion borehole terminated						lepth and amber gla es s and topp inated on	no services ass jars and bed with aris encounterin	were foun 1 x 1L plas sings on co ng bedrocl	d. ttic tub. ompletion. ‹.		<u>I</u>	1	<u> </u>		Logged b Checked Figure	y RW by JN Shee 06/01/	t 1 of 2 2023

Project	N	ewport Q	uinn Phas	se 2			Engineer		Pinnac	cle Cons	ulting En	gineers		Project	No.	PN	V224395	,	
Client	D:	nnaela Ca	n cultin a l	Engineers	Lingita	4	National	Grid	Limite 32773	d 11 F				Borehol	e	Bŀ	124		
Client	PI	nnacie Co	onsulting I	Engineers	Limite	3	Coordina	ites	18400	0.5 N				Ground	Level	11	L.06 m	OD	
Sampli	ng			Propertie	es	1	Strata										Scale	1:5	0
De	pth	Sample Type	Depth Cased & (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth		Legend		(m OD)
		F													-				
		E													-				
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Boring		· 1			•	Progress	-				Groundv	water			'				
Depth	Hole Dia	. Techniqu	Je		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Case	d Rose to	in Mins	Depth Seale	d Re	emarks on	Grou	ndwater
						2.50	2.50	DRY	26/08/22	08:00									
						5.41	5.50	DI	20/00/22	10.00									
Remarks		1					ı		1		•	1	1	1	Logged b	y	RW		
Symbols an	d d														Checked	by	JN	ot o	of 2
abbrevation	ns are In the														IBUIE		06/01	/2023	5
accompany	ing key														600			~	
All dimensio	ons are in														geotechnica	1 400	geoenvironm	ental	specialists
metres.		Logged in a	accordance w	vith BS5930:2	2015 + A1	:2020													

Project	Ne	wport Q	uinn Phas	e 2			Enginee	r	Pinnac	Project	No.	PN224395 BH25					
Client	Pir	nnacle Co	nsulting (ngineers	Limited	d	National	Grid	22779	d 2.4 E				Borehol	e	BH25	20
							Coordina	ates	18401	0.5 N				Ground	Level	11.00 m	JD
Samplin	ıg	Sample	Darth Cared	Propertie	es		Strata									Scale	1:50
Dep	oth	Туре	& (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth	Legend	(m OD)
0.21 - 0.4 0.25 0.25 0.25 0.55 0.90 - 1.1 1.00 1.20 - 1.1 2.00 - 2.4 2.00 - 2.4 3.00 - 3.4 3.00 - 3.4	20 65 70 45 50 40	Type B D ES B B B B C B C B C B C B C B C C C C C C C C C C C C C	1.20 (DRY) 2.00 (DRY) 3.00 (DRY) 4.00	kPa	11	C17 C31 C48 C50/	MADE G [MADE G to subard [MADE G to subard [MADE (At 0.21n Soft to fi subangu [RIVER T Below 1 [RIVER T [RIVER T	ROUND: L GROUND - ROUND: E goular fine GROUND) n, plastic g irm dark b lar to sub 'ERRACE D .00m, grav dense brin fine to cc ithologies 'ERRACE D	ight grey co <u>CONCRETE</u>] Dark brown g to coarse of reotextile. rown slightly rounded fine tePOSITS-CO real is fine to i pown clayey S barse subang EPOSITS-GR	y sandy s ravelly fi sandstor y sandy s to coars HESIVE] medium AND and ular to su ANULAR]	ine to coar ne and cor lightly grav se of siltsto d GRAVEL v ubroundec	se sand. G ncrete. Sar velly CLAY. nne and sa vith low cc I. Gravel a	ravel is an Id is of ash Gravel is ndstone.	gular ent. : of	- 0.21 - 0.21 0.90 - 1.10 	Legend	(m OD) 10.79 10.10 9.90
4.00 - 4.	50	- в	(DKT)			24711111					-						
4.60		 D					Stiff dar	k red sligh	tly sandy slig	htlv grav	elly CLAY.	Gravel is s	ubangular	to	- - 4.60		6.40
		_					subroun	ded fine t	o coarse of n	nudstone	e and sand	stone (pro	bable		-		
5.00 - 5.4	45	-	5.00 (DRV)			C39	weather [ST MAU	ed bedroo JGHANS F	:k). DRMATION-I		-						
5.00 - 5.	50	- B - B]				- - - - - - - -		
6.00 - 6.	39 45		6.00 (DRY)			S50/ 241mm	Extreme [ST MAL	ly weak re JGHANS F	eddish browr DRMATION]	n MUDST	ONE. Reco	vered as g	ravelly cla	y.	6.00 		5.00
										Ènd of B	orehole				- 0.39 		4.61
Boring		I			I	Progress					Groundw	ater					
Depth I	Hole Dia.	Techniqu	e		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on	Groundwater
0.21 1.20 6.00	0.21 0.30 Concrete Core D-Drill 0.00 1.20 0.30 Inspection Pit RW/AC 1.20 6.00 0.15 Cable Percussion WO/JT 1.20 4.00 1.20 1.20 1.20 1.20					0.00 1.20 1.20 4.00	4.00	DRY DRY DRY	26/07/22 26/07/22 23/08/22 23/08/22	08:00 17:00 08:00 17:00						No ground strikes note have been water adde	vater d - may masked by d.
Remarks		Inspection	pit hand e	kcavated to	1.20m d	lepth and r	o services	were foun	d.		1				Logged b	y AC	
Symbols and	1000	ES sample Slow progr	= 1 x 60ml ess: 3.00-4	glass vial, 2 .00m for 1	2 x 258m 50 minut	l amber gla es, 5.00-6	ss jars and 00m for 60	1 x 1L plas minutes	stic tub.						Checked	by JN	t1 of 2
abbrevations explained or	s are 1 the	A 50mm st	andpipe w	as installed	to 4.60n	n with a ge	owrapped	slotted see	tion from 3.0	00m to 4.	60m with a	a flush cove	er installed		- Buic	06/01	2023
accompanying key sheets. Backfill details from base of hole: bentonite seal u ground level.						ne seal up	ιο 4.60m,	gravei filte	r up to 3.00m	ı, penton	ne seal up	ιο υ.20m,	concrete up	μ το	GCC	שרבת	NICS
All dimensions are in At 6.39m cable percussion borehole terminated of metres.						inated on	encounteri	ng bedroc	k.						geotechnica	i and geoenvironm	ental specialists
		LOSGED III a	coordance W		LUID T AL	.2020											

Project	Ne	ewport Q	uinn Phas	ie 2			Engineer		Pinnac	le Cons	ulting En	gineers		Project	No.	PN	1224395)	
Client	D:				1 : :+	-1	National	Grid	Limite	d 24 F				Borehol	e	Bŀ	125		
Client	PI	nnacie Co	onsulting i	Engineers	Limite	3	Coordina	ites	18401	0.5 N				Ground	Level	11	1.00 m	OD	
Sampli	ng			Propertie	es		Strata										Scale	1:5	0
De	pth	Sample Type	Depth Cased & (to Water)	kPa	w(%)	SPT N				Descri	ption				Depth		Legend		(m OD)
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		-													-				
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Boring		I				Progress	I				Groundv	vater							
Depth	Hole Dia	. Techniqu	ie		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Case	d Rose to	in Mins	Depth Seale	d Re	emarks on	Grou	indwater
						4.00	4.00	DRY	24/08/22	08:00									
						0.59	0.00	DKI	24/00/22	17.00									
Remarks	A63														Logged b	y by	AC		
Symbols an	d														Figure	υγ	Shee	et 2	of 2
explained o	n the																06/01	/2023	3
sheets.	ны кеу														Geo	ת	œc⊦	N	ICS
metres.	ons are in	Logged in a	accordance w	/ith BS5930:	2015 + A1	:2020									geotechnica	il and	geoenvironn	ental	specialists

Project	Ne	ewport	Quinn Phas	se 2			Enginee	r	Pinna	cle Cons	ulting En	gineers	Pro	ject	No.	PN224395	
Client	Di	nnacla (Conculting	Enginoorg	Limito	Ч	Nationa	l Grid	Limite 32784	d 6.6 E			Bor	ehol	е	BH26	
	ΡI		Jonsuiting	Engineers	Linne	u	Coordin	ates	18401	.9.3 N			Gro	und	Level	10.95 m OD)
Samplin	ng	Sample	Depth Cased	Propertie Strength	25		Strata			Decer					Dauth	Scale 1:	50 Level
Dep	otn	Туре	& (to Water)	kPa	W(%)	SPIN	MADEG		ight grev co	Descri	ption				Depth	Legend	(m OD)
0.25		E D					[MADE	GROUND	- CONCRETE					/	0.21		10.74
0.25	60	- ES					MADE G Gravel i	ROUND: I	Light greyish to subangula	brown g r fine to	ravelly me	dium to co iltstone is	parse sand. andstone and	ŀ	-		
0.25 - 0.	00						concret	e. Some fr	agments of	steel rein	forcing ba	r and 'The	rmoLite'	l	- 0.60		10.35
0.50	20	ES B					insulation [MADE	on GROUNDI						/			
1.00	20						MADE	ROUND:	Dark brown	slightly g	ravelly fine	to coarse	e sand with a lov	w	- 1.20		9.75
1.00	51	– ES				\$50/	subrour coarse o	ided cobb	le content. G	Gravel is s and lime	subangular stone.	to subrou	unded fine to	/	-		
1.20 - 1.	51	- D	(DRT)			160mm	[MADE	GROUND]	, surrascorre					_/	-		
1.20 - 1.	70	В			11		Soft to f	irm light b Ided fine t	prown slightl	y sandy g siltstone	gravelly CL and sands	AY. Gravel	is subangular to probable low	2	_		
2.00 - 2.	33	F	2.00			S50/	coble co	ontent.					, probable lot	-	-		
2 00		F n	(DRY)			175mm	[ALLUVI	UM]							-		
2.00		ES													-		
2.00 - 2.	50	БВ												-	_		
3.00 - 3.	45	F	3.00			S11									_		
		È	(DRY)												-		
3.00 3.00 - 3.	45	- ES													-		
3.00 - 3.	50	Бв												F	_		
3.80		- D													-		
4.00 - 4.	45	F	4.00 (DRY)			S8	Soft to f	irm light b	prown mottle	ed dark b	rown sligh	tly sandy s	slightly gravelly	_	-4.00	X X	6.95
4.00		E ES	(5117)				organic fragmer	CLAY with	frequent ba	nds of ps	seudo-fibro rds silt Gra	ous peat a avel is sub	nd wood rounded to		_	sile - se	
4.00 - 4.	45 50				33		rounded	fine to co	parse of silts	tone and	sandstone	2.		ŀ	-	Sile Je Sile	
4.80							[ALLUVI	UM]							-		
5.00 - 5.	.45	F	5.00			S4								-	-	sle se sl	
5.00			(DRY)											F	_		
5.00 - 5.	45														_	Sile -	
5.00 - 5.	.50	- B													-		
5.80	45	E	6.00			s0*/										X SH	
0.00 - 0.	45	F	(DRY)			450mm									-	X <u>XHU</u>	
6.00	15	- ES													-	Sile se	
6.00 - 6.	.50	- в													-	Sile se	
6.80		ΕD												F	_	SIK	
7.00 - 7.	45	F	7.00			S7								ŀ	-	× <u></u>	
7.00 - 7.	.45	- D	(DRT)											-	-	X She	
7.00 - 7.	.50	В													- 7.60	×	3 35
7.80		- D					Soft bed Gravel i	oming firi	m reddish br lar to subrou	own sligł Inded fin	ntly sandy e to mediu	slightly gra um of mud	avelly CLAY. Istone siltstone	.			5.55
8.00 - 8.	.45	F	8.00			S7	and san	dstone (pi	robable wear	thered be	edrock).				-		
8 00 - 8	15	E	(DRY)				[ST MAU	JGHANS F	ORMATION-	UPPER C	LAY]			-	_		
8.00 - 8.	.50	В													_		
		È .													-		
8.80	20	E	9.00			\$50/									-		
5.00 5.	.50	F	(DRY)			225mm	At 9.00r	n becomii	ng stiff to vei	ry stiff.					-		
9.00 - 9.	.38									End of B	orehole				9.38		1.57
		E												-	-		
		F												-	-		
		F													-		
Boring						Progress					Groundv	vater					
Depth	Hole Dia	e Dia. Technique Crew Depth Hole			Depth of Hole	of Depth Cased Depth to Water Date Time Depth Struck Depth Cased Rose to in Mines							√lins	Depth Sealed	oth Sealed Remarks on Groun		
0.21	0.30	Concre	ete Core		D-Drill	0.00		DDV	29/07/22	08:00						No groundwat	er
9.38	0.30	Cable I	tion Pit Percussion		WN	1.20		DRY	10/08/22	18:00 08:00						have been ma	may sked by
						3.45	3.00	DRY	10/08/22	18:00						water added.	
Remarks	AGS	Inspecti	on pit hand e	xcavated to	1.20m (lepth and	no services	were four	nd.	•	•		•		Logged b	y RW	
Symbols and	d	LS samp Chisellin	ie = 1 x 60ml ig: 8.80-9.00r	glass vial, 2 n for 60 mi	. x 258m nutes.	i amber gla	ass jars and	т х тг ріа	รแต่ เนิ่ม.						Cnecked Figure	Dy JN Sheet 1	of 2
abbrevation explained or	s are n the	Boreho At 9.38n	le backfilled v n cable percu	with bentor	ite pelle Iole term	ts and top	ped with an	risings on a	completion. k.							06/01/202	23
accompanyi sheets.	ng key							0 2.00							Geo	NGCH	NCS
metres.	nis are in	Logged i	n accordance v	vith BS5930.	2015 + A1	.2020									geotechnical	I and geoenvironmenta	al apecialists
BOREHOLE RECORD - Cable Percussion

PRELIMINARY

Clear Protection Protection </th <th>Project</th> <th>N</th> <th>ewport Q</th> <th>uinn Phas</th> <th>ie 2</th> <th></th> <th></th> <th>Engineer</th> <th></th> <th>Pinnac</th> <th>le Cons</th> <th>ulting En</th> <th>gineers</th> <th></th> <th>Project</th> <th>No.</th> <th>PN</th> <th>N224395</th> <th></th> <th></th>	Project	N	ewport Q	uinn Phas	ie 2			Engineer		Pinnac	le Cons	ulting En	gineers		Project	No.	PN	N224395		
Linetty Constraints 120033 / N Ground Level 10.95 m · m0.1 Serenday Visite Visite <td>CI</td> <td>D.</td> <td></td> <td>1.1</td> <td></td> <td></td> <td></td> <td>National</td> <td>Grid</td> <td>Limite</td> <td>d 66 F</td> <td></td> <td></td> <td></td> <td>Boreho</td> <td>е</td> <td>Bł</td> <td>H26</td> <td></td> <td></td>	CI	D.		1.1				National	Grid	Limite	d 66 F				Boreho	е	Bł	H26		
Samples Borge live Samples Barrow Samples Description	Client	PI	nnacle Co	onsulting I	Engineers	Limite	3	Coordina	ites	18401	9.3 N				Ground	Level	10).95 m (DC	
Depth Name Vice Name Vice STATE Depth Legent	Sampli	ng	1	1	Propertie	es		Strata										Scale	1:5	0
	De	pth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	iption				Depth		Legend		Level (m OD)
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8.45 8.00 DRY 11/08/22 18:00 8.45 8.00 DRY 12/08/22 08:00 08:00 9.38 9.00 DRY 12/08/22 18:00 Image: Constraint of the second se	· · ·						3.45	3.00	DRY	11/08/22	08:00						+			
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Remarks Symbols and abbrevations are explained on the accompanying key sheets. All dimensions are in							9.38	9.00	DRY	12/08/22	18:00									
Checked by JN Symbols and abbreviations are explained on the accompanying key sheets. All dimensions are in	Remarks		1				I	<u> </u>				I	1	1		Logged b	y	RW		
abbrevations are explained on the accompanying key sheets. All dimensions are in	Symbols an	d d														Checked	by	JN	+ ? ·	of 2
accompanying key sheets. All dimensions are in perfectively and geoenvironmental speciality	abbrevation explained of	ns are In the														IBUIC		06/01/	2023	3
All dimensions are in geotechnical and geoenvironmental specialist	accompany	ing key														ഹ	'n	rr∟	N	
Incures. Logged in accordance with BS5930-2015 + A1-2020	All dimension metres	ons are in	Lograd in a	accordance ::	ith BS5020-	2015 J A1	.2020									geotechnica	i and	geoenvironm	ental	specialists

BOREHOLE RECORD - Cable Percussion

Project	Ne	wpor	t Qı	iinn Phas	e 2			Engineer		Pinnad	cle Cons	sulting En	gineers	Р	roject	No.	PN2243	95	
Client	Pin	nacle	Со	nsulting E	Engineers	Limite	d	National	Grid	Limite 32818	d 9.7 E			B	oreho	le Level	BH29		
Sampling	,				Propertie)c		Coordina Strata	ates	18409	9.2 N				irouna	Level	11.22 I	1 UL	50
Dept	h	Samp	le	Depth Cased & (to Water)	Strength	w(%)	SPT N	Strata			Descri	iption				Depth	Legen	d 1.	Level (m OD)
0.10 - 0.25	5	- B		. ,	N G			MADE G	ROUND: E	Black tarmad	adam.					- 0.10	00000	50 XX	11.12
0.20 0.20		_ D _ ES						\ [MADE G	GROUND - ROUND: F	TARMACAD Reddish brov	AM] vn gravel	lly medium	n to coarse	sand with a	low	0.25		à	10.97
0.30 - 0.60	0	_ В						cobble c	ontent. G	ravel is suba	ngular to	subround	led mediur	m to coarse	of	-			
0.50		_ ES						[MADE C	GROUND]	5.						- 0.90			10 32
0.90 - 1.20	0	— В - D						MADE G cobble c	ROUND: (ontent. G	Greyish brow ravel is suba	n gravel ngular to	ly medium o subround	to coarse led mediur	sand with a m to coarse	low of				10.02
1.00	_	– ES		1 20			C76	concrete			0				- //	- 1.20		- 0	10.02
1.20 - 1.65	5	_		(DRY)			C20	Light bro	wn grave	Ily medium	to coarse	SAND. Gr	avel is subr	rounded fine	e to	-			
1.20 - 1.70	0	_ В _ D				8		coarse o	f sandsto	ne. DEPOSITS-GR		21				-			
2.00 - 2.45	5			2.00			C46	Soft to fi	rm orang	ish brown sli	ghtly gra	velly sand	y CLAY witl	h a low				-	
2.00		ES		(DRY)				subroun	ded cobbl	e content. G	iravel is s	subrounde	d fine to co	barse of		_			
2.00 - 2.50	0	— B						[RIVER T	ERRACE D	EPOSITS-CC	HESIVE]					_		-	
2.70		- D														_			
3.00 - 3.45	5	_		3.00			C32									_			
3.00 - 3.50	0	- - В														-			
		_														_		-0	
3.70		– D						Extreme	ly weak re	eddish brow	n MUDST	TONE. Reco	overed as s	stiff to very s	tiff	- 3.70 -			7.52
4.00 - 4.45	5	-		4.00			S26	reddish l [ST MAU	brown slig IGHANS F	shtly gravelly ORMATION]	r clay.					-			
4.00 - 4.45	5	- - D		(DRY)						-						-			
4.00 - 4.50	0	B														_			
		_														_			
5.00 - 5.49	5	_		5.00			S39									-			
5.00 - 5.45	5	- - - D		(DRY)															
5.00 - 5.50	0	_ В		F 00			550/									_			
5.50 - 5.90	0	-		5.00 (DRY)			255mm									-			
		_									End of B	Borehole				- 5.90			5.32
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Boring		_					Progress		Depth to			Groundv	vater						
Depth Ho	ole Dia.	Techr	niqu	e n Pit		Crew	Hole	Depth Cased	Water	Date	Time	Depth Struck	Depth Cased	Rose to i	in Mins	Depth Seale	d Remarks	on Gro	undwater
5.90	0.30	Cable	e Per	cussion		PO/JT	5.90	5.00	DRY	28/07/22	18:00						strikes n	oted -	may
																	have bee water ad	n ma ded.	sked by
Derr'		Inspec	tion	pit hand e	excavated to	0 1.20m	depth and	no services	were fou	 nd.						Logged h	DV R	N	
Remarks	AGS	ES sam	ple	= 1 x 60ml	glass vial, 2	x 258m	l amber gl	ass jars and	1 x 1L pla	stic tub.						Checked	by JN		
abbrevations and explained on t	are he	Chisell	ing:	ess. 2.40-2 5.30-5.50n	n for 60 mir	nutes.	s anu 3.10	-3.30111 TOF	oo minute	.						⊢ıgure	Sł 06	1 eet 1/01/202	0T 1 3
accompanying sheets.	g key	Boreho At 5.90	ole b)m c	ackfilled w able percu:	ith bentoni ssion boreh	ite pellet Iole term	s and topp ninated on	ed with ari encounteri	sings on co ng bedroc	ompletion. k.						GCY	ກາວ	ц	
All dimensions metres.	s are in	Logged	l in a	cordance w	vith BS5930:2	2015 + A1	:2020									geotechnica	al and geoenvir	onmenta	apecialists



Pinnacle Consulting **Engineers** Limited

Project No.

PN224395

Client Pinnacle Consulting Engineers Limited

					Spatin	g Drive		Test	Drive			
Hole	Depth (m bgl)	Depth (m OD)	SPT Туре	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' value
вно2	1 20	9.68	s		Д	3	10	10	(11111)	(1111)	34	10 20 30 40 50
BH02	2.00	8.88	S		3	4	4	5	, 5	9	23	
BH02	3.00	7.88	S		8	10	10	10	10	10	40	
BH02	4.00	6.88	S		1	1	4	4	6	4	18	
BH02	5.00	5.88	S		2	3	3	4	4	5	16	
BH02	6.00	4.88	S		8	7	7	6	10	10	33	
BH02	7.00	3.88	S		4	10	12	12	8	10	42	
BH02	8.00	2.88	S		8	8	10	8	8	8	34	
BH02	9.00	1.88	S		12	13	16	12	10	12	50	
BH02	10.00	0.88	S		4	7	8	8	8	9	33	
BH02	11.00	-0.12	S		10	12	15	13	12	10	50/245	
Hammer No	o.:		JB14				Remarks					
Energy Ratio	o, Er (%):		63									
-/- Blows -*/- Total SWP Penet	s/penetratior blows/penet tration under	n (mm) after tration (mm) town weight	seating (mm)		S - SPT w C - SPT v L - Split	vith split spo vith cone Spoon liner	oon sampler used	r			GCC geotechnical	NECHNICS and geoenvironmental specialists

- L Split Spoon liner used
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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
			0		

Pinnacle Consulting Engineers Limited Client

			Seatin	g Drive		Test	Drive								
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco	prrected	א' SPT 'N 30	V' value 40 50
BH03	1.20	9.57	С		4	4	5	6	5	5	21				
BH03	2.00	8.77	С		5	5	5	6	5	6	22				
BH03	3.00	7.77	С		6	7	7	8	7	8	30				
BH03	4.00	6.77	С		5	7	9	9	8	9	35				
BH03	5.00	5.77	С		6	7	8	8	7	6	29				
BH03	6.00	4.77	С		5	6	6	7	8	8	29				
BH03	7.00	3.77	С		8	10	11	12	14	13	50/275				
Hammer N	0.:		SAM1				Remarks	i							
Linergy rdt	io, Li (/0j.		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,												
-/- Blov	vs/penetration	n (mm) after	seating		S - SPT v	vith split spo	oon sample	r							
-*/- Tota	al blows/penet	tration (mm)			C - SPT v	vith cone					GCC	ne	C	-N	ICS
SWP Pene	etration under	r own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geoe	nvironr	nental :	specialist

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Project	Newport Quinn Phase 2			Engineer		Pinnacle (Engineers	Consulting Limited	S	Proje	ct No.	Р	N22439	95		
Client	Pinnacle C	onsulting E	ingineer	s Limitec	ł										
					Seatin	g Drive		Test	Drive						
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco	20	d SPT 'I	N' value
BH04	1.20	9.57	С		9	16	50		. ,	. ,	50/245	10	20	50	40 50
Hammer N Energy Rat	o.: io, Er (%):		SAM1 75				Remarks								
-/- Blow	/s/nenetratio	n (mm) after	seating		ς _ ςdt	with solit soc	on sample	r							
вюм -*/- Tota	l blows/penet	tration (mm)	scatnig		C - SPTV	vith cone	on sample	1			GCO	ne	Cł	-N	ICS

SWP Penetration under own weight (mm)

- L Split Spoon liner used

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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive		Test	Drive						
Holo	Depth	Depth	SPT	SWP	0		0		150 -	225 -	SPT 'N'	Unco	orrected	SPT 'N	' value
ное	(m bgl)	(m OD)	Туре	(mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	225	300	Value				
PHOE	2.00	9 76	<u> </u>		0	12	16	24	(mm)	(mm)	E0/12E	10	20	30	40 50
вноз	2.00	7.76	C C		9	8	8	34 Q	٩	10	36				
	3.00	6.76			, 0	0	0 1/1	9 15	9 17	10	50/220				
Hammer No Energy Ratio	o.: o, Er (%):		SAM1 75				Remarks								
-/- Blows -*/- Total	s/penetration blows/penet	n (mm) after : ration (mm)	seating		S - SPT w C - SPT w	vith split spo vith cone	on sampler	r			Gec	ກັດ	Ċŀ-	N	

- L Split Spoon liner used

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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive		Test	Drive				
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncorrected SPT 'N'	value
BH06	1.20	9.66	С		5	4	6	6	5	5	22	10 20 30 2	+0 50
BH06	2.00	8.86	C C		7	9	9	8	7	7	31		
вно6	3.00	7.86	S		7	7	8	8	7	8	31		
BH06	4.00	6.86	C		8	11	12	14	14	10	50/250		
							Remarks						
Hammer No Energy Ratic	.: o, Er (%):		SAM1 75										
-/- Blows -*/- Total	/penetratior blows/penet	n (mm) after tration (mm)	seating		S - SPT w C - SPT v	vith split spo vith cone	oon sampler				Gec	NGCHN	cs

geotechnical and geoenvironmental specialists

AGS

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
			Engineers Limited		

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive		Test	Drive			
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' value 10 20 30 40 50
BH08	1.20	9.75	С		2	4	4	5	4	4	17	
BH08	2.00	8.95	С		5	5	6	5	5	5	21	
BH08	3.00	7.95	С		5	6	5	6	5	5	21	
BH08	4.00	6.95	С		7	8	8	7	8	9	32	
BH08	5.00	5.95	S		8	10	14	11	12	13	50	
Hammer N			SAM1				Remarks					
Hammer No).: 		SAM1				Remarks					
Energy Ration	o, Er (%):		75									
-/- Blows	s/penetratior blows/penet	n (mm) after tration (mm)	seating		S - SPT w C - SPT v	vith split spo vith cone	oon samplei	r			GGC	NCHNICS

SWP Penetration under own weight (mm)

L - Split Spoon liner used

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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
			Lingineers Linited		

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive		Test	Drive			
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' value 10 20 30 40 50
BH09	1.20	9.81	С		5	6	9	9	8	8	34	
вн09	2.00	9.01	С		8	9	10	10	11	12	43	
BH09	3.00	8.01	С		5	6	7	7	8	9	31	
BH09	6.00	5.01	С		5	6	6	7	6	7	26	
BH09	7.00	4.01	S		8	10	11	14	14	11	50/245	
Hammer No	D.:		SAM1				Remarks					
Hammer No Energy Rati	o.: o, Er (%):		5AM1 75									
/	s /nonstti	(mm) -ft.	contin-		C (DT	ith only -						
-/- вюw -*/- Total	blows/penet	ration (mm)	seating		S - SPIW	with cone	ion samplei	Ī			Gec	NECHNICS

SWP Penetration under own weight (mm) L - Split Spoon liner used

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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive		Test	Drive							
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco	orrecte	ed SPT ' 30	N' value 40	9 50
BH11	1.20	9.77	S		4	8	50		. ,	. ,	50/45	10	20	30	10	50
BH11	2.00	8.97	S		5	6	20	12	18		50/200					
BH11	3.00	7.97	S		3	2	4	6	8	8	26					
BH11	4.00	6.97	S		4	10	12	17	21		50/225					
BH11	5.00	5.97	S		10	10	15	18	17		50/280					
Hammer N			1814				Remarks									
Hammer No	o.:		JB14				Remarks									
Energy Rati	o, Er (%):		63													
-/- Blow -*/- Total	s/penetratior	n (mm) after ration (mm)	seating		S - SPT w C - SPT v	vith split spo vith cone	oon sample	r		(GGC	סת	Cł	-1		5

SWP Penetration under own weight (mm) L - Split Spoon liner used

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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

SWP

					Seatin	g Drive		Test	Drive							
Hole	Depth	Depth	SPT	SWP	0.75	75 450	0.75	75 450	150 -	225 -	SPT 'N'	Unco	orrected	I SPT 'I	N' value	
nole	(m bgl)	(m OD)	Туре	(mm)	0 - 75 (mm)	75 - 150 (mm)	U - 75 (mm)	75 - 150 (mm)	225	300	Value					
01112	1 20	0.70				10	4 -	25	(mm)	(mm)	50/110	10	20	30	40	50
	2.00	9.79	5		5	10	15	35	٥	٥	22					-
BH12	3.00	7 99	3 5		0	9	13	0 20	9 17	9	50/220					
BH12	4.00	6.99	S		7	12	20	18	12		50/190					
Hamme	r No.:		JB14				Remarks									
Energy F	Ratio, Er (%):		63													
-/- В	lows/penetratio	n (mm) after	seating		S - SPT w	/ith split spo	on sampler									
-*/- т	otal blows/pene	tration (mm)			C - SPT w	vith cone					Geo	ກຕ	C-	-N		5
SWP P	enetration under	r own weight	(mm)		L - Split	Spoon liner	used			_	geotechnical	and geos	environr	nental :	speciali	sts

AGS

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
Client	Pinnacle Consulting Engineers Limited				

					Seatin	g Drive		Test	Drive							
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco	orrecte	ed SPT '	N' valu	ie Fo
BH13	1 20	9 79	s		25		50		()	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	50/75	10	20	30	40	50
BH13	2.00	8.99	S		25		50				50/75					
BH13	3.00	7.99	S		2	3	7	4	2	4	17			_		_
BH13	4.00	6.99	S		1	5	5	5	6	10	26					
BH13	5.00	5.99	S		1	2	3	2	-	2	7			_		
BH13	5.60	5.39	S		25		50				50/15					
Hammer N	0.:		JB14				Remarks									
Hammer N Energy Rat	o.: io, Er (%):		JB14 63													
-/- Blov	/s/penetratior	n (mm) after	seating		S - SPT w	/ith split spc	on sampler	r					<u> </u>	_		
-*/- Tota	l blows/penet	ration (mm)			C - SPT v	vith cone					GCC	nc	C	-		S
SWP Pene	etration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geo	environ	mental	specia	lists
							Printed:	07/09/2022	2	AGS						

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

					Cart	a Drive		T '	Drive						
	Denth	Denth	SDT	S\A/D	Seatin	g Drive		rest		225	SPT 'N'	Und	orrecte	d SPT 'N	\' value
Hole	(m bgl)	(m OD)	Туре	(mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	Value	10	20	30	40 50
BH15	1.20	9.45	S		4	17	20	17	13		50/255				
BH15	2.00	8.65	S		2	3	2	2	3	4	11				
BH15	4.00	6.65	S		12	13	20	30			50/230				
Hammer No Energy Ratio).:), Er (%):		JB14 63				Remarks								
-/- Blows	/penetratior	n (mm) after	seating		S - SPT w	/ith split spo	on sample	r							
-*/- Total	blows/penet	ration (mm)			C - SPT v	vith cone					GCC	nc	C	-N	ICS
SWP Penet	ration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geo	environ	mental :	specialists

AGS

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive		Tost								
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco	orrecte 20	ed SPT ' 30	N' valu 40	е 50
BH16	1.20	11.92	С		8	10	14	28	8		50/160					
BH16	2.00	11.12	С		7	7	9	7	6	7	29					
BH16	3.00	10.12	С		10	16	19	21	10		50/175					
BH16	4.00	9.12	С		25		50				50/35					
BH16	5.00	8.12	С		8	12	19	31			50/120					
BH16	6.00	7.12	С		7	7	6	7	8	7	28					
BH16	7.00	6.12	S		9	16	19	22	9		50/165					
Hammer No Energy Ratio	o.: o, Er (%):		SAM1 75				Remarks									
-/- Blows -*/- Total	/penetration blows/penet	n (mm) after tration (mm)	seating		S - SPT v C - SPT v	vith split spo vith cone	oon sample	r			Gec	ກັດ	C			ς

SWP Penetration under own weight (mm)

- L Split Spoon liner used
 - Printed: 07/09/2022



Project	Newport Quinn Phase 2				Engineer		Pinnacle (Engineers	Consulting Limited	S	Proje	ct No.	PN22	24395		
Client	Pinnacle C	onsulting E	ingineer	s Limited	I			J							
					Seatin	g Drive		Test	Drive						
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncori	rected S	PT 'N' v a	alue
BH17	1.20	9.86	С		3	4	3	4	4	4	15	10	20 5	<u> </u>	. 50
			-		-		-				-				
Hammer N	er No.: SAM1						Remarks								
Energy Rat	io, Er (%):		75												
-/- Blow -*/- Tota SWP Pene	vs/penetratior Il blows/penet etration under	n (mm) after tration (mm) • own weight	seating (mm)		S - SPT w C - SPT v L - Split	vith split spo vith cone Spoon liner	l oon sampler used	r			GCO geotechnical			NIC ntal spe	CS cialists

SWP Penetration under own weight (mm)

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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited
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Project No. PN224395

Client Pinnacle Consulting Engineers Limited

Seating Driv				g Drive		Test	Drive					
Hole	Depth (m bgl)	Depth (m OD)	SPT Туре	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225	225 - 300	SPT 'N' Value	Uncorrected SPT 'N' value
DU10	1 20	0.92	ç		٥	10	0	7	(mm) 0	(mm) 10	24	10 20 30 40 50
BH18	2.00	9.83	5 5		2	3	3	, Д	2	3	12	
BH18	3.00	8.03	s		2 	6	15	15	2	5	50/225	
BH18	4.00	7.03	s		2	3	3	4	5	4	16	
BH18	5.00	6.03	s		2	2	3	4	4	5	16	
BH18	6.00	5.03	s		2	4	6	6	8	9	29	
BH18	7.00	4.03	s		1	1	2	3	3	3	11	
BH18	8.00	3.03	s		2	4	7	7	10	10	34	
BH18	9.00	2.03	s		2	3	, 2	,	9	10	28	
BH18	10.00	1.03	s		2	6	15	15	20	10	50/180	
DITIO	10.00	1.05	5		2	0	15	15	20		50/100	
Hammer N	0.:		JB14				Remarks					
Energy Rati	io, Er (%):		63									
-/- Blow	/s/penetratior	n (mm) after	seating		S - SPT w	vith split spo	on sampler	r				
-*/- Tota	l blows/penet	ration (mm)			C - SPT w	/ith cone					GOC	
SWP Pene	tration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geoenvironmental specialists

- L Split Spoon liner used

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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395	
Client	Pinnacle Consulting Engineers Limited					

Seating Drive **Test Drive** Uncorrected SPT 'N' value SPT 'N' Depth Depth SPT SWP 150 -225 -Hole 75 - 150 0 - 75 75 - 150 0 - 75 (m bgl) (mm) (m OD) Туре Value 225 300 (mm) (mm) (mm) (mm) (mm) (mm) 40 50 10 20 30 BH19 1.20 9.81 С 4 7 9 7 32 8 8 BH19 9.01 2.00 С 5 8 9 9 10 10 38 С BH19 3.00 8.01 6 6 7 8 8 9 32 BH19 4.00 С 5 7 7 7 30 7.01 8 8 BH19 С 5.00 6.01 7 6 6 7 8 9 30 BH19 5.50 5.51 С 9 9 10 10 16 14 50/290 Remarks SAM1 Hammer No.: Energy Ratio, Er (%): 75 -/-Blows/penetration (mm) after seating S - SPT with split spoon sampler -*/-C - SPT with cone 5 Total blows/penetration (mm) Georgeh L - Split Spoon liner used SWP Penetration under own weight (mm) geotechnical and geoenvironmental specialists AGS

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
			Lingineers Linited		

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive	ive Test Drive									
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco	rrected	I SPT 'I 30	N' valu	1e 50
BH20	1.20	9.81	С		8	10	9	14	14	14	51	10	20		10	50
BH20	2.00	9.01	С		7	8	8	9	9	10	36					
BH20	3.00	8.01	С		5	8	9	7	5	5	26					
BH20	4.00	7.01	С		5	6	7	7	8	7	29					
BH20	5.00	6.01	S		9	11	12	14	14	10	50/250					
							Remarks									
Hammer	No.:		SAM1				Remarks									
Energy R	atio, Er (%):		75													
-/- В	lows/penetration	n (mm) after	seating		S - SPT w	ith split spo	on sample	r								
-*/- т	otal blows/penet	tration (mm)			C - SPT w	vith cone					GCC	ne	CH	-N	IC	S
SWP P	enetration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geoe	nvironn	nental	specia	lists

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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive	ive Test Drive									
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco	rrected	30	N' valu 40	e 50
BH21	1.20	9.83	С		9	16	23	27	. ,	. ,	50/265		20			50
BH21	2.00	9.03	С		5	7	8	8	9	8	33					
BH21	3.00	8.03	С		6	9	8	9	9	10	36					
BH21	4.00	7.03	С		3	5	7	7	8	8	30					
BH21	5.00	6.03	S		6	10	11	13	15	11	50/270					
							Remarks									
Hammer	No.:		SAM1				Remarks									
Energy R	atio, Er (%):		75													
-/- Bl	ows/penetratior	n (mm) after	seating		S - SPT w	vith split spo	on sampler	r								
-*/- To	otal blows/penet	ration (mm)			C - SPT w	vith cone					GCC	ne	CH-	-N	IC	5
SWP Pe	enetration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geoe	nvironn	nental	special	lists

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Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395	
Client	Pinnacle Consulting Engineers Limited					

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					Seatin	g Drive Test Drive									
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco 10	orrected	d SPT 'N 30	l' value 40 50
BH22	1.20	9.50	С		8	8	9	9	10	9	37				
BH22	2.00	8.70	С		6	7	7	8	8	8	31				
BH22	3.00	7.70	C		5	7	7	8	8	9	32				
BH22	4.00	6.70	S		5	7	8	8	9	10	35				
BH22	5.00	5.70	S		7	8	9	8	9	9	35				
BH22	5.50	5.20	С		9	16	15	14	15	6	50/245				
Hammer N	0.:		SAM1				Remarks								
Energy Rati	io, Er (%):		75												
-/- Blow	s/penetratior	n (mm) after	seating		S - SPT v	vith split spo	on sample	r							
-*/- Tota	l blows/penet	tration (mm)			C - SPT v	vith cone					GCC	nc	C	-N	ICS
SWP Penetration under own weight (mm) L - Split Spoon liner						used				geotechnical	and geo	environr	mental s	specialists	

AGS

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

					Seatin	ating Drive Test Drive									
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncorr	rected SP	T'N'val	ue 50
BH24	1.20	9.86	С		25		50		. ,		50/50	10	20 30		50
BH24	2.00	9.06	С		25		50				50/65				
BH24	3.00	8.06	С		4	7	9	10	14	9	42				
BH24	4.00	7.06	С		6	7	7	8	7	8	30				
BH24	5.00	6.06	С		9	10	12	14	16	8	50/255				
							Remarks								
Hammer	No.:		SAM1				Remarks								
LIICI BY N	uiio, Li (<i>1</i> 0).		,,,												
-/- В	ows/penetratior	n (mm) after	seating		S - SPT w	ith split spo	on sample	r							
-*/- T	otal blows/penet	ration (mm)			C - SPT v	vith cone					Gec	ne	H	NIC	:5
SWP P	enetration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geoen	vironmen	tal speci	alists

SWP Penetration under own weight (mm) L - Split Spoon liner used

Printed: 07/09/2022

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
Client	Pinnacle Consulting Engineers Limited				

					Seatin	g Drive	Test Drive									
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unc 10	orrecte 20	ed SPT ' 30	' N' valu 40	ie 50
BH25	1.20	9.80	С		3	4	3	4	5	5	17					
BH25	2.00	9.00	С		5	6	6	8	8	9	31					
BH25	3.00	8.00	С		5	6	9	14	17	8	48					
BH25	4.00	7.00	С		8	12	19	31			50/247					
BH25	5.00	6.00	С		7	8	8	9	10	12	39					
BH25	6.00	5.00	S		8	14	4	16	16	14	50/241					
							Remarks									
Hammer No	o.:		SAM1				Remarks									
Energy Rati	o, Er (%):		75													
-/- Blow	s/penetratior	n (mm) after	seating		S - SPT w	/ith split spo	on sampler									
-*/- Total	blows/penet	ration (mm)			C - SPT v	vith cone					GCC	nc	C	-1		5
SWP Pene	tration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geo	environ	mental	specia	lists
							Printed:	07/09/2022	2	AGS						

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting
			Engineers Limited

Project No. PN224395

Pinnacle Consulting Engineers Limited Client

Note Depth (m bg/m Str. from Top Form Top Form Top Form						Seatin	g Drive		Test Drive				
Harmer No.: JB14 Remarks Karmer No.: JB14 Software State Software State Software State Karmer No.: JB14 Software State Software State Software State Software State Karmer No.: JB14 Software State Software State Software State Software State Software State Yange State Software State	Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' value
Barrier No.: Bit Bit <t< td=""><td>BH26</td><td>1.20</td><td>9.75</td><td>s</td><td></td><td>15</td><td>10</td><td>15</td><td>15</td><td>20</td><td>()</td><td>50/160</td><td>10 20 30 40 50</td></t<>	BH26	1.20	9.75	s		15	10	15	15	20	()	50/160	10 20 30 40 50
Barrier No: JS1 JS1 JS1 L Performance Hammer No: JS1 JS1 S<	BH26	2.00	8.95	S		15	10	15	15	20		50/175	
Hammer No.: Ib34 Composition Solution	BH26	3.00	7.95	S		10	9	7	3	-	1	11	
BARZE S.00 S.95 S I <th< td=""><td>BH26</td><td>4.00</td><td>6.95</td><td>S</td><td></td><td>1</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>8</td><td></td></th<>	BH26	4.00	6.95	S		1	2	2	2	2	2	8	
Bit 26 6.00 4.95 5 1 1 2 2 1 2 7 Bit 26 7.00 3.95 5 1 1 2 2 1 2 7 Bit 26 8.00 2.95 5 1 0 15 15 20 7 1 Bit 26 9.00 1.95 5 10 15 15 15 20 50/225	BH26	5.00	5.95	S		1	1	1	1	1	1	4	
BH26 7.00 3.95 S 1 1 2 2 1 2 7 BH26 8.00 2.95 S 1 - 1 2 2 2 7 BH26 9.00 1.95 S 10 15 15 15 20 50/225 BH26 9.00 1.95 S 10 15 15 15 20 50/225 BH26 9.00 1.95 S 10 15 15 15 20 50/225 BH26 9.00 1.95 S 10 15 15 15 20 50/225 BH26 9.00 1.95 S 10 15 15 20 50/225 BH26 9.00 1.95 S BH26 BH26 </td <td>BH26</td> <td>6.00</td> <td>4.95</td> <td>S</td> <td></td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>0*/450</td> <td>-</td>	BH26	6.00	4.95	S		-	-	-	-	-	-	0*/450	-
BH26 8.00 2.95 S 1 - 1 2 2 7 BH26 9.00 1.95 S 1.0 1.5 1.5 1.5 2.0 50/225 Hammer No:: J81.4 Remarks Energy Ratio, Er (%): 63 /* Bloxx/penetration (mm) after seating S - SPT with core S - SPT with core	BH26	7.00	3.95	S		1	1	2	2	1	2	7	
Hammer No.: JB14 Remarks tenergy Ratio, Er (%): 63 63 50 50 CCOCCENSES	BH26	8.00	2.95	S		1	-	1	2	2	2	7	
Hammer No.: //B14 Energy Ratio, Er (%): 63 /- Blows/penetration (mm) after seating S - SPT with split spoon sampler */- Total blows/penetration (mm) C - SPT with core	BH26	9.00	1.95	S		10	15	15	15	20		50/225	
Energy Ratio, Er (%): 63 -/- Blows/penetration (mm) after seating S - SPT with split spoon sampler */- Total blows/penetration (mm) C - SPT with cone	Hammer No	D.:		JB14				Remarks	i				
-/- Blows/penetration (mm) after seating S - SPT with split spoon sampler */- Total blows/penetration (mm) C - SPT with cone Geoteenses	Energy Rati	o, Er (%):		63									
-/- Blows/penetration (mm) after seating S - SPT with split spoon sampler */- Total blows/penetration (mm) C - SPT with cone													
*/- Total blows/penetration (mm) C - SPT with cone GEOIECHNICS	-/- Blow	s/penetratior	n (mm) after	seating		S - SPT v	vith split spc	on sample	r			~~~	
	-*/- Total	blows/penet	tration (mm)			C - SPT v	vith cone					GCC	VICCHNICS

- L Split Spoon liner used

Printed: 07/09/2022

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395	
Client	Pinnacle Consulting Engineers Limited					

С

					Seatin	g Drive	Test Drive					
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' value 10 20 30 40 50
BH29	1.20	10.02	С		2	5	7	7	6	6	26	
BH29	2.00	9.22	С		7	9	12	12	10	12	46	
BH29	3.00	8.22	С		5	8	7	8	8	9	32	
BH29	4.00	7.22	S		4	5	6	6	7	7	26	
BH29	5.00	6.22	S		8	9	9	10	10	10	39	
BH29	5.50	5.72	S		9	11	12	13	14	11	50/255	
Hammer No	o.:		SAM1				Remarks					
Energy Rati	o, Er (%):		75									
-/- Blows -*/- Total	s/penetratior blows/penet	n (mm) after ration (mm)	seating		S - SPT w C - SPT v	vith split spo vith cone	oon samplei	r			GGC	NECHNICS

SWP Penetration under own weight (mm)

L - Split Spoon liner used

Printed: 07/09/2022





SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

JB Site Investigation
Ramparts Business Park
Berwick upon Tweed
TD15 1TB
Tel: 01289 304646

Instrumented Rod Data

Diameter d _r (mm):	54
Wall Thickness tr (mm):	6.1
Assumed Modulus Ea (GPa):	208
Accelerometer No.1:	6178
Accelerometer No.2:	5843

SPT Hammer Ref:	JB14
Test Date:	16/06/2022
Report Date:	14/07/2022
File Name:	JB14.spt
Test Operator:	JB

SPT Hammer Information

Hammer Mass	m (kg):	63.3
Falling Height	h (mm):	760
SPT String Leng	gth L (m):	11.0

Comments / Location





63



Velocity



Calculations

Area of Rod A (mm2):		918
Theoretical Energy Etheor	(J):	473
Measured Energy Emeas	(J):	300

Energy Ratio Er (%):



Signed: Title:

SPT Hammer Energy Test Report

Borehole

in accordance with BSEN ISO 22476-3:2005

Unit 8	
Orton Enterprise	Centre
Orton Southgate	
Peterborough	
PE2 6XU	

Instrumented Rod Data

Diameter dr (mm):	54
Wall Thickness tr (mm):	6.3
Assumed Modulus Ea (GPa):	208
Accelerometer No.1:	11853
Accelerometer No.2:	10332

SPT Hammer Ref:	SAM1
Test Date:	05/05/2022
Report Date:	05/05/2022
File Name:	SAM1.spt
Test Operator:	PR

SPT Hammer Information

Hammer Mass m (kg): 63.0 Falling Height h (mm): 760 SPT String Length L (m): 15.0

Comments / Location

Maximum calibration interval is 12 months





Calculations

Energy Ratio Er (%	6):	75	
Measured Energy Emeas	(J):	356	
Theoretical Energy Etheor	(J):	473	
Area of Rod A (mm2):		944	





P. Rodgman

Signed: PR Title: Operator

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APPENDIX 4

Cable Percussion -Rotary Follow-on Borehole Records

DATA SHEET - Symbols and Abbreviations used on Records

DATA	A SHEET - Symbols a	nd Abbreviations u	sed on Re	cords	G
Sample	e Types	Groundwater		Strata, Continued	
В	Bulk disturbed sample	Water Strike	∇	Mudstone	
BLK	Block sample	Depth Water Rose To	Y		
С	Core sample			Siltstone	* * * * * *
D	Small disturbed sample (tub/jar)	Instrumentation		Sitstone	× × × × × × × × × × × × × × × × × × ×
E	Environmental test sample		22	Metamorphic Rock	* * * * *
ES	Environmental soil sample	Seal		Fine Grained	~~~~~
EW	Environmental water				******
G	Gas sample			Medium Grained	~~~~
L	Liner sample	Eilean	-		\sim
LB	Large bulk disturbed sample	Filter	1	Coarse Grained	$\sim \sim$
Р	Piston sample (PF - failed P		- -	Igneous Rock	$\sim\sim$
тw	Thin walled push in sample			Fine Grained	~~~~~
U	Open Tube - 102mm	Seal			+ + + +
	diameter with blows to take sample. (UF - failed U sample)			Medium Grained	+ + + + + + + + + + + + + + + + + + + +
UT	Thin wall open drive tube	Strata	Legend	Coarse Grained	
	with blows to take sample.	Made Ground			
V	(UTF - failed UT sample)	Granular			
Ŵ	Water sample	Made Ground		Backfill Materials	
#	Sample Not Recovered	Cohesive		A	Č.
Insitu T	Lesting / Properties	Topsoil		Arisings	
		10000			Ň
CBRP	CBR using TRL probe	Cobbles and Boulders	.0.8	Bentonite	
СНР	Permeability Test		0.0		A .
COND	Electrical conductivity	Gravel		Concrete	• •
тс	Thermal Conductivity				
TR	Thermal Resistivity				
HV	Strength from Hand Vane	Sand		Sand	[.
	CBR Test				2
IRES	Resistivity Test	Silt	× * * *	Grout	
MEX	CBR using Mexecone		* * *		
	Probe Test	Clav	× × ,	Gravel	00000
	Packer Permeability Test	Clay		Graver	00
	Plate Load Test Strongth from Pocket				
FF	Penetrometer	Peat	Ma.	Asphalt/Tarmacadam	
Temp	Temperature		N/C		-
VHP	Variable Head Permeability Test		NZ.	Rotary Core	
VN	Strength from Insitu Vane	Note: Composite soil typ	es shown	RQD Rock Quality D	esignation
w%	Water content	by combined symbols		(% of intact con FRACTURE INDEX	e >100mm)
(All othe	er strengths from	Chalk		Fractures/metre	2
S	Standard Penetration Test			NR No core re	covery
~	(SPT)	Limestone		AZCL Assumed zo loss	one of core
	SPT Popula				
IN _/_	SFI Result Blows/penetration (mm)	Sandatara			
-/-	after seating drive	Sandstone			
-*/- (mm)	Total blows/penetration				
()	Extrapolated value	Coal			



PRELIMINARY

Project	Ne	wport Q	uinn Phas	ie 2			Enginee	•	Pinna	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Pir	nnacle Co	onsulting	Engineer	Limite	ł	National	Grid	22770	a 10.5 E				Boreho	le 	BH01	
							Coordina	ates	18419	0.8 N				Ground	Level	10.86 m (טכ
Samplin	g	6 I		Properti	25		Strata									Scale	1:50
Dep	th	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	ption				Depth	Legend	(m OD)
0.20		- D					MADE G	ROUND: B	lack tarmad	adam.					- 0.19		10.67
0.20		E ES					MADE G	ROUND -	IARMACAL eddish brov	vn slightl	v clavev g	ravellv me	dium sand	1.			10.07
0.20 - 0.6	50	В					Gravel is	angular fi	ine to coars	e of sand	stone and	limestone	e.		_ 0.56		10.30
0.50		_ D - FS						SROUND	ight brown	aliah thu a		ngularta	ubroundo	dfing	_		
0.60 - 1.2	20	В					to coars	e gravel of	siltstone, s	andstone	and limes	stone.	ubrounde	a nne	-		38
1.00		- D					[MADE (SROUND]							- 1.20	*****	9.66
1.00	55	_ ES	(DRY)			S11	Soft to fine to c	rm brown	gravelly sau	ndy CLAY.	Gravel is	subangula	r to subro	unded	_		
1.20 - 1.6	55	_ D					[RIVER T	ERRACE D	EPOSITS-CC	HESIVE]					-		38
1.20 - 1.7	70	В													-		
2.00 - 2.4	45	-	2.00			S12									_		38
		-	(DRY)												_		10
2.00	15	- ES													-		38
2.00 - 2.5	50	— В													-		38
2.80		- D													F		
3.00 - 3.4	45	_	3.00			S22	Medium	dense hrr	wn verv sa	ndv clave	W GRAVEL	Gravel is	subround	ed fine	- 3.00		7.86
2 00			(DRY)				to medi	um of sand	stone and	siltstone.	JY GIVWEE	. Graveris	Subround	cume	E		38
3.00 - 3.4	45	D					[RIVER T	ERRACE D	EPOSITS-GF	RANULAR]				_		10
3.00 - 3.5	50	в													_		38
3.80		- D													_		
4.00 - 4.4	45		4.00			S14											38
4 00		– – FS	(1.50)												_		10
4.00 - 4.4	45	D													_		38
4.00 - 4.5	50	В													_		10
4.80		_ D			16										_	· · · · · ·	38
5.00 - 5.4	45	_	5.00			S9	Firm to s	stiff reddis	h brown gra	velly CLA	Y. Gravel i	is subangu	lar fine to)	- 5.00	. <u></u>	5.86
5.00		– ES	(DRY)				medium	of mudsto	one (Weath	ered muc	dstone).	-			_		
5.00 - 5.4	45	_ D					[ST MAU	GHANS FO	ORMATION-	UPPER C	LAY]				_		38
5.00 - 5.5	50	– В													-		38
5.80		– D													-		10
6.00 - 6.3	38	-	6.00 (DRV)			\$50/									-		38
6.00 - 6.3	38	- - D	(011)			22311111									-		1 40
		-						Boreho	le continue	d by rota	ry techniq	ues - see i	next page		- 0.38		4.48
		_													_		
		_													F		38
		Ē													E		10
		E													E		38
		_													_		38
		_													_		
		_													_		38
		_													_		10
		_													_		38
		_													_		38
		_													_		
		-													-		38
		-													-		10
		-													-		38
		-													 -		
		F													+		
		-													-		22
Boring						Progress					Groundy	water					
Depth H	Hole Dia.	Techniqu	Je		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	k Depth Cased	Rose to	in Mins	Depth Seale	ed Remarks on O	Groundwater
1.20	0.30	Inspectio	on Pit		AC/RW	0.00	2.00	DBV	09/08/22	08:00	3.00	3.00	1.50	20		Water enter	ing hole
6.38 20.20	0.15 0.12	Rotary C	ore		CI/JS	3.00 3.00	3.00	1.50	09/08/22	17:00 08:00	15.00	10.50				overnight. Driller note	alarge
			-		.,	6.38	6.00	DRY	10/08/22	17:00						water strike	during
Derre !		Inspection	n pit hand e	xcavated to	1.20m c	lepth and i	no services	were foun	d.		I				Logged H	Dy RW	
Remarks	AGS	ES sample	= 1 x 60ml	glass vial,	2 x 258m	l amber gla	iss jars and	1 x 1L plas	tic tub.						Checked	by JN	
Symbols and abbrevations	are	Slow prog	ress: 5.50-6	6.00m for 6	0 minute	es. Im with a r	eowranno	d slotted or	oction from f	14 00m to	18 00m u	vith a fluch	cover inst	alled	Figure	Shee	t 1 of 4
explained on accompanyir	the ng kev	Backfill de	tails from b	ase of hole	: benton	ite seal up	to 18.00m	, gravel filte	er up to 12.0	0m, bent	onite seal	up to 0.20	m, concret	te up to		05/01/	-723
sheets.	ns are in	ground le	vel.												Gec	רכפר	NICS
metres.		Logged in a	accordance v	ith BS5930:	2015 + A1	:2020									geotechnic	ar and geoenvironm	ental specialists

PRELIMINARY

Project	Ne	wport Quinn Ph		Enginee	r	Pinna	cle Cons	ulting En	gineers		Project	No.	PN224395				
Client	Pin	nacle Consultin	o Engine	⊃rs l im	nited		National	l Grid	Limite 32770	d)0.5 E				Boreho	le	BH01	_
					nicu		Coordina	ates	18419	0.8 N				Ground	Level	10.86 m O	D
Samplin Sample /	g/Testing SPT N/	Drilling Core Run/Depth	Depth Cased	TCR/	RQD		Strata				Detail				Donth	Scale 1	:50 Level
SPT Depth	Type	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	Bo	rehole con	ntinued by ro	otary	Detall				Depth	Legend	(m OD)
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	20 0	0		Bo	rehole con technique	ntinued by ro	otary w						Legend	
						AZCL	Firm to s slightly s Gravel is to medi (Weathe	stiff dark n sandy sligh s angular t ium of mu ered muds	eddish brow ntly gravelly o subangula dstone tone).	n CLAY. Ir fine	Betwee zone of	n 6.00-7.1 core loss.	9m, assun	ned	1_ 		
F						NI NI	CLAY]	JGHANS FO	ORMAIION-	UPPER	Betwee	n 7.19-7.5	0m, non-iı	ntact.	-		
- 7.50 - - 7.95 -	C26	7.50 - 9.00 (92mm)	7.50 ADDED	66 46	34	AZCL					Betwee zone of	n 7.50-8.0 core loss.	0m, assun	ned			10000
- 8.18 - - 8.26 - 8.26 - - 8.38 - 8.42 - - 8.61	C C C					<u>NI</u> 9	Extreme brown N closely t light gre [ST MAL	ely weak to MUDSTONI to medium ey mudstor JGHANS Fo	o weak reddi E with occas n spaced noc ne. ORMATION]	ish ional lules of	Betwee recover horizoni deg.), ve spaced, disconti	n 8.00-8.1 ed as grave tal to inclir ery closely planar, sm nuities.	7m, non-ii el. ned (15 - 4 to closely nooth	ntact, !5	8.00 - - - - - - - - -		2.86
- 8.61 - - 8.71 - 8.73 - - 8.80 - 8.86 - - 9.00 - 9.00 - 9.45	C C C C42	9.00 - 10.50 (92mm)	9.00 ADDED	10 0	0	AZCL					Betwee zone of	n 9.00-10. core loss.	34m, assu	med			
Boring	·			ı	- I	Progress	I				Groundw	/ater			ı		1
Depth 1.20 6.38 20.20	Hole Dia. 0.30 0.15 0.12	Technique Inspection Pit Cable Percussion Rotary Core		Cre AC/ WO CJ/	ew RW /JT /JS	Depth of Hole 0.00 3.00 3.00 6.38	Depth Cased 3.00 3.00 6.00	Depth to Water DRY 1.50 DRY	Date 09/08/22 09/08/22 10/08/22 10/08/22	Time 08:00 17:00 08:00 17:00	Depth Struck 3.00 15.00	Depth Cased 3.00 10.50	Rose to 1.50	in Mins 20	Depth Seale	ed Remarks on Gr Water enterin overnight. Driller notes water strike o	oundwater ng hole large during
Remarks Symbols and abbrevation: explained or accompanyii sheets. All dimensio metres.	I S sare / n the E ng key E sans are in	nspection pit hanc S sample = 1 x 60: ilow progress: 5.5(A 50mm standpipe Backfill details fron ground level. Logged in accordanc	d excavated ml glass via D-6.00m for was install n base of h	l to 1.20 al, 2 x 23 r 60 mi led to 1 ole: bei 30:2015	0m de 58ml a inutes .8.00m ntonite + A1:2	pth and r amber gla n with a g e seal up 020	no services ass jars and geowrappe to 18.00m	I s were foun I 1 x 1L plas d slotted se I, gravel filt	l Id. stic tub. ection from 1 er up to 12.0	14.00m to 10m, bent	o 18.00m w conite seal o	ith a flush up to 0.20r	cover insta n, concrete	illed. e up to	Logged I Checked Figure	by RW by JN Sheet 05/01/20	2 of 4 ²²³

Project	Newport Quinn Phase 2				Enginee	r	Pinnac	le Cons	ulting E	ngineers		Project	No.	PN224395			
Client	D:			1 :	. :		National	Grid	Limite	d 05 F				Boreho	e	BH01	
Client	PIN	nacie Consultin	g Enginee	ers Lin	nited		Coordina	ates	18419	0.8 N				Ground	Level	10.86 m Ol	D
Samplin	g/Testing	Drilling	-	-			Strata								_	Scale 1	:50
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail				Depth	Legend	Level (m.OD)
-		9.00 - 10.50	9.00	10	0										_	8	8
F		(92mm)	ADDED	0											-		0.52
- 	C50/	10.50 12.00	10.50		47	NI AZCI	Light gre	ey and rec	SILTSTONE	with	Betwe	en 10.34-1	0.50m, nor	I-	-10.34 	* * * * * * *	0.32
10.68	40mm	10.50 - 12.00 (92mm)	10.50 ADDED	94 61	47	NI	as subro	ounded to	rounded fine	e to	\ <u>intact</u> .	on 10 50 1	0.5.9m	/	-		0.11
-10.70 -	С	(52)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			12 1940	coarse g	gravel).			zone c	of core loss.	0.5611, 855	umeu	_ 10.75		0.11
- 10.84						22 NI	ST MAL	JGHANS F	ORMATION]		Betwe	en 10.58-1	0.75m, nor	I-	-		
F						15	MUDST	ONE (Reco	overed as stif	f	intact.	10 01 1	0.00		-		
F						15	slightly	gravelly s	andy clay).		intact.	recovered	o.96m, nor as gravel.	-	_		
11.61 -	C					10	Weak to	JGHANS F	ORMATION]	sh	Betwe	en 11.09-1	1.17m, nor	-	-		
E						N	brown f	ine to me	dium grainec	1	intact,	recovered	as gravel o	f light	_		
E		12.00 - 13.50	10.50	90	47	AZCL	SANDST	ONE with	occasional		Betwe	en 11.57-1	1.63m, nor	-	_		•
E		(92mm)	ADDED	/8			light gre	i to widle	ly spaced bec	is of wities	intact,	recovered	as gravel.				°
-12.50 -	С					22	are hori	zontal to	inclined (10 -	35	Betwe	en 11.63-1 ined (40 de	1.92m, hor	izontal			•
12.60							deg.), v	ery closel	y to closely s	paced,	spaced	d, planar, sr	nooth		_		•
12.83 -	C					5	planar t	o undulat casional b	ing and smoo lack staining.	otn	discon	tinuities.			_		
13.05 -	С					14	[ST MAU	JGHANS F	ORMATION]		Betwe	en 11.92-1 recovered	2.00m, nor as gravel	-	_		
- 13.20	6										Betwe	en 12.00-1	2.14m, ass	umed	_		·
13.40 -	C	13.50 - 15.00	10.50	98	55	AZCL					zone c	f core loss.			_		°
2		(92mm)	ADDED	71		22					Betwe	en 12.14-1 recovered	2.24m, nor as gravel	-	_		•
E_							-				Betwe	en 12.51-1	2.87m,		_		•
F						11					horizo	ntal, mediu	Im spaced,	planar,	-		0
_14.32 -	С					NI	-				Betwe	n discontin en 13.21-1	uities. 3.38m. ver	tical.	_		
14.50						15					planar	, smooth di	scontinuity		_		ľ
F						NI 15					Below	13.50m, be	ecoming sti	rong.	_		•
<u>–</u>						NI]				Zone c	en 13.50-1. f core loss.	3.53m, ass	umed	_	▼ ::::: •]	°
F		15.00 - 16.50 (92mm)	10.50	100	54	NI 33					Betwe	en 13.53-1	3.56m, nor	-	-		•
- 15.37 -	С	(521111)	ADDED			NI	-				intact,	recovered	as gravel.		_		•
15.46						13					intact.	recovered	as gravel.	-	_		•
15.55 -	C					NI	-				Betwe	en 13.76-1	3.92m, ver	tical,	-		
-						6					planar	to undulat	ing, smoot	h to	-		ľ
F						0					Betwe	en 13.92-1	3.97m, nor	-	-		°
- 16.42 -	с					22	1				intact,	recovered	as gravel.		-	::::: •	•
- 16.50		16.50 - 18.00	10.50	87	24	AZCL					Betwe	en 13.97-1 ined (50 - 6	4.33m, hor	izontal	-		•
F		(92mm)	ADDED	62			-				spaced	d, planar, sr	nooth	Jery	-		•
–						29					discon	tinuities wi	th black sta	aining.			•
E											recove	en 14.33-14 red as grav	4.34, non-i el.	ntact,			
L											Betwe	en 14.66-1	4.74m, nor	-	_		
L						14					intact,	recovered	as gravel.	inod	_		°
E											(25 - 4	5 deg.), clo	sely spaced	liieu 1,	_		•
-18.00 -	C	18.00 - 19.00	10.50	100	42	NI	1				planar	, smooth di	scontinuiti	es	_		
18.09		(92mm)	ADDED	72		16					with b	lack stainin	g. 5 37m nor	-	_		
F						22					intact,	recovered	as gravel.		-		
F											Betwe	en 15.73-1	5.84m, nor	-	_		
- 18.92 -	с										Betwe	recovered en 16.28-1	as gravei. 6.50m. hor	izontal	-		
- 19.00		19.00 - 20.20	10.50			AZČL					to incl	ined (50 de	g.), closely		-		
F		(92mm)	ADDED			13	1				space	d, planar, sn	nooth		-		
F						NI					Betwe	tinuities. en 16.50-1	6.69m, ass	umed	_		
F						1 ₽	1				zone c	f core loss.			-		
19 95 -	C					10					Betwe	en 16.69-1	6.71m,		-		
20.20																	
Boring	1			I	<u> </u>	Progress	<u> </u> ;				Ground	water					1
Depth	Hole Dia.	Technique		Cre	ew	Depth of	Depth Cased	Depth to	Date	Time	Depth Stru	ck Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on Gro	oundwater
		•				6.38	6.00	2.90	18/08/22	08:00		1				15.00-16.50m	n core
						15.00	10.50	2.90	18/08/22	17:00						run.	
						15.00 19.00	10.50	2.90	19/08/22	08:00 17:00							
	_					2.50			.,,						<u> </u>		
Remarks	A65														Logged b Checked	ру KW by JN	
Symbols and	l s are														Figure	, Sheet	3 of 4
explained o	the															05/01/20	23
accompany	пд кеу														\sim		

All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020 GCOTCCHNICS postechnical and gecenvironmental specialists

PRELIMINARY

Project	Ne	wport Quinn Ph	nase 2				Enginee	r	Pinnad	cle Cons	ulting En	gineers	Project	No.	PN224395	
Client	Dir	nacla Concultin	a Engino	ore Line	itad		National	Grid	Limite 32770	d 10.5 F			Boreho	le	BH01	
Client	PI	inacie Consultin	g Engine	ers Lim	ntea		Coordina	ates	18419	0.8 N			Ground	Level	10.86 m Ol	0
Samplin	g/Testing	g Drilling	1			1	Strata								Scale 1	:50
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail			Depth	Legend	Level (m OD)
_		19.00 - 20.20	10.50								non-int	act, recove	ered as gravel.	- 20.20		-934
E		(92mm)	ADDED								intact, r	recovered	as gravel.			5.54
-											Betwee	n 17.06-1	7.16m, non-	_		
F											intact, r	recovered	as gravel. 7.25m. pop-			
-											intact, r	recovered	as soft gravelly			
F											clay.					
-											Betwee	en 17.25-1 cal mediu	7.50m, horizontal m spaced planar	-		
F											smooth	discontin	uities.	F		
-											Betwee	n 17.50-1	8.00m, horizontal	-		
–											spaced.	ied (45 de . planar, sn	g.), c;ioseiy nooth	–		
F											discont	inuities.		-		
F											Betwee	n 17.92-1	8.00m, extremely	-		
F											sandy c	iav.	recovered as	-		
F											Betwee	n 18.00-1	8.12m, non-	-		
-											intact, r	recovered	as gravel.	_		
F											undulat	in 18.12-16	th discontinuity.	-		
E											Below 1	18.30m, be	ecoming weak to	Ë I		
E											mediun	n strong.	8 75m horizontal	E I		
E											to inclir	ned (30 - 4	5 deg.),			
<u> </u>											extrem	ely closely	to closely	_		
L											spaced,	, planar, sn inuities wi	nooth th black staining	_		
L											Betwee	n 18.75-18	8.84m, non-	_		
L											intact, r	recovered	as gravel.	_		
F											Betwee	n 18.84-19 Ital closely	9.00m, v spaced planar			
-											to stepp	ped, smoo	th	_		
E											discont	inuities.		_		
<u>–</u>											Betwee	en 19.00-19	9.05m, assumed	-		
F											zone of	core loss.	,	-		
-											Betwee	n 19.13-19	9.19m, non-	-		
-											Betwee	ecovered n 19.44-19	9.56m, vertical,	-		
-											undulat	ting, smoo	th discontinuity.	-		
-											Betwee	n 19.56-19	9.61m, non-	-		
F											Betwee	n 19.66-19	9.72m, non-	-		
F											intact, r	recovered	as gravel.	_		
F												End of E	Sorehole	-		
F														-		
E														_		
L														_		
<u> </u>														-		
F														E		
F														E		
F														F		
F														 		
F														⊨		
F														F		
F														F		
F														F		
F														F		
F														F		
Boring						Progress		Donth /			Groundy	water				
Depth	Hole Dia.	Technique		Cre	w	Hole	Depth Cased	Vepth to Water	Date	Time	Depth Struck	Depth Cased	Rose to in Mins	Depth Seale	d Remarks on Gro	oundwater
						19.00 20.20	10.50	2.40	22/08/22	08:00 17:00						
						20.20	10.30		22/00/22	17.00						
Remarks				-			1		I	1	I	1	I	Logged b	y RW	
Symbols	1													Checked	by JN	1 of 4
abbrevation	s are													⊢ıgure	5heet - 05/01/20	+ OT 4 23
explained of accompanyi	ng key													~~~		
sheets. All dimensic	ins are in													GGC	JIGCH	NICS
metres.		Logged in accordanc	e with BS59	30:2015	+ A1:2	2020									<u></u>	

PRELIMINARY

Project	Ne	wport Q	uinn Phas	e 2			Engineer		Pinnac	cle Consi	ulting En	gineers		Project	No.	PN224395	
Client	Pin	inacle Co	nsulting (Engineers	Limited	ł	National	Grid	22787	a 3.4 E				Borehol	e	BH04A	
							Coordina	ites	18421	9.4 N				Ground	Level	10.86 m	
Samplin	g	Sample	Depth Cased	Propertie	S		Strata									Scale	1:50 Level
Dep	ith	Type	& (to Water)	kPa	w(%)	SPT N				Descrip	otion				Depth	Legend	(m OD)
0.25 0.25 0.25 - 0.5	55	D ES B					MADE G [MADE G MADE G subangu	ROUND: E GROUND - ROUND: F lar fine to	• TARMACAD • TARMACAD Reddish brov • coarse of si	adam. AM] vn gravell Itstone ar	y medium nd sandsto	i sand. Gra	avel is ang	ular to	- 0.20 		10.66
0.60 0.60 0.60 - 1.2 1.00	20	– D _ ES _ B _ D					[MADE G PROBAB cobble c siltstone	BROUND] LE MADE ontent. G and sand	GROUND: Bi ravel is suba	rown sligł ngular to	ntly gravel subround	ly mediur led fine to	n sand wit coarse of	h a low	- - - - - -		0.00
1.00 1.20 - 1.4	46	ES	1.20 (DRY)			C50/ 115mm	Very stiff subround	GROUND] f brown sl ded fine t	ightly gravel o coarse of s	ly sandy (iltstone a	CLAY. Grav and sandst	el is subai one.	ngular to	/	- 1.20 - - -		9.00
1.20 - 1.3	70	В					[RIVER T	ERRACE D	EPOSITS-CO	HESIVE]					-		
2.00 - 2.3	30	_	2.00			C50/									_		
2.00 - 2.5	50	B 	(DRY)		11	145mm									- - - - -		
3.00 - 3.4	45		3.00			C27									-	· · · · · · · · · · · · · · · · · · ·	
3.00 - 3.9	50	В	(DRY)				Stiff redo [ST MAU	dish brow GHANS F	n slightly sar ORMATION-	ndy CLAY. UPPER CL	.AY]				- 3.10 - - - -		7.76
4 00 4 3	20	-	4.00			550/									-	¥	C 96
4.00 - 4.:	59	_	4.00 (3.90)			237mm	Firm to s	tiff reddis unded fin	sh brown slig e to coarse o	htly grav	elly sandy one. Some	CLAY. Gra	vel is suba of light gre	ngular v clav			0.80
4.00 - 4.4							(probabl [ST MAU Below 4.	e weathe IGHANS F 00m, ver	red bedrock ORMATION- y stiff.). UPPER CL	AY]						
								Boreho	le continued	l by rotar	y techniq	ues - see i	next page				
Boring					1	Progress					Ground	vater					
Donth		Technia	۹		Crow	Depth of	Denth Casad	Depth to	Data	Timo	Groundy	Denth Cost	Rosa to	in Mine	Denth Cool-	Remarks on	Groundwator
1.20 4.45 21.00	0.30 0.15 0.12	Inspectio Cable Per Rotary Co	e n Pit rcussion ore		AC/RW WO/JT	Hole 0.00 1.20 1.20 4.45	1.20 4.00	Water DRY DRY DRY 3.90	10/08/22 10/08/22 16/08/22 16/08/22	08:00 17:00 08:00 17:00	4.00	3.30	3.90	20	uepth Seale	Slow inflow	
Remarks Symbols and abbrevations	are the	Inspection ES sample Slow progr Chiselling:	pit hand e = 1 x 60ml ess: 1.80-3 3.70-4.00n	xcavated to glass vial, 2 .00m for 1 n for 60 min	1.20m d x 258ml 50 minute nutes.	epth and r amber gla es.	no services ass jars and	were four 1 x 1L pla:	id. stic tub.					1	Logged b Checked Figure	y AC by JN Shee 05/01	et 1 of 4
accompanyir sheets.	ng key	A 50mm st Backfill de	andpipe w tails from b	as installed ase of hole	to 17.00 : benton	m with a g ite seal up	eowrapped to 17.00m,	slotted s gravel filt	ection from 1 er up to 15.0	.5.00m to 0m, bento	17.00m w onite seal	ith a flush up to 0.30	cover insta m, concrete	illed. e up to	Geo	אספת	NICS
All almension metres.	ns are in	ground lev Logged in a	el. ccordance w	vith BS5930:2	2015 + A1:	2020									geotechnica	i and geoenvironm	ental specialists

Project	Ne	wport Quinn Ph	iase 2				Enginee	r	Pinnad	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Dir	unacla Consultin	a Enginor	orc Lin	nitod		National	l Grid	Limite 32787	d '3.4 E				Boreho	le	BH04A	
Client	ΓII		g Linginiee	EIS LIII	nteu		Coordina	ates	18421	.9.4 N				Ground	Level	10.86 m O	D
Samplin	g/Testing	g Drilling			1	1	Strata								1	Scale 1	:50
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail				Depth	Legend	Level (m OD)
-							Bo	rehole cor	ntinued by ro	otary					_		·
E								technique	es - see belo	w					E		8
E																	
L															_		
<u> </u>															_		
F															-		
F															_		
F															-		
F															_		
E															_		
L															_		
E															_		
F															-		
F															_		
F															-		
F															_		
E															E		
E															_		
E.															-	┣	
F		4.00 - 5.00 (92mm)	4.00 ADDED	44 0	0		Firm to a	stiff reddis sandy CLA	sh brown slig XY Gravel is	ghtly	Betwee	n 4.00-4.5	6m, assun	ned	-		
F		(02)	/ 10020	Ū		AZCL	subangu	lar to sub	rounded fine	e to	Betwee	n 4.56-4.8	6m, non-i	ntact,	-		
F							coarse c	of mudstor	ne. Some no probable	dules	recover	ed as sligh	tly gravell	ý	-		
E						NI	weather	red bedroo	ck).		Betwee	n 4.86-5.0	ia. 10m, non-ii	ntact,			
F		5.00 - 6.00	4.00	69	0	NI	[ST MAL	JGHANS F	ORMATION-	UPPER	recover	ed as clay.					
F		(92mm)	ADDED	0		AZCL	CLAT				zone of	n 8.00-5.3 core loss.	1m, assun	ned	_		
- 5.52 -	С					NI					Below 5	5.31m, stif	f to very st	iff.	-		
5.60	Ŭ					NI					betwee	n 5.31-5.4	3m, non-ii	ntact,	-		
5.60 -	С										Betwee	n 5.43-6.0	lom, non-ii	ntact,	-		
5.78 -	С	6.00 - 7.50	4.00	65	28		1				recover	ed as very	stiff clay	200	E		
_ 5.94		(92mm)	ADDED	51		AZCL					Betwee	n 6.00-6.5	2m, assun	ned	_		
-	6					NI	Extreme	ely weak to	o weak reddi	ish	zone of	core loss.		/	6.52		4.34
6.80	C						brown N	NUDSTON	E with close	ly to	Betwee	n 6.52-6.6 ed as grav	i4m, non-ii el	ntact,	-		
6.80 -	С					11	medium mudstor	i spaced n ne Horizo	odules of lig ntal to inclin	ht grey red (20	Betwee	n 7.32-7.3	8m, non-i	ntact,	_		
- 6.90							- 45 deg	.), very clo	osely to close	ely	recover	ed as grav	el. 5m assun	her	_		
E						NI 16	spaced,	planar, sm	nooth		zone of	core loss.	5111, 035011	icu	E		
F		7.50 - 9.00 (92mm)	4.00	96 51	33	NI	[ST MAL	JGHANS F	ORMATION]		Betwee	n 7.55-7.8	1m, non-i	ntact,	_		
- 7 93 -	C	(521111)	ADDED	51		40					Betwee	n 7.86-8.3	4m, inclin	ed (45 -	-		
- 8.10	Ŭ					4					50 deg.), medium	spaced, p	lanar,	-		
8.10 -	С										Betwee	n 8.34-8.7	uities. '6m, horizo	ontal to	_		
- 0.20						28					inclined	l (30 - 60 c	leg.), extre	mely	E		
E											planar t	to very cid o undulati	isely space ing, smoot	a, h to	_		
F		0.00 10.50	1.00	50		NI					rough d	liscontinui	ties with s	ome	<u> </u>		
-		9.00 - 10.50 (92mm)	4.00 ADDED	56 21	9						gravel i Betwee	nfill. n 8.76-9.0	0m. non-ii	ntact.	_		
E						AZCL					recover	ed as grav	el.	,	_		
E											Betwee	n 9.00-9.6 core loss	6m, assun	ned			
											Betwee	n 9.66-10.	.02m, non-	intact,	F		
9.95 - 20.05	C														_		0
Baring						Dreamon					Croundu	tor					
Depth	Hole Dia	Technique		Cri	ew	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on Gu	roundwater
1.20	0.30	Inspection Pit		AC/	RW	ноle 0.00		Water DRY	10/08/22	08:00	4.00	3.30	3.90	20		Slow inflow.	
4.45	0.15	Cable Percussion		wc	TL/O	1.20	4.00	DRY	10/08/22	17:00							
21.00	0.12	Kotary Core				1.20 4.45	4.00	3.90	16/08/22	08:00 17:00							
		Inspection pit har	+ excavato -	 to 1 3	0m d	onth and		were four							Logged b		
Remarks	MGS	ES sample = 1 x 60	ml glass via	il, 2 x 2	58ml	amber gla	ass jars and	1 x 1L pla	stic tub.						Checked	by JN	
Symbols and abbrevation	d s are	Slow progress: 1.8 Chiselling: 3 70-4 (0-3.00m for	r 150 m minut≏	ninute s.	s.									Figure	Sheet	2 of 4
explained or accompanyi	n the ng key	A 50mm standpipe	was instal	led to 1		n with a g	geowrappe	d slotted s	ection from 1	15.00m to	0 17.00m w	ith a flush	cover insta	lled.		55/01/20	
sheets. All dimensic	ins are in	Backfill details fror ground level	n base of h	ole: be	ntoni	e seal up	to 17.00m	, gravel filt	er up to 15.0	0m, bent	onite seal	up to 0.30	m, concrete	e up to	Gee	JIGCH	NICS
metres.		Logged in accordanc	e with BS593	30:2015	+ A1:2	2020									geotechnici	- and geoenvironmen	sar specialists

PRELIMINARY

Project	Ne	Newport Quinn Phase 2					Enginee	r	Pinnac	cle Cons	ulting En	gineers	Project	No.	PN224395	
Client	Din	nacla Concultin	a Engino	ore Line	itad		National	Grid	Limite 32787	d '3.4 F			Boreho	le	BH04A	
Client	PIN	nacie consulting	g Enginee	EIS LIII	nteu		Coordina	ates	18421	.9.4 N			Ground	l Level	10.86 m OD)
Samplin	g/Testing	Drilling					Strata								Scale 1:	50
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail			Depth	Legend	Level (m OD)
-		9.00 - 10.50	4.00	56	9	NI					recover	ed as soft	gravelly clay.	-	3	
F		(92mm)	ADDED	21		22]				Betwee	n 10.02-10	0.16m, non-	-		
E_						14					intact, r	ecovered a	as gravel.	-		
-		10.50 - 12.00 (92mm)	400.00 ADDED	77 38	14	AZCL					horizon	tal, very cl	osely to closely	-		
-	C	(521111)	ADDED	50		NI					spaced,	planar to	undulating,	-		
- 11.00											smooth	discontini n 10 34-10	uities.	-		
F						10					intact, r	ecovered	as gravel.	-		
<u>–</u>						10					Betwee	n 10.50-10	0.84m, assumed	-		
F						NI					zone of Betwee	core loss. n 10 84-11	1 05m non-	-		
-						NI NI	1				intact, r	ecovered	as gravel.	-		
-		12.00 - 13.50	4.00	93	66	AZCL	1				Betwee	n 11.05-12	2.00m,	-		
-12.21 -	C	(92mm)	ADDED	85			1				disconti soft clay	nuities ha infill	ve occasional	_	3	
- 12.30						_					Betwee	n 11.27-11	1.49m,	_		
-12.70 -	с										disconti	nuities are	e medium	-		
12.90											spaced.	n 11 61-11	1 74m non-	-		
-						16					intact, r	ecovered	as gravel.	-		
F						NI 12					Betwee	n 11.79-12	2.00m, non-	-		
F		12 50 15 00	4.00	100	0						Intact, r	ecovered and 12 00-17	as gravel. 2 10m assumed	F		
F		13.50 - 15.00 (92mm)	4.00 ADDED	100 60	8	54 NI					zone of	core loss.	2.10m, assumed	-		
F		(0)				24					Betwee	n 12.10-12	2.17m, non-	_		
-						NI					intact, r	ecovered a	as soft slightly	-		
-						20					Betwee	n 12.17-12	2.99m,	-		
_14.45 -	С										horizon	tal, closely	to medium	-		
- 14.56											spaced,	planar to	stepped, smooth	-		
F						NI					infill.	nunnes wi	th some clay	-		
-		15.00 - 16.50	4.00	88	0	AZCL					Betwee	n 12.99-13	3.24m, horizontal	-		
F		(92mm)	ADDED	67			1				to vertion	al, closely	spaced, planar	-		
F											disconti	nuities.	0011	_		°
F						17					Betwee	n 13.24-13	3.28m, non-	E		•
- 15.87 -	С										intact, r	ecovered	as gravel.	E		•
15.94						NI					intact. r	ecovered	as gravel.	-		•
-						33 NI					Betwee	n 13.531	.3.96m,	-		
_16.43 -	С					28					horizon	tal to incli	ned (45 deg.),	-		
- 16.50 -		16.50 - 18.00 (92mm)	4.00 ADDED	84 26	11	AZCL					spaced.	planar to	undulating.	E		°
F		(521111)	NODED	20		- 33					smooth	discontin	uities.	-		•
-						INI					Betwee	n 13.64-13	3.67m, non-	-		
F						44					Betwee	ecovered a n 13.96-14	as gravei. 4.10m. non-	F		
-17.40 -	С					12					intact, r	ecovered	as gravel.	-		
- 17.50						15					Betwee	n 14.53-14	1.63m, non-	-		
F						NI					At 14.79	ecoverea 9m. steppe	as gravei. ed discontinuity.	-		
F		18.00 - 19.50	4.00	90	9	AZCL	1				Betwee	n 14.79-15	5.00m, non-	F		
F		(92mm)	ADDED	41		NI 27	1				intact, r	ecovered	as gravel.	F		
F						NI	1				zone of	core loss.	, assumed	F		
F						25					Betwee	n 16.03-16	5.11m, non-	F		
F						L	-				intact, r	ecovered	as gravel.	F		
-						NI 17					intact. r	ecovered	as gravel.	FI		
-19.20 -	С					17					Betwee	n 16.50-16	5.73m., assumed	-		
- 19.55		40.50.04.00	4.00								zone of	core loss.		_		
F		19.50 - 21.00	4.00 ADDED			NI					medium	n 16.73-17 Nistrong.	7.67m, weak to	-		
F			NODED			31					Betwee	n 16.73-16	5.79m, occasional	E		
							1									1
					l)*0077					Ground	inter-				
Boring		Tashaisus		C		Depth of	Durath Council	Depth to	Data	Time	Grounaw	ater	Dess to in Mins	Death Coole	Bomorks on Cro	unducator
Depth	noie Dia.	recimique			vv	Hole	A OO	Water	24/00/22	08.00	Depth Struck	Depth Cased		Depth Sealer		unuwater
						9.00	9.00	2.40	24/08/22	17:00						
						9.00	9.00	2.40	25/08/22	08:00						
						21.00	12.00	2.10	25/08/22	17:00						
Remarks													i	Logged b	y AC	
Symbols and	t in the second													Checked Figure	oy JN Sheet 7	S of 4
abbrevation	s are h the													- Buic	05/01/202	23
accompanyi	ng key													\sim	070CI &	
All dimensio	ins are in		=											geotechnica	and geoenvironment:	al specialists

All dimensions are in metres. Logged in accordance with BS5930:2015 + A1:2020

PRELIMINARY

Project	Nev	wport Quinn Ph	ase 2			Enginee	r	Pinna	cle Cons	ulting En	gineers	Project	No.	PN224395			
Client	Pin	nacle Consultin	g Enginee	rs Limite	ed	Nationa	l Grid	3278	20 73.4 E			Boreho	le	BH04A	חר		
			0 0			Coordin	ates	1842	19.4 N			Ground	Level	10.86 m 0			
Samplin Sample /	g/Testing	Core Run/Depth	Denth Cased	TCR/ R	DD	Strata								Scale	1:50	Level	
SPT Depth	Type	(Core Dia/Time)	& (to Water)	SCR (%) (%) FI	General				Detail			Depth	Legend		(m OD)	
-		19.50 - 21.00	4.00 ADDED		14					veins of	f quartz.	7 14m non-	-				
-			1.0000		14					intact, r	ecovered	as gravel.	-				
-					NI 10	-				Betwee	n 14.14-1	7.67m, many	-				
F					NI	1				nodules Betwee	s of light g n 17 43-1	rey mudstone. 7 67m horizontal	-				
-					16					to verti	cal, closely	/ spaced, planar,	-21.00			10.14	
F										smooth	discontin	uities.	-				
E										intact. r	ecovered	as gravel.	-				
_										Betwee	n 18.00-1	8.14m, assumed	_				
L										zone of	core loss.	8 24m non-	_				
-										intact, r	ecovered	as gravel.	-				
_										Betwee	n 18.24-1	8.53m, non-	_				
_										Betwee	n 18.53-1	as gravei. 8.89m. horizontal	-				
-										to verti	cal, very c	losely to closely	-				
-										spaced,	planar to	undulating,	_				
-										Betwee	n 18.59-1	8.89m, vertical	-				
-										discont	inuity.		-				
E										Betwee	n 18.89-1 ecovered	9.09m, non- as sand and	Εl				
E										gravel.			El				
L_										Betwee	n 19.09-1	9.26m, weak to	L I				
-										Betwee	n 19.26-1	9.50m, non-	_				
-										intact, r	ecovered	as gravel.	_				
-										Betwee	n 19.50-1 core loss	9.61m, assumed	-				
-										Betwee	n 19.61-1	9.69m, non-	-				
-										intact, r	ecovered	as gravel.	-				
-										strong.	19.0911, W	eak to medium	-				
										Betwee	n 19.69-1	9.88m,	_				
E										horizon	tal, extrer selv space	nely closely to ed. planar.					
_										smooth	discontin	uities.	_				
_										Betwee	n 19.88-2	0.00m, non-	_				
_										Betwee	n 20.14-2	0.26m, vertical	_				
_										discont	inuity with	n black staining.	_				
-										Betwee	n 20.48-2 ecovered	0.59m, non- as gravel	-				
-											End of E	Borehole	_				
-													-				
-													-				
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F													E				
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-													F				
Boring					Progress	<u> </u>				Groundy	vater						
Depth	Hole Dia.	Technique		Crew	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to in Mins	Depth Seale	Remarks on C	Groun	dwater	
					Hole		water										
Remarks	100			1	1	1			1	I	I		Logged b	y AC			
Symbols and	interna b												Checked Figure	by JN Shee	t 4 of	f4	
abbrevation explained or	s are n the													05/01/	2023		
accompanyi sheets.	ng key												G	ריבות	N	~~	
All dimensic	ins are in	annad in sec.	a with Dong-	0.2015	1.2020								geotechnica	i and geoenvironm	ental ap	recialists	
		Loggeu in accordance	e wiru R2283	u:2012 + A	1:2020												
Project	Ne	wport Q	uinn Phas	e 2			Enginee	r	Pinnad	cle Cons	ulting En	gineers		Project	No.	PN224395	
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Client	Pir	inacle Co	onsulting I	Engineers	Limited	ł	National	Grid	32819	u 16.3 E				Boreno	le	BHU/	
Canadia				Durananti			Coordina	ates	18423	5.5 N				Ground	Level	12.08 III C	1.50
Samplin	ig	Sample	Depth Cased	Strength	25	CDT N	Strata									Scale	Level
samplin Dep 0.10 0.10 - 0. 0.25 - 0. 0.50 1.00 1.20 - 1. 2.00 2.00 - 2. 3.00 - 3. 3.00 - 3. 3.00 - 3. 4.00 - 4. 4.00 - 4.	rg Doth 225 40 60 90 20 65 70 45 50 42 50 45 50	Sample Type Type B B B B D ES B B B B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C C C C C C C C C C C C C	Depth Cased & (to Water) (DRY) 2.00 (DRY) 3.00 (DRY) 4.00 (DRY)	Propertia Strength kPa	es w(%) 14	SPT N C32 C34 C50/ 265mm C36	MADE G [MADE G angular [MADE G angular [MADE G sandstoi [MADE G Soft to f subangu [RIVER T Dense li] of siltsto [RIVER T Below 0 Below 1 Below 3 Below 4	ROUND: I GROUND: I ROUND: I to subang GROUND] ROUND: I GROUND] irm light brown TERRACE D 90m, low .20m, der	Black tarmac - TARMACAD Reddish brow jular fine to i Grey sandy a crete. Sand i prown slightl rounded of s DEPOSITS-CG i slightly san andstone. DEPOSITS-GR i subrounded isse, slightly c	Descrij adam. MAM] vn gravel medium o ngular to s of ash. y sandy s siltstone a HESIVE] dy subrou cANULAR d cobble o layey.	ption ly fine to o f sandsto subangul lightly gra and sands unded fine l content of es fine to	oarse san ne. ar fine to o velly CLAY, tone. to coarse sandstone medium.	d. Gravel i coarse gra Gravel is clayey Gf e.	vel of RAVEL	Depth 0.10 0.22 0.36 0.60 0 0.60 0 0 0 0 0 0 0 0 0 0 0 0 0	Scale	L:50 Level (n 00) 12.58 12.46 12.32 12.08
5.00 - 5. 5.00 - 5. 5.00 - 5. 5.05 6.00 - 6.	45 45 50 39 45	- D - D - B - D - D - D - D - D - D - D	5.00 (DRY) 5.00 (DRY)		26	533 550/ 240mm	Very stif angular [ST MAL Very stif angular mudstor [ST MAL	f dark red fine to me JGHANS F f dark red fine to me re). JGHANS F	dish brown s edium of mu ORMATION- dish brown s edium of mu ORMATION-	slight san dstone. (' UPPER Cl slight san dstone ai UPPER Cl	dy slightly Weathere .AY] dy slightly nd sandsto .AY]	gravelly C d mudstor gravelly C nne. (Weat	LAY. Grave te) LAY. Grave thered	el is	5.00 		7.68 6.68
Boring						Progress Depth of		Boreho		1 by rotai	ry techniq Groundv	ues - see r vater	next page				
Depth	Hole Dia.	Techniqu	ue		Crew	Hole	Depth Cased	Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on G	roundwater
1.20 6.00 20.30	0.35 0.15 0.12	Inspectio Cable Pe Rotary C	on Pit ercussion core		AC/RW WPO/JT CJ/JS	0.00 6.45 6.00 7.50	5.00 6.00 7.50	DRY 3.90 DRY	04/08/22 04/08/22 22/08/22 22/08/22	08:00 17:00 08:00 17:00						No groundw strikes noted have been m water added	ater I - may nasked by I.
Remarks Symbols and abbrevations explained or accompanyin sheets. All dimensio metres.	s are n the ng key ns are in	Inspectior ES sample Slow prog Chiselling: A 50mm s Backfill de Logged in a	n pit hand e: e = 1 x 60ml ress: 3.00-4 : 5.70-6.00n tandpipe w etails from b accordance w	kcavated to glass vial, 2 .00m for 1 n for 60 mi as installed ase of hole vith BS5930:	2 1.20m d 2 x 258ml 50 minut nutes. I to 20.50 2: gravel f 2015 + A1	epth and r amber gla es. m with a g ilter up to	no services ass jars and geowrapped 13.00m, be	were four 1 x 1L pla d slotted s entonite se	ection from 1 eal up to 0.30	13.0.00m Im, concre	to 20.50m ete up to g	with a flus	h cover in l.	stalled.	Logged & Checked Figure	by AC by JN Sheet os/o1/2	1 of 4 1023

Project	Ne	wport Quinn Ph	ase 2				Enginee	r	Pinnac	le Cons	ulting En	gineers		Project	No.	PN224395	
Client	Pin	nacle Consultin	g Enginee	ers I jm	nited		National	Grid	Limite 32819	d 6.3 E				Boreho	le	BH07	
			g Englined	213 LIII	ince		Coordina	ates	18423	5.5 N				Ground	Level	12.68 m O	D
Samplin Sample /	g/Testing SPT N/	Drilling Core Run/Depth	Depth Cased	TCR/	RQD	EI	Strata				Detail				Denth	Scale 1	L:50 Level
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)		Bo	rehole cor	ntinued by ro	otarv	Detail					Legend	(m OD)
_								technique	es - see belov	N					-		
-															-		
F															_		
F															-		
-															-		
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F															_		
F		6.00 - 7.50	6.00	73	0		Very stif	f dark red	dish brown s	light	Betwee	n 6.00-6.4	0m, Assur	ned	-		
F		(92mm)	ADDED	6		AZCL	sandy sl	ightly grav	elly CLAY. Gr	avel is	zone of	core loss.			_		
F							angular	nne to me dstone. (V	edium of mu Veathered	astone	Betwee	n 6.40-6.9	96m, non-i	ntact.	-		
F						NI	mudstor	ne).			recover	ed as soft	to firm red	ddish	-		
F							[ST MAU	JGHANS F	ORMATION-	UPPER	brown	slightly sar	ndy slightly	/	6.96		5 72
F						38	Extreme	lv weak to	o weak reddi	/	gravelly	clay.	0		- 0.90		5.72
F						NI	brown N	UDSTON	E. Discontinu	lities	zone of	core loss.	om, assun	nea	-		
F		7.50, 0.00	7.50	96	0	44	are hori	zontal to i	nclined (30 -	50	Betwee	n 7.70-7.9	3m, non-i	ntact,	_		
F		(92mm)	ADDED	38	0	AZCL	planar te	ery ciosely o undulati	ng. smooth v	vith	recover	ed as grav	el.	ataat	_		
7.86 -	С	. ,				NI 50	occasior	nal black s	taining.		recover	ed as soft	slightly gr	avellv	_		
- 7.90						NI	[ST MAU	JGHANS F	ORMATION]		sandy c	lay.	0 70	,	-		
8.32 -	С					40 Ni 16					Betwee	n 8.25-8.3	11m, non-i	ntact,	_		
_ 8.42						22					Betwee	eu as grav en 8.31-8.6	ei. 51m. horizo	ontal.	_		
F						NI 22					closely	spaced, pl	anar, roug	h	_		
F						NI 22	1				discont	inuities.	1	ataat	_		
F		9.00 - 10.50	9.00	88	40	AZCL					recover	ed as grav	el.	niaci,	-		
F		(92mm)	ADDED	56		NI]				Betwee	n 8.80-8.9	1m, non-i	ntact,	_		
F							-				recover	ed as grav	el.		_		
F						13					inclined	n 8.91-9.0 1 (10 deg.)	, closely sp	bhtaí to baced,	-		
9.94 -	с						-				planar,	rough disc	ontinuitie	s.	_		
10.02	-																
Boring						Progress					Groundy	vater					
Denth	Hole Dia	Technique		Cre	w	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on Gr	roundwater
1 20	0.35	Inspection Pit		AC/	RW	Hole	Beptil Cused	Water	04/08/22	08.00	beptiliberael				Bepen Seule	No groundwa	ater
6.00	0.15	Cable Percussion		WPC	TL/C	6.45	5.00	DRY	04/08/22	17:00						strikes noted	- may
20.30	0.12	Rotary Core		C1/	JS	6.00	6.00	3.90	22/08/22	08:00						have been m	asked by
						7.50	7.50	UKY	22/08/22	17:00						water added.	
Remarks	AGS	nspection pit hand	d excavated	to 1.20	Om de	pth and	no services	were four	nd.						Logged b	y AC	
Symbols and		sample = 1 x 60 Slow progress: 3.00) y glass via 0-4.00m fo	n, 2 x 2: r 150 m	oomi a iinute	annoer gla s.	ass jars and	т х тг ріа	SUC LUD.						Cnecked Figure	by JN Sheet	2 of 4
abbrevation: explained or	are the	Chiselling: 5.70-6.0	0m for 60	minute	s.			al al a se - 1		2.0.05	t. 20 55				0	05/01/20	023
accompanyi sheets	ng key	a 50mm standpipe Backfill details from	was instal n base of h	ied to 2 ole: gra	:0.50n Ivel fil	n with a g ter up to	geowrappe 13.00m. he	a slotted s entonite se	ection from 1 eal up to 0.30	.3.0.00m m, concr	το 20.50m ete up to s	with a flus round leve	an cover ins el.	stalled.	ദ്ദ	പാപ	
All dimensio	ns are in	Loggod in '	o with perce	20.2015		020			,	,					geotechnica	al and geoenvironmer	tal specialists

PRELIMINARY

Project	Nev	wport Quinn Ph	ase 2				Enginee	r	Pinn	acle Cons	ulting En	gineers	Proje	ct No.	PN224395	
Client	Pin	nacle Consultin	g Enginee	ers Lim	ited		National	l Grid	3281	.96.3 E			Borer	iole	BH07	
			8 211811100				Coordina	ates	1842	35.5 N			Grou	nd Level	12.68 m (
Samplin	ng/Testing	Drilling				1	Strata				1				Scale	1:50
Sample / SPT Depth	SPT N / Type	(Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	кцр (%)	FI	General				Detail			Depth	Legend	(m OD)
- 10.10 -	С	9.00 - 10.50	9.00	88 F C	40	9					etween	9.00-9.18	m, assumed zone	_		38
-10.23 -	с	(921111)	ADDED	50							Betwee	en 9.18-9.5	50m, non-intact,	_		
10.40		10.50 - 12.00	10.00	85	0	AZCL					recover	ed as grav	el.	-		
10.40 -	C	(92mm)	ADDED	36		NI	1				Betwee recover	n 9.90-9.9 ed as grav	el.	-		
F						60					Betwee	n 10.25-10	0.31m, non-	- -		8
E						33 NI	1				intact, r	ecovered	as gravel. 245m non-			
L						23					intact, r	ecovered	as gravel.	-		
F						NI	-				Betwee	n 10.50-10	0.72m, assumed	-		38
F						22 NI	1				Betwee	n 10.72-10	0.92m, non-	-		88
-		12.00 - 13.00	12.00	64	13	470	1				intact, r	ecovered	as gravel.	-		
F		(92mm)	ADDED	29		AZCL					horizon	n 10.92-1. tal, extren	nely closely to	-		38
E						NI					closely	spaced, pl	anar, smooth	_		8
-12.69 -	С					31]				disconti	inuities. n 10 92-1	1 02m vertical	-		
_ 12.74						NI					planar,	smooth di	scontinuity.	_		
F		13.00 - 14.50 (92mm)	13.00 ADDED	82 34	9	AZCL					Betwee	n 11.02-1	1.12m, non-	-		
13.43 -	с	(521111)	NODED	34		NI 21	1				Betwee	n 11.21-1:	1.37m, non-	-		
13.48	_										intact, r	ecovered	as gravel.			
13.70 -	С					14					intact, r	ecovered	as gravel.	_		
						NI					Betwee	n 11.86-12	2.00m, non-			
-						28					Betwee	ecovered n 12.00-12	as gravel. 2.36m. assumed	-		
F		1150 1000	12.00		45	22					zone of	core loss.	,	-		
- 14.72 -	С	14.50 - 16.00 (92mm)	ADDED	88 57	45	AZCL					Betwee	n 12.36-12 ecovered	2.61m, non- as gravel	-		
- 15.00						36	1				Betwee	n 12.77-12	2.90m, thin bed	=		
E						8					of extre	mely wea	k to weak light			
- 15.27 -	С					NI	1				spaced	thick lami	nae of reddish	_		
-15.60 -	с					16 NI	-				brown r	nudstone.		_		
15.67	-					14]				disconti	n 12.77-1. inuities ha	2.90m, ve clay infill.	-		
-		16.00 17.50	12.00	04	62	NI AZCL	-				Betwee	n 12.90-1	3.00m, non-	-		
F		(92mm)	ADDED	94 67	62	NI	1				intact, r Betwee	ecovered n 13 00-1	as gravel. 3 27m assumed	-		
E							Very we	ak to wea	k reddish b	rown	zone of	core loss.		_ 16.35		° -3.67
E						3	MUDST	ONE. Disco	ontinuities	are	Betwee	n 13.27-13 ecovered	3.37m, non- as gravel	_		Ŷ
-16.90 -	с						closely t	o medium	n spaced, p	s. <i>),</i> lanar,	Betwee	n 13.37-1	3.56m, horizontal	-		
17.05						14 NI	smooth	with som	e clay infill.		to inclin	ed (45 de	g.), extremely	-		
-17.21 -	С					7		JGHANS F	ORMATION	1]	smooth	discontin	uities.	-		
E		17 50 - 19 00	13.00	87	69		1				Betwee	n 13.56-1	3.64m, non-	Ē		
-17.70 -	С	(92mm)	ADDED	84		8					Betwee	n 13.69-13	as gravei. 3.71m, non-	_		
17.93	с					21	-				intact, r	ecovered	as gravel.	_		
18.06						9	1				Betwee	n 13.85-14 ecovered	4.24m, non- as verv soft	-		
F						NI					slightly	gravelly sa	andy clay.	-		
F							-				Betwee	n 14.31-14	4.41m, non-	-		
	C					4					Betwee	n 14.50-14	4.67m, assumed	-		
19.00	L	19.00 - 20.53	13.00	100	10		-				zone of	core loss.	174m non			
E		(92mm)	ADDED	100	0						intact, r	ecovered	as gravel.	-		
F						2					Betwee	n 14.85-1	5.22m, horizontal	-		
F											to inclin mediun	iea (30 de 1 spaced, i	g.,, closely to planar, smooth	F		
19.85 -	С										discont	inuities.		_		ŀ
13.32																
Boring			I			Progress	I				Groundv	vater			I I	
Depth	Hole Dia.	Technique		Cre	w	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to in Mi	ns Depth Seale	d Remarks on O	iroundwater
						7.50	7.50	DRY	23/08/22	08:00						
						20.30	13.00	19.70	23/08/22	17:00						
Remarks	, P			1				1		1	I	1	<u> </u>	Logged b	by AC	
Symbols and	d d													Checked	by JN	t3 of 4
abbrevation	is are n the													ingule	05/01/	2023
accompanyi	ing key													60	∟רכות	
All dimensio	ons are in													gestechnic	al and geoenvironm	intal specialists
metres.		ogged in accordanc	e with BS593	30:2015	+ A1:2	2020										

Project	Ne	wport Quinn Ph	nase 2				Engineer		Pinnac	cle Cons	ulting En	gineers	Project	No.	PN224395	
Client	Pin	nacle Consultin	g Enginer	⊃rslim	nited		National	Grid	Limite 32819	d 16.3 E			Boreho	ole	BH07	
					nicu		Coordina	tes	18423	5.5 N			Ground	d Level	12.68 m	DD
Sampling Sample /	g/Testing	Drilling Core Run/Depth	Depth Cased	TCR/	RQD		Strata								Scale	1:50 Level
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General				Detail			Depth	Legend	(m OD)
F		19.00 - 20.53 (92mm)	13.00 ADDED	100 100	10 0	5					etween recover	15.22-15 ed as grav	.36m, non-intact, vel.	F		
F						5					Betwee	en 15.54-2	15.65m, non-	F		•
E											intact, r	recovered	as soft slightly	$E^{20.53}$		-7.85
-											Betwee	en 15.86-1	.6.00m, non-	F		
-											intact, r	recovered	as gravel.	–		
F											zone of	core loss		_		
_											Betwee	n 16.08-1	.6.22m, non-	_		
L											clay.	ecovereu	as sont graveny	F		
<u> </u>											Betwee	n 16.22-1	6.35m, horizontal	<u> </u>		
-											very clo	ned, extre osely space	mely closely to ed, undulating to	F		
-											stepped	d, smooth	discontinuities.	-		
F											Betwee	n 16.88-1	.6.93m, non-	F		
E											Betwee	ecovereu en 17.07-1	.7.20m, non-	E		
<u> </u>											intact, r	recovered	as gravel.	-		
-											intact, r	recovered	as clay.			
F											Betwee	n 17.50-1	.7.69m, assumed	F		
F											zone of Betwee	core loss n 18.26-1	.8.31m,	F		
_											subhori	izontal to	inclined (10 deg.),	_		
E											closely discont	spaced, p inuities.	lanar, smooth	E		
-											Betwee	n 18.48-1	.8.56m, non-	F		
-											intact, r	recovered	as soft slightly	_		
-											Betwee	en 18.80-1	8.86m, thin bed	_		
E											of weak	k light grev	y mudstone.	E		
E											spaced	nodules c	of light grey	E		
<u> </u>											mudsto	ne.	0.00-	_		
-											horizon	ital, widel	y spaced, planar,	F		
-											smooth	discontin	nuities.	-		
-												End of I	Borehole	-		
E														E		
-														F		
<u> </u>														_		
-														_		
F														F		
E														E		
														_		
-														-		
F														F		
E														E		
Ē														E		
<u> </u>														-		
F														F		
F														F		
F														F		
E														E		
\vdash														-		
						<u> </u>										
Boring		Tochnique		<i>~</i>		Progress Depth of	Donth Correct	Depth to	Data	Time	Groundy	vater	d Pocoto in Main	Donth C'	d Remarks are	Froundwater
Depth	nore DIa.	recrimque		Cre	vv	Hole	Depth Cased	Water	Date	rime	Deptn Struck	Depth Case		Depth Seale	nemarks on (nounuwater
														Loggod b		
Remarks	AGS													Checked	by JN	
Symbols and abbrevations	l s are													Figure	Shee	t 4 of 4
explained on accompanyir	n the ng key														05/01,	2023
sheets. All dimension	ns are in													Geo	JJGCF	NICS
metres.	are iil	Logged in accordanc	e with BS59	30:2015	+ A1:2	020								geotechnica	al and geoenvironm	ental specialists

Project	Ne	wport Qı	uinn Phas	e 2			Enginee	r	Pinnac	le Cons	ulting Enរូ	gineers	Pro	oject N	lo.	PN224395	
Client	D:-				1.1	J	National	Grid	Limite	d 74 F			Во	rehole	9	BH10	
Client	PIr	nacie Co	nsulting E	ngineers	Limited	1	Coordina	ates	18415	0.6 N			Gr	ound l	Level	11.00 m C	D
Samplir	ng			Propertie	s		Strata									Scale 2	1:50
Dep	oth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	ption				Depth	Legend	Level (m OD)
Dep 0.25 0.25 - 0. 0.25 - 0. 0.25 - 0. 0.50 1.00 1.20 - 1. 1.20 - 1. 2.00 - 2. 2.00 2.00 - 2. 2.40 3.00 - 3. 3.00 3.10 3.50 - 4. 4.00 - 4. 4.20 5.00 - 5. 5.00 - 5. 5.	45 20 65 70 45 50 45 50 45 50 45 50 45 00 58	Type Type B B B D ES D ES B B B B B C B B C C B C C C C C C C C	1.20 (DRY) 2.00 (DRY) 3.00 (DRY) 3.00 (CRY)	76	vv(%) 41 20	C15 C19 C25 C50/ 225mm	MADE G [MADE G Subroun [MADE G MADE G content siltstone [MADE G Below 1 Firm to 5 slightly as slightly as [RIVER T Firm to 5 subangu [RIVER T Firm to 5 subangu [RIVER T	ROUND: G GROUND: E GROUND: E GROUND: E of sandsto SROUND] ROUND: E of sandsto SROUND] ROUND: E Ground Comment Stiff light g gravelly CL ded fine o ERRACE D Stiff reddis lar to suble FRRACE D Stiff reddis lar to suble FRRACE D Stiff reddis lar to suble Boreho	le. rey concret <u>CONCRETE</u>] irown gravel b coarse of s some. Gravel is lium dense. lium dense. lium dense. <u>EPOSITS-CO</u> rey slightly s rounded fine EPOSITS-CO h brown slig rounded fine DRMATION-1 ength. Ie continued	bescrij e. ly mediu iltstone, andy clay s subrour s subrour bisional ba Decasional HESIVE] andy slig e of siltste HESIVE] htly sance to coars d bedroo UPPER CL	m sand. G sandstone rey gravel nded fine t nded fine t htly gravel ne. iy slightly g se of sands sk). .AY]	ravel is sut e and brick with a low to coarse o coarse o coarse o coarse o ly CLAY. Gr gravelly CL tone, siltst ues - see n	Slightly sandy subangular to fragments. rounded cob f sandstone a subangular to l. ravel is AY. Gravel is tone and ext page	o o	Depth 0.19 0.45 	Legend	(moD) 10.81 10.55 8.00 7.70 6.20
		- - - -												-	- - - -		
Boring					1	Progress	l				Groundw	/ater		[
Depth	Hole Dia.	Techniqu	e		Crew	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to in	Mins	Depth Seale	d Remarks on G	roundwater
0.19	0.30	Concrete	Core		D Drill	Hole 0.00		Water DRY	10/08/22	08:00	6.00	6.00				Seenage No	rise.
1.20 6.58	0.30 0.15	Inspectio Cable Per	n Pit rcussion		TL/OW	6.58 6.58	6.20 6.20	DRY 5.20	10/08/22 15/08/22	17:00 08:00	5.00	5.00				500pube. NO	
20.70 Remarks	0.12	Rotary Conspection	pit hand ex = 1 x 60ml	ccavated to glass vial, 2	CJ/JS 1.20m d x 258ml	16.20 epth and r amber gla	7.20 no services iss jars and	ADDED were foun 1 x 1L plas	15/08/22 d. tic tub.	17:00					Logged b Checked	by AC by JN	1 of 4
abbrevation	s are	A 50mm st	andpipe wa	as installed	to 6.50n	n with a ge	owrapped	slotted sec	tion from 5.0	00 to 6.50)m with a f	lush cover	installed.		rigurë	5neet 05/01/2	1 UT 4
explained or accompanyi	n the ng key	Backfill det	tails from b	ase of hole	: benton	ite seal up	to 6.50m,	gravel filte	r up to 5.00n	n, benton	ite seal up	to 0.20m,	concrete up to	þ			
sheets. All dimonsio	ins are in	ground lev	el.												Gec	JIGCH	NICS
metres.	are in	Logged in a	ccordance w	ith BS5930:2	2015 + A1	:2020									geotechnica	il and geoenvironme	ntal specialists

Project	Ne	wport Quinn Ph	nase 2				Enginee	r	Pinna	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Pin	nacle Consultin	g Enginee	ers Lim	ited		Nationa	l Grid	Limite 32782 1841	ed 27.4 E 50.6 N				Borehol Ground	le Level	BH10 11.00 m OD)
Samplir	ng/Testing	Drilling					Strata	ates	10415	0.0 1						Scale 1:5	50
Sample /	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail				Depth	Legend	Level (m.OD)
sample / spT Depth - - - - - - - - - - - - - - - - - - -	SPT N/ Type	Core Run/Depth (Core Dia/Time)	Lepth Cared & (to Water)	ICR/ SCR (%)	nuU (%)	FI	General Bo	rehole con technique	ntinued by r es - see belo	otary w	Detail				Depth	Legend	Level (m OD)
 6.74 - 6.80	С	6.20 - 7.20 (92mm) 7.20 - 8.70 (92mm)	6.20 ADDED 7.20 ADDED	62 5 100 46	5	AZCL NI 30 NI 25	Extreme brown S nodules Disconti inclined to close smooth staining	ely to very ILTSTONE of grey sil inuities are (30 - 40 d ly spaced, with occa	weak reddis with occasio tstone. e horizontal eg.), very clo planar and sional black	sh onal to osely	Betwee zone of Betwee recover Betwee recover clayey s Betwee	n 6.20-6.5 core loss. n 6.58-6.6 ed as grav n 6.76-7.2 ed as grav and. n 7.20-7.3	8m, assum 3m, non-ir el. 0m, non-ir elly slightly 0m, vertic	ned ntact, ntact, / al,			
- 7.50 - - 7.54 -	с	(321111)		40		NI 4 NI 33 NI 20	ST MAU	JGHANS F	ORMATION]		planar, s black st Betwee recover Betwee vertical, spaced,	smooth di aining. n 7.60-7.7 ed as grav n 7.73-7.8 , very close planar, sn	scontinuity 3m, non-ir el. 0m, horizc ely to close nooth	y with htact, ontal to ely			
8.53 8.98 - 9.06 9.47 - 9.60 9.90 - 10.10	C C C	8.70 - 10.20 (92mm)	7.20 ADDED	87 67	36	AZCL NI 11 NI 12					disconti Betwee recover Betwee disconti infill. Betwee planar, s Betwee recover	nuities. n 7.80-8.0 ed as grav n 8.08-8.2 nuities wi n 8.14-8.2 smooth dia n 8.20-8.2 ed as sligh	8m, non-ir elly sand. 0m, th some sa 0m, vertice scontinuity 6m, non-ir tly gravelly	ntact, ind al, /. ntact, / sand.			
Boring					1.0	Progress					Ground	vater					
Depth	Hole Dia.	Technique		Cre	w	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on Gro	undwater
0.19 1.20 6.58 20.70	0.30 0.30 0.15 0.12	Concrete Core Inspection Pit Cable Percussion Rotary Core		D D WO WO CJ/	rill /JT /JT JS	0.00 6.58 6.58 16.20	6.20 6.20 7.20	DRY DRY 5.20 ADDED	10/08/22 10/08/22 15/08/22 15/08/22	08:00 17:00 08:00 17:00	6.00	6.00				Seepage. No ri	se.
Remarks Symbols an abbrevatior explained o accompany sheets. All dimension metres.	d (ns are) n the E ing key E ons are in	nspection pit han ES sample = 1 x 60 Chiselling: 5.90-6.2 A 50mm standpipe Backfill details fror ground level.	d excavated ml glass via 20m for 60 r e was install n base of ho e with BS593	to 1.20 I, 2 x 25 minutes ed to 6 ole: ber)m dep 58ml a 5. .50m v ntonite + A1-20	oth and i mber gla with a ge e seal up	no services ass jars and cowrapped to 6.50m,	were foun I 1 x 1L plas slotted see gravel filte	nd. stic tub. ction from 5. r up to 5.00r	.00 to 6.50 n, benton	0m with a f iite seal up	lush cover to 0.20m,	installed. concrete u	p to	Logged b Checked Figure	y AC by JN Sheet 2 05/01/202	of 4 3

Project	Ne	wport Quinn Ph	ase 2				Enginee	r	Pinnac	le Cons	ulting En	gineers	Pr	oject N	о.	PN224395	
Client	Pin	nacle Consultin	g Enginer	ors lim	nited		Nationa	l Grid	Limite 32782	d 7.4 E			Bo	orehole		BH10	_
			g Engine		nteu		Coordin	ates	18415	0.6 N			Gr	round L	evel	11.00 m Ol	D
Samplir Sample /	Ng/Testing	Drilling Core Run/Depth	Depth Cased	TCR/	RQD	51	Strata								с. II.	Scale 1	:50 Level
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General				Detail	0 26 0 70	100		Depth	Legend	(m OD)
-		(92mm) /	ADDED/	67 /	30 46	A7CI					discont	inuities wi	th some silt a	ind –		× × × × × × ×	
10.45 -	с	10.20 - 11.70	7.20	90	40	13					sand in	fill.		E		× × × × × × ×	
10.58		(92mm)	ADDED	70		N	Weak to	medium	strong reddi	ch	Betwee	en 8.60-8.7 ting smoo	'0m, vertical, th discontinui	_{itv} E	10.62	× × × × × × × ×	0.38
E						ŇĪ	brown n	nedium to	coarse grair	ned	Betwee	en 8.70-8.8	9m, assumed	1 E			
F							SANDST	ONE. Disc	ontinuities a	re .	zone of	f core loss.	Om non into		-		
-11.30 -	с					13	undulati	ing, smool	th with occa:	nar to sional	recover	red as grav	el.	·, -			
_ 11.36							black sta	aining.			Below	9.10m, gra	ding to mediu	um 占			
-11.53 -	С	11 70 12 20	7 20	100	56	28	ST MAU	JGHANS F	ORMATION]		Betwee	sandstone. en 9.10-9.4	6m.	F			
-11.90 -	с	(92mm)	ADDED	72	50	NI]				discont	inuities wi	th some sand	ı F			
12.05		. ,				10					and gra	avel infill.	Om non into	a F	-		
12.33 -	с					-75-					recover	red as grav	el.				
- 12.41						14					Betwee	en 9.50-10.	20m,	IE			
E	6					16	1				discont	inuities wi	th sand infill.	E le			
12.82 -	Ľ										zone of	f core loss.	5.54m, 6556m		-		
_13.08 -	С					11					Betwee	en 10.57-10	0.62m, non-		13.20		-2.20
- 13.20		13.20 - 14.70 (92mm)	7.20	90 78	49	AZCL	Weak to	medium	strong reddi with occasic	sh mal	Betwee	en 10.72-10	0.79m. non-	F		* * * * * * *	
-	-	(32)				18	nodules	of light gr	ey siltstone.		intact,	recovered	as gravel	F			
-13.70 - 13.96	С						Disconti	inuities are	e horizontal,	ooth	includir	ng grey san	idstone.	F			
							[ST MAL	JGHANS F	ORMATION]	0011.	betwee	en 11.37-12	1.52m, vertica	al, 🗖	-	* * * * * * *	
[14.16 -	С					11					planar	to undulati	ing, smooth	. E			
14.30											Betwee	2nuities wi 2n 11.77-12	th black stain 1.93m, non-	ing.		× × × × × × × × × × ×	
- 14 70 -	C					56) A/			-1-	intact,	recovered	as gravel.	Ŀ	14.66	× × × × × ×	-3.66
15.05	C	14.70 - 16.20	7.20	90 74	56	AŽČL	brown f	ine to mea	strong reddi dium grained	sn I	Betwee	en 11.93-12 ned (40 de	2.32m, horizo g) closely	ontal			
-		(921111)	ADDED	/4		5	SANDST	ONE with	occasional n	odules	spaced	, planar, sn	nooth		-		
F							of light	grey sands	stone.		discont	inuities.					
F						12	closely of	occasional	ly medium s	paced,	to incli	en 12.32-12 ned (45 de	2.36m, horizo g.). verv close				
-							planar t	o undulati	ng and smoo	oth /	spaced	, planar, sn	nooth	.,	15.61		-4.61
F						-518	Veak re	ddish bro	WINATION	NE	discont	inuities wi	th some sand				
	C						with occ	casional no	odules of gre	ey .	Betwee	en 12.57-12	2.63m, non-	E	-		
16.36	Ľ	16.20 - 17.70	7.20	100	67		mudsto	ne. Discon	tinuities are	Vorv	intact,	recovered	as gravel.				
F		(92mm)	ADDED	96		13	closely t	to closely s	spaced, plan	ar to	Betwee	en 12.81-12 recovered	2.86m, non- as gravel.				
E							undulati	ing and sm	nooth.		Betwee	en 13.20-13	3.35m, assum	ned			
È.						NI 26		JGHANS F	ORMATION		zone of	core loss.		L	-		
-						-/5-	Weak to	medium	strong reddi	sh	intact,	recovered	as gravel.		17.08		-6.08
17.43 -	с					9	brown f	ine to med	dium grainec	l ro	Betwee	en 13.58-13	3.61m, non-				
- 17.62							horizont	tal to inclir	ned (30 deg.), very	intact,	recovered	as gravel. 4 61m				
-	6	17.70 - 19.20	7.20	93	38	AZCL 35	closely t	to closely s	spaced, plan	ar and	horizor	ntal, very cl	losely to medi	ium 📙			
18.12		(92mm)	ADDED	71			Smooth ST MAU	JGHANS F	ORMATION]		spaced	, planar to	undulating,	"IE	-		
F						8]		staining	i uiscontini g.	uities with Dia				
F											Betwee	en 14.61-14	4.66m, non-				
-						- 22					Betwee	n 14 70-1	as gravel. 4.85m assum				
F						30 NI]				zone of	f core loss.		~~ F			
19.05 -	С					25	Extreme	ely weak to	o weak reddi F	sh	Betwee	en 15.20-15	5.85m, horizo	ontal	-		
E 19.20		19.20 - 20.70	7.20	100	45	13	[ST MAL	JGHANS F	ORMATION]		closely	to closely	o ueg.,, very spaced, plana	ar, [-	10.15		
E		(92mm)	ADDED	92		N ₩	Medium	n strong to	strong redd	ish '	smooth	discontin	uities with bla	ack 📙	19.43		-8.43
F							SANDST	ONE.	aium grainec	1	Betwee	g. on 15 85-14	5 91m	E	19.79		-8.79
E_							[ST MAU	JGHANS F	ORMATION]			10.00 1.		F	-	<u> :::::</u>	
Boring			1		F	rogress	1		I		Ground	water	1 1			i	-
Depth	Hole Dia.	Technique		Cre	ew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struc	k Depth Cased	Rose to ir	n Mins D	epth Sealed	Remarks on Gro	oundwater
						16.20	7.20	3.10	16/08/22	08:00							
						20.70	1.20		10/00/22	17.00							
Remarks							1	1	1			1	1	I	ogged b	y AC	
Symbols	d d													(Checked	by JN	R of 4
abbrevation	- is are n the													F	igule	5/01/20	23
accompanyi	ing key														600		
All dimensio	ons are in														geotechnical	and geoenvironment	al specialists
metres.		Logged in accordance	e with BS59	30:2015	+ A1:2	020											

Project	Ne	wport Quinn Ph	nase 2				Enginee	r	Pinnad	le Cons	ulting En	gineers	Project	No.	PN224395	
Client	Din	nacla Concultin	a Engino	ore Line	itad		National	Grid	Limite 32782	d 7.4 F			Boreho	le	BH10	
Client	PIII		g Engine	EIS LIII	nteu		Coordina	ates	18415	0.6 N			Ground	l Level	11.00 m OD	
Samplin	g/Testing	Drilling	1			1	Strata				1				Scale 1:50	
Sample / SPT Depth	SPIN/ Type	(Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail			Depth	Legend	(m OD)
	C	19.20 - 20.70 (92mm)	7.20 ADDED	100 92	45	14					non-int. Betwee intact, r Betwee intact, r Betwee intact, r Betwee intact, r Betwee light gro sandsto Betwee light gro sandsto Betwee lorizon planar, ; with soi Betwee horizon planar, ; with soi Betwee horizon planar, ; Betwee lintact, r Betwee intact, r Betwee to inclir spaced, disconti Betwee to inclir spaced, disconti Betwee to inclir spaced, disconti Betwee to inclir spaced, disconti	act, recover n 15.98-16 ecovered i n 16.15-16 ecovered i n 16.87-16 <u>ecovered i</u> n 17.08-17 tal, closely discontinu n 17.41-17 ey medium ne. n 17.70-17 core loss. n 17.80-17 tal, very cl smooth disme sand a n 17.94-18 tal, mediu ing, smoot nuities. n 18.82-19 muities with n 18.92-19 muities with n 19.73-12 ted (20 dep planar, sm nuities. n 19.75-12 ted (20 dep planar, sm nuities. n 19.75-20 sely space ne. n 19.79-20 ted (15 - 21 planar, sm nuities. End of B	red as gravel. 5.08m, non- as gravel. 5.08m, non- as gravel. 5.78m, vertical, th discontinuity. 5.89m, non- as gravel. 7.70m, r spaced, planar, uities. 6.66m, grading to a grained 7.80m, assumed 7.80m, assumed 7.80m, assumed 7.80m, assumed 7.94m, osely spaced, scontinuities nd gravel infill. 8.17m, m spaced, th 8.91m, non- as gravel. 9.04m, vertical, scontinuity. 9.04m, vertical, scontinuity. 9.04m, vertical, scontinuity. 9.05m, non- as gravel. 9.55m, non- as gravel. 9.55m, horizontal g.), very closely nooth 9.79m, r spaced, planar, uities with some 1.04m, light grey, di beds of red 0.70m, horizontal 0 deg.), closely nooth 0.70m, horizontal 0 deg.), closely nooth			-9.70
Boring	1	1			F	rogress					Groundv	vater		. I		
Depth	Hole Dia.	Technique		Cre	w	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to in Mins	Depth Seale	Remarks on Groun	dwater
Remarks											L	1		Logged b Checked Figure	y AC by JN Sheet 4 o	f 4
abbrevation explained o accompanyi sheets.	is are n the ing key													GGG		2
All dimensio metres.	ons are in	Logged in accordanc	e with BS593	30:2015	+ A1:2	020								geotechnica	i and geoenvironmental sp	pecialists

Project	Ne	wport	Quinn Pha	ase 2			Enginee	r	Pinnad	cle Cons	sulting Eng	ineers		Project	No.	PN224395	
Client	Pir	nacle	Consulting	Engineer	limiter	4	National	Grid	Limite 32806	d 8.2 E				Borehol	e	BH14A	
Cheffit	ΓII	inacie	COnsulting	; Lingineer:		J	Coordina	ates	18418	85.7 N				Ground	Level	10.91 m Ol	D
Samplir	ng	1	1	Properti	es	-	Strata									Scale 1	:50
Dep	oth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	iption				Depth	Legend	Level (m OD)
0.00							MADE G	ROUND: 0	Grey concret	e.					- 0.15		10.76
0.20		ES							- CONCRETE] Ilv mediu	um sand Gr	aval is sul	hangular to	/			10.51
0.20 - 0.	60	— в					subroun	ded fine t	coarse of s	sandston	ie and siltsto	one.	bangulai tu	, I	- 0.40		10.51
0.50		E D					[MADE (GROUND]						/	_		
0.50	20						PROBAB	LE MADE	GROUND: D	ense bro	wn slightly i	gravelly n	nedium sar	nd.	_		
1.00		F D					siltstone			inueu ini			istone and		-		
1.00	C.F.	ES	(DDV)			540	[MADE 0	GROUND]							_		
1.20 - 1.	65 65	Fр	(DRY)			540									_		
1.20 - 1.	70	- в													-		
1.80	20	_ D	2.00			650/									-		
2.00 - 2.	30		(DRY)			150mm									-		
2.00		- ES	. ,				Soft to f	irm browr	n slightly grav	velly san	dy CLAY Gra	avel is sub	angular to		2.30		8.61
2.00 - 2.	30	E D					subroun	ded medi	um to coarse	e of sand	lstone and s	iltstone.			_		
2.00 - 2.	50	Ев			12		[RIVER T	ERRACE D	DEPOSITS-CC	HESIVE]							
2.00	45	E	2.00		12	621									- 2 00		7.01
5.00 - 5.	45	L	(DRY)			321	Stiff red	dish brow	n slightly gra	avelly CLA	AY. Gravel is	angular t	o subangu	lar	- 3.00		7.51
3.00		ES ES					fine to n mudstor	nedium of ne)	mudstone l	ithorelict	ts. (Weather	red calcar	reous		_		
3.00 - 3.	45 45	L #		1			[ST MAU	JGHANS F	ORMATION-	UPPER C	LAY]				-		
3.00 - 3.	-5 50	Ев		1											-		
3.80		- D															
4.00 - 4.	45	F	4.00 (DRV)			S15	Below 4	.00m, firm	n.						_		
4.00		ES													_		
4.00 - 4.	45	- D													-		
4.00 - 4. 4.80	50	- D													_		
5.00 - 5.	45	-	5.00			S30		~~~~							-		
		F	(DRY)				Below 5	.00m, stiff	r						-		
5.00 - 5	15	- ES													_		
5.00 - 5.	-5 50	- в													_		
5.80		- р													-		
6.00 - 6.	38	-	6.00			S50/	Polow 6	00m vor	v ctiff						_		
6 00 G	20	F	(DRY)			230mm	Below 0	.00m, ver	y sun.						_		
6.00 - 6.	38	E						Boreho	ole continue	d by rota	ırv techniau	es - see n	next naae		_		
		_								,	.,				_		
		_													_		
		-													-		
		-													-		
		F													_		3
		F													-		
		F													-		
		F													-		
		E															
		E													_		
		L													_		
		F													-		
		F													-		
		F		1											-		
		-													-		
		F													_		
		-													_		3
Boring						Progress		Denth to	1		Groundwa	ater	I I		1		
Depth	Hole Dia.	Techn	ique		Crew	Hole	Depth Cased	Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Gro	oundwater
1.20	0.30	Inspe	ction Pit		D-Drii AC/RW	2.30	2.00	DRY	04/08/22	18:00						strikes noted	- may
6.40	0.15	Cable	Percussion		WN/JB	2.30	2.00	DRY	05/08/22	08:00						have been ma	asked by
21.00	0.12	Rotar	/ Core		CI/JS	5.45	4.50	DRY	05/08/22	18:00						water added.	
Remarks	AGS	Inspect	ion pit hand	excavated to	0 1.20m d	lepth and i	no services	were four	nd.						Logged b	y RW	
Symbols and	1	Chiselli	ng: 1.80-2.60	m grass vial, . Om for 240 n	≤ x ∠58m ninutes ar	nd 5.80-6.0	355 Jars and 00m for 60	minutes.	כוור ועט .						Cnecked Figure	JN JN Sheet	1 of 4
abbrevation explained or	s are n the	Boreho	le backfilled	with bentor	ite pellet	s and topp	ed with ari	sings on c	ompletion.						-	05/01/20	23
accompanyi sheets.	ng key														GCC	നവ	
All dimensio metres.	ns are in	المععط	in accordance	with RSEQ20-	2015 + ^1	·2020									geotechnica	and geoenvironment	tal specialists
L		-055CU			_010 · AI	020											

Project	Ne	wport Quinn Ph	iase 2				Engineer	r	Pinnad	cle Cons	ulting En	gineers		Project	No.	PN224395	
Clinat	Dia						National	Grid	Limite	d 18.2 F				Boreho	e	BH14A	
Client	PIN	nacie Consultin	g Enginee	ers Lim	ntea		Coordina	ates	18418	5.7 N				Ground	Level	10.91 m OE)
Samplin	g/Testing	Drilling		0			Strata									Scale 1:	50
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail				Depth	Legend	Level (m OD)
_							Bor	rehole cor	ntinued by ro	otary					_		
F								technique	es - see belo	w					-		
F															_		
F															_		
E															_		
E															_		
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-															-		
E															_		
-															_		
F															_		
_		6.40 - 7.50	6.40	90	52	470	Extreme	ly weak t	o weak redd	lish	Betwee	n 6.40-6.6	i9m, assun	ned	_		
-		(92mm)	ADDED	66			brown N	UDSTON	E with occas	ional	zone of	core loss.			-		
- 6.90 -	С						Disconti	of grey m nuities are	e horizontal	to	Betwee	n 6.69-6.7 ed as grav	'7m, non-ii 'el	ntact,	-		
7.15	6					4	inclined	(15 - 45 d	leg.), closely	to	Betwee	n 6.77-6.8	2m, non-ii	ntact,	-		
7.15 -	Ľ					19	medium undulati	spaced, p ng. smoo	planar to th occasiona	llv	recover	ed as soft	slightly gra	avelly			
F		7.50 - 9.00	7.50	100	73	NI	rough w	ith some	clay infill.	,	Betwee	n 7.50-7.5	i9m, non-ii	ntact,	_		
_		(92mm)	ADDED	75		6	[ST MAU	JGHANS F	ORMATION]		recover	ed as grav	el.		_		
	с					NI					recover	ed as grav	el.	ntact,	-		
8.15	_					5					Betwee	n 8.40-8.5	0m, horizo	ontal,	-		
Esco	· ·					50					planar	isely to clo smooth di	seiy space scontinuiti	ies.	_		
8.60						13					Betwee	n 8.40-8.5	0m, vertic	al,	_		
F						N 10					planar, Betwee	rough disc n 8.72-ន ទ	ontinuity. 0m. non-ii	ntact.	-		
-		9.00 - 10.50	9.00	83	0	AZCI					recover	ed as grav	el.		-		
F		(92mm)	ADDED	18		NI					Betwee	n 8.80-9.0	0m, horizo	ontal,	-		
_						17					planar t	o undulat	ing, smoot	:h	_		
É											discont	inuities.	6m unt	-al			
E											Retwee	n 8.92-8.9	om, vertic	dl,	_		
Boring	I		1		F	rogress	L				Groundv	vater					L
Depth	Hole Dia.	Technique		Cre	w	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on Gro	undwater
0.15	0.30	Concrete Core		D-D)ril	0.00	2.00	0.01/	04/08/22	08:00						No groundwat	er
1.20 6.40	0.30	Inspection Pit Cable Percussion		AC/I	/JB	2.30 2.30	2.00	DRY	04/08/22	08:00 18:00						have been ma	may sked by
21.00	0.12	Rotary Core		CJ/	JS	5.45	4.50	DRY	05/08/22	18:00						water added.	
Remarks		nspection pit hand	d excavated	to 1.20)m de	oth and r	no services	were four	nd.	I	I	I	I	I	Logged b	y RW	
Symbols and	1 199 1 1 1	ES sample = 1 x 60 Chiselling: 1 80-2 6	ml glass via	l, 2 x 25) minut	58ml a	mber gla	iss jars and	1 x 1L pla minutes	stic tub.						Checked	by JN	of 4
abbrevation explained of	sare l n the	Borehole backfilled	d with bent	onite p	ellets	and topp	ed with ari	sings on c	ompletion.						Inguie	05/01/202	23
accompanyi sheets	ng key														ഹ		
All dimensio	ins are in	Loggodia	a with perce	0.2015		000									geotechnica	and geoenvironments	al specialists
medes.		Lugged in accordanc	e with BS593	su:2015	+ A1:2	JZU											

PRELIMINARY

Project	Nev	/port Quinn Ph	ase 2				Enginee	r	Pinna	cle Cons	sulting En	gineers	Pro	ject N	No.	PN224395	
Client	Pinr	acle Consultin	g Enginee	ers Lim	ited		National	Grid	22806	a i8.2 E			Bo	rehole	9 	BH14A	
	/ T .:	D :11:	0 0				Coordina	ates	18418	5.7 N			Gro	Juna	Levei	10.91 m C	1.50
Sampling Sample /	sPT N /	Core Run/Depth	Depth Cased	TCR/	RQD	51	Strata				Datail				Dauth	Scale	1:50 Level
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General				Uetali	ing smoo	th discontinuit		Depth	Legend	(m OD)
-		(92mm)	ADDED	83 18	0	NI					Betwee	n 9.00-9.2	5m, assumed	.y.			
E											zone of	core loss.	1m recovered		_		
-	_	10.50 - 12.00 (92mm)	9.00 ADDED	100 74	48	75					very so	ft to soft sl	ightly gravelly	-	.		
10.80 -	С					15					sandy c	lay.	50m non-inta	ct -	.		
_11.15 -	с					- N I					recover	ed as very	soft to soft	,			1
- 11.35						5					slightly	sandy slig	htly gravelly cla 56m non-	ay.	.		
-						NI 33					intact, r	ecovered	as gravel.	-	-		
-11.80 -	С					8					Betwee	n 10.97-12 ecovered	1.04m, non- as gravel	E			
12.00	С	12.00 - 13.50	9.00	97	66	AZCL					Betwee	n 11.04-1	1.12m, horizor	ital	-		
12.19		(92mm)	ADDED	92		14					to inclir	ned (30 de ly spaced	g.), very closel [.] planar_smoot	y –			
-							1				discont	inuities.		-	-		
-12.80 -	C					4					Betwee	n 11.12-12 recovered	1.15m, non- as sand				
12.90	C										Betwee	n 11.49-1	1.54m, non-		-		
_13.15 -	С					-616	1				intact, r	ecovered lav	as very soft ve	ry –	.		
13.40	с										Betwee	n 11.62-1	1.66m, vertical	,	.		
13.50		13.50 - 15.00	9.00	71 64	45						undulat with so	ting, rough me clav int	discontinuity fill.	E	:		
- 13.90 -	с	(9211111)		04							Betwee	n 11.66-1	1.75m, non-	F	.		
14.00	6										Betwee	ecovered n 12.00-12	as gravel. 2.04m, assume	ed	-		
14.00 -	C					8					zone of	core loss.			.		
-											intact, r	ecovered	as gravel.		-		
-	6					15	Extreme	lv weak to	weak light	grev	Betwee	n 13.50-13	3.93m, assume	ed	14.80		-3.89
15.00	Ľ	15.00 - 16.50	9.00	100	71	NI	MUDSTO	ONE with c	closely space	ed	Betwee	n 14.51-14	4.56m, non-	E	-15.00		-4.09
-		(92mm)	ADDED	83			beds of (Dipping	reddish br at 15-20 (own mudsto deg.).	one	intact, r	ecovered	as soft slightly		.		
_						4	ST MAL	JGHANS FO	DRMATION]		Betwee	n 14.56-14	4.80m, horizor	ital 📙	-		
E						33	Extreme brown N	ly weak to	o weak redd E with occas	lish ional	to inclin	ned (20 - 3 undulatio	0 deg.), mediu g. rough	m			
<u> </u>						9	nodules	of grey m	udstone.		discont	inuities wi	th some clay		.		
16.15 -	С					<u>40</u> 15	inclined	nuities are (10 - 45 de	e horizontal eg.), closely	to to	infill.	n 1/ 80-1	5 00m incline		.		
- 16.25						46	medium	spaced, p	lanar to		(15 - 20	deg.), clo	sely spaced,				
-		16.50 - 18.00	9.00	94 72	62	AZCL	rough w	ing, smoot ith some c	h occasiona clay infill.	lly	planar,	smooth di	scontinuities		.		
- 16.77 - - 16.88	С	(9211111)	ADDLD	72		11	[ST MAL	JGHANS FO	ORMATION]		Betwee	n 15.00-1	5.11m, assume	ed –	.		
-						18					zone of	core loss.	- 1 4 ma	E	-		
- -	-					4					horizon	tal, very cl	osely spaced,				
17.45 - - 17.65	C										planar,	smooth di	scontinuities.	_	-		
-17.77 -	С					9					planar,	smooth di	scontinuities.	, 			
17.88		18.00 - 19.50	9.00	97	68	AZGL					Betwee	n 16.27-16 tal. verv.cl	5.40m, oselv to closel	v –	-		
-		(92mm)	ADDED	73							spaced,	planar, sn	nooth	'	.		
E						100					discont Betwee	inuities. n 16.50-16	5.58m, assume	ed E	-		
- 18.80 -	с										zone of	core loss.		F	:		
18.90	-										intact, r	recovered	as gravel.	F	-		
Ē						NI					Betwee	n 17.78-18	3.00m, non-	E			
F		40.52		4.0-		11 NI					slightly	gravelly cl	ay.	F	-		
-		19.50 - 21.00	9.00 ADDED	100 94	53	9					Betwee	n 18.00-18	3.04m, assume	ed	.		
E						21					Betwee	n 18.08-19	9.00m,	Ē	_		
Boring	· · · · · · · · · · · · · · · · · · ·			1		Progress					Groundy	vater	1	'		I	
Depth H	lole Dia.	Technique		Cre	w	Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to in	Mins	Depth Sealed	Remarks on G	roundwater
						5.45 6.40	4.50 6.00	DRY DRY	08/08/22 08/08/22	08:00 18:00							
						6.40	7.50	6.30	11/08/22	08:00							
						10.00	9.00	AUDED	11/08/22	17:00							
Remarks	AGS														Logged b Checked	y RW by JN	
Symbols and abbrevations	are														Figure	Shee	3 of 4
explained on accompanyir	the ng key														~~~	05/01/.	
sheets. All dimensior	ns are in														GEC	and geoenvironme	ntal specialists
metres.	L	ogged in accordance	e with BS593	30:2015	+ A1:2	020											

Project	Nev	wport Quinn Ph	ase 2				Engineer		Pinna	cle Cons	ulting En	gineers	Proje	ct No.	PN	224395		
Client	Pin	nacle Consultin	g Enginee	ers Lim	ited		National	Grid	32806	68.2 E			Bore	nole	BH	14A		
			6 Enginee	215 EIII	inceu		Coordina	tes	18418	85.7 N			Grou	nd Level	10.	91 m (טט	
Samplin	g/Testing	Drilling				-	Strata								1	Scale	1:50	
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail			Depth		Legend		Level (m OD)
-		19.50 - 21.00	9.00	100	53						horizon	tal, widely	spaced, planar,	-	Ē		9	
20.22 -	C		ADDED	94							rough d	liscontinui	ties with some	-				
- 20.30						8					Betwee	n 19.00-19	9.23m. non-	_				
F											intact, r	ecovered	as gravel.	_			1	
F						Щ					Betwee	n 19.23-19	9.50m, horizonta					
-						22					to inclir	ned (30 de	g.), closely	21.00			~~~	10.09
F											discont	inuities.	stepped, smooti	' =				
F											Betwee	n 19.50-19	9.55m, non-	F				
F											intact, r	ecovered	as gravel.					
F											to inclin	ned (30 - 4	5 deg.), very	' -				
-											closely	to closely	spaced, planar to					
E											undulat	ing, smoo	th					
E											Betwee	inuities. n 20 87-20	0.91m non-					
E											intact, r	ecovered	as gravel.	IE				
F												End of E	Borehole	-				
É														E				
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Boring					F	Progress		Darath ta			Groundv	vater	1					
Depth	Hole Dia.	Technique		Cre	w	Hole	Depth Cased	Water	Date	Time	Depth Struck	Depth Cased	Rose to in M	ns Depth Sea	led Rer	marks on G	roun	dwater
						18.00	9.00	6.50	12/08/22	08:00 17:00								
						21.00	5.00		12/00/22	17.00								
Remarks							ı – I			1	•		ı I	Logged	by	RW		
Symbols and	<u>1997</u>													Checke	d by	JN	- 1	fл
abbrevation	- s are													Figure		05/01/	. 4 0 2023	14
accompanyi	ng key													~~~	-	~		~~
sheets. All dimensio	ns are in													Ge		GCH	N	CS
metres.	1	Logged in accordance	e with BS593	30:2015	+ A1:2	020								geotechni	var and g	-cerwironni	ersat bij	APCIANS78

Project	Ne	wport Q	uinn Phas	e 2			Enginee	r	Pinnac	cle Cons	ulting En	gineers	Proj	ect N	lo.	PN224395	
Client	Pir	nacle Co	onsulting (Engineers	Limited	ł	National	l Grid	22771	a 5.8 E			Bore	ehole	9 	BH1/A	D
							Coordina	ates	18407	4.1 N			Gro	una L	evei	11.04 m O	50
Samplin	lg	Sample	Depth Cased	Propertie Strength	es(0()		Strata			Deseri					Denth	Scale 1	.:50 Level
Dep	oth	Туре	& (to Water)	kPa	w(%)	SPIN				Descri	ption			\rightarrow	Depth	Legend	(m OD)
0.25							MADE G	GROUND: (GROUND -	Grey concret - CONCRETE]	e.				ļ	0.23		10.81
0.25		ES ES					MADE G	ROUND: I	Dark grey mo	ottled bro	wn gravel	ly medium	to coarse sand	i. E	0.48		10 56
0.25 - 0.	50	В					Gravel is and clin	s subangu ker Some	fragments o	inded fine f wood a	e to coarse nd metal	e of siltstoi	ne, sandstone	Æ	- 0.40		10.50
0.50		E ES					[MADE (GROUND]	indginents o	1 1000 0	na metai.			_/E			
0.50 - 0.	80	в					MADE G	ROUND: I	Dark grey gra	velly me	dium to co	barse sand	with a low		-		9.94
0.80 - 1.	20	_ B					siltstone	content. G	ravel is suba	ngular to ete.	subround	led fine to	coarse of	E	1.10		9.84
1.00		_ ES					[MADE (GROUND]						_/E	_		8
1.20 - 1.	65	_	(DRY)			C15	MADE G	ROUND: I	Brown grave	ly slightly	y clayey m	edium san	d with a low	l			8
1.20 - 1.	70	_ В					[MADE 0	GROUND	ravel is subro	bunaea n	neaium to	coarse or	sandstone.				
2.00 - 2.	45	-	2.00			C19	Soft ligh	t brown s	lightly sandy	slightly g	gravelly CL	AY with a l	ow subrounded	ĩĿ	-		
2.00		– ES	(DRY)				cobble c	content of	sandstone.	Gravel is :	subangula	r to subro	unded fine to	F			
2.00 - 2.	50	В					[ALLUVI	UM]		Jie.				F	-		
2.30		– D			10									F			
		_												F			
3.00 - 3.	45	_	3.00 (DRV)			C26								F	-		8
3.00		– ES												F			8
3.00 - 3.	40	_ В					Firm be	coming sti	iff reddish br	own sligh	ntly gravell	ly sandy Cl	AY with a low	-	3.40		7.64
3.50 - 4.	00	– В					subroun	ided cobb	le content of	mudstor	ne and sar	dstone. G	ravel is	F			8
4 00 4	45	_	4.00			620	[ST MAL	JGHANS F	ORMATION-	UPPER CL	LAY]		sanustone.	F			
4.00 - 4.	45	-	4.00 (DRY)			528								F	-		8
4.00 - 4.	45	E D	. ,											E			
4.00 - 4.	50	_ В			17									E	-		
4.05					17									E			8
5.00 - 5.	45	-	4.00			C45			~					F	_		
5 00 - 5	50	- - - B	(DRY)				At 5.00r	n, very sti	ff.					E			
5.00-5.	50	- B	1.00			65.0								F	-		
5.60 - 6.	05	_	4.00 (5.50)			C50		Boreho	ole continued	l by rotai	ry techniq	ues - see n	iext page	E	5.60		5.44
		_	. ,											E	_		
		_												E			8
		_												E			
		_												F	-		8
		-												F			8
		-												F	-		
		-												F			
		-												F			
		-												F	-		
		_												F			
		_												F	-		
		-												F			8
		-												F			
		-												F	-		8
		-												F			
		_												F	-		8
		E												E			
														E			
		_												E			8
		_												E			
		_													-		6
Poring						Drogroco					Groundu	vator					
Denth	Hole Dia	Techniqu	10		Crow	Depth of	Denth Cased	Depth to	Date	Time	Depth Struck	Denth Cased	Rose to in N	Ains T	Jonth Seale	d Remarks on G	roundwater
0.23	0 30	Concrete	Core		D Drill	Hole	Septil Caseu	Water DRV	09/08/22	08.00	5.60	4 00	5.50 2	0	pui seale	Seenage	- anawater
1.20	0.30	Inspectio	on Pit		AC/RW	1.20		DRY	09/08/22	13:24	5.00	-1.00	5.50 2	~		Scepage.	
6.05	0.15	Cable Pe	rcussion		PO/JT	1.20		DRY	11/08/22	08:00							
20.00	0.12	notary C			C1/12	0.05	3.30	3.30	11/00/22	17.00							
Remarks	AGS	Inspection	pit hand e	glass vial	1.20m d	epth and amber gla	no services	were four	nd. stic tub	_	_	_		l	Logged b	y AC	
Symbols and		Chiselling:	5.30-5.60n	n for 60 mi	nutes	2bci 510		pia						1	Figure	Sheet	1 of 4
apprevation: explained or	are the	A 50mm s Backfill do	tandpipe w	as installed	to 12.00	m with a g	geowrappe	d slotted s	ection from 1	0.00m to	12.00m w	vith a flush	cover installed.	0		05/01/2	023
accompanyi sheets.	ng key	ground lev	el.	200 01 11010		Jeur up	-0 -2.0011	, ₀ . a ver mit	10.0	, oent	Line Jear		, concrete up t	-	Gee	лесн	
All dimensio metres.	ns are in	SPTs at 2.0	0m and 3.0	0m are like	ely to hav	e encount	ered cobbl	es.							geotechnica	il and geoenvironmer	tal specialists
		-opged III a	scoruarice W		TWU CTO	020											

Project	Nev	wport Quinn Ph	nase 2				Enginee	r	Pinna	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Pin	nacle Consultin	ıg Enginee	ers Lim	nited		National Coordina	l Grid ates	Limite 32771 18407	d .5.8 E '4.1 N				Boreho Ground	le Level	BH17A 11.04 m O[)
Sample /	spt N /	Core Run/Depth	Depth Cased & (to Water)	TCR/ SCR (%)	RQD	FI	Strata General				Detail				Depth	Scale 1: Legend	Level
Set Depth Set Depth Set Depth Set Depth Set Depth Set Depth Set Set Set Set Set Set Set Set Set Set	Type	(Core Dia/Time)	5.50 ADDED	14 0	0	FI	Stiff dar gravelly	rehole con technique	prown slight vel is subang	btary w	Betwee zone of	n 5.60-5.9 core loss.	3m, assum	ned	Depth	Legend	(m OD)
	C C C	6.00 - 7.50 (92mm)	6.00 ADDED	90	12	NI AZCL NI 10 NI	subroun mudstor bedrock [ST MAL CLAY] BOULDE light gre sandsto bedrock [ST MAL CLAY]	ided fine to ne (probab (). JGHANS F(ER of weak ey medium ine (Possib (). UGHANS F(o medium o ole weatherd ORMATION- to medium to coarse g le sandstond ORMATION-	f ed UPPER strong rained e UPPER	Betwee recover Betwee zone of Betwee recover Betwee closely disconti	n 5.93-6.0 ed as clay. n 6.00-6.1 core loss. n 6.14-6.3 ed as stiff n 6.39-6.5 spaced, pla inuities. n 6.58-7.5	0m, non-ir 4m, assum 9m, non-ir <u>clay.</u> 8m, horizc anar, smoc 0m, non-ir	ntact, ned ntact, ontal, oth	- 6.39 - 6.58 		4.65 4.46
- 7.60 - - 7.60 - - 7.77 - 8.62 - - 8.92 - 9.30 - - 9.50 	c c	7.50 - 9.00 (92mm) 9.00 - 10.50 (92mm)	6.00 ADDED 6.00 ADDED	90 86 86 86 86	80	AZCL 3 37 8 AZCL 14 2	Stiff dar gravelly subrour mudstoi bedrock [ST MAL CLAY] Extreme MUDSTO spaced I Disconti inclined spaced [ST MAL	k reddish t CLAY. Grav Ided fine to ne (probab (). JGHANS F(2) weak re ONE with r beds of gre inuities are I (20 deg.), planar and UGHANS F(prown slight vel is subang o coarse of ole weathere ORMATION- eddish brow medium to v ey sandstone e horizontal closely to n d smooth. ORMATION]	ly gular to ed UPPER n videly e. to nedium	recover Betwee inclined planar t disconti Betwee sandsto very clo planar, : Betwee sandsto Betwee zone of Betwee bed of s Betwee	ed as clay. n 7.64-8.3 l (20 deg.), o undulati inuities. n 8.36-8.5 ne. Incline sely to clo smooth di n 8.94-9.0 ne. n 9.00-9.2 core loss. n 9.21-9.2 sandstone. n 9.49-10.	6m, horizc widely sp ing, smoot 2m, thin b dd (20 - 40 sely space scontinuiti 0m, thin b 1m, assum 5m, very t 40m, horiz	/ aced, h ed of deg.), d, es. ed of hed hin contal,			
Dening											Correct of						
Depth	Hole Dia.	Technique		Cre	ew	Depth of	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	ed Remarks on Gro	oundwater
0.23 1.20 6.05 20.00	0.30 0.30 0.15 0.12	Concrete Core Inspection Pit Cable Percussion Rotary Core	1	D D AC/I PO, CJ/	rill RW /JT /JS	0.00 1.20 1.20 6.05	5.50	DRY DRY DRY 5.50	09/08/22 09/08/22 11/08/22 11/08/22	08:00 13:24 08:00 17:00	5.60	4.00	5.50	20		Seepage.	
Remarks Symbols an abbrevatior explained o accompany sheets. All dimensio metres.	d C ns are A n the E ing key E ons are in S	nspection pit hand S sample = 1 x 60 Chiselling: 5.30-5.6 S 50mm standpipe Backfill details fror ground level. PTs at 2.00m and Logged in accordance	d excavated ml glass via 50m for 60 i e was install m base of hi 3.00m are	l to 1.20 il, 2 x 25 minutes led to 1 ole: bei likely to	Dm de 58ml a s 2.00n ntonit	pth and amber gland n with a g e seal up e encount	no services ass jars and geowrappe to 12.00m tered cobbl	were foun 1 x 1L plas d slotted se n, gravel filt les.	d. stic tub. ection from 2 er up to 10.0	10.00m to 10m, bent	0 12.00m w conite seal	ith a flush up to 0.20i	r cover insta n, concrete	lled. e up to	Logged I Checked Figure	by AC I by JN Sheet 2 05/01/20	

Project	Ne	wport Quinn Ph	ase 2				Enginee	r	Pinna	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Dim	nada Cancultin	a Engino	ara Lina	itad		National	l Grid	Limite 32771	d 5.8 F				Boreho	le	BH17A	
Client	PIN	nacie consultin	g Enginee	ers Lin	nteu		Coordina	ates	18407	4.1 N				Ground	Level	11.04 m O[)
Samplin	g/Testing	Drilling					Strata				1				1	Scale 1:	50
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail				Depth	Legend	Level (m OD)
_		9.00 - 10.50	6.00	86	80						widely	spaced, pl	anar, smoo	th	_		0
10.25 -	С	(92mm)	ADDED	86							Betwee	inuities. en 10.68-1	1.10m.				0
-		10.50 - 12.00	6.00	100	66	10	1				horizon	ital, mediu	m spaced,	planar,	_		
-		(92mm)	ADDED	96			1				smooth sand in	n discontin fill.	uities with	some	_		
-						4					Betwee	en 11.10-1	1.49m, hor	izontal	-		
E							Weak to	medium	strong reddi	sh	to inclir	ned (45 de planar sr	g.), closely nooth	,	11.21		-0.17
-11.40 -	С					a	brown n	nedium to	coarse grai	ned	discont	inuities.			_ 11.49		-0.45
-11.60 -	с						SANDST	ONE. IGHANS F	ORMATION	/	Betwee	en 11.94-1	2.00m, nor	-	-		Þ
11.95						NI	Extreme	ely weak re	eddish brow	n	Betwee	en 12.00-1	as gravei. 2.07m, assi	umed	_		•
-12.00 - [12.14	C	12.00 - 13.50	6.00	95	81	AZCL 14	MUDST	ONE. Disco	ontinuities a	re N	zone of	core loss.			 12_10		-1 15
E		(92mm)	ADDED	85		NI	planar t	o undulati	ng and smo), oth	Betwee (15 - 25	en 12.07-1 5 deg.). clo	2.19m, incl selv spaced	ined I.	_ 12.19		-1.15
-12.50 -	С					- 28	with sor	ne sandy	clay infill.		planar,	smooth di	scontinuiti	es 🛛	12.50		-1.46
- 12.60							Weak re	ddish bro	wn medium	to	with so	me sandy	clay infill.		-		
-						3	coarse g	rained SA	NDSTONE.	- 20	intact, r	recovered	as sandy g	ravel.	_		
13.17 -	С						deg.), cl	osely space	e inclined (1) ed, planar a	nd 5 - 20	Betwee	en 12.43-1	2.50m, hor	izontal	_		
							smooth	with som	e sandy clay	infill.	spaced,	, planar, sr	nooth		-		
F	13.50 - 15.00 6.00 87 83 (92mm) ADDED 86 -				AZCL	Extreme	ely weak to	o weak purp	lish	discont	inuities wi	th some sa	nd				
F							brown N	UDSTON	E. Discontin	uities	Betwee	en 12.62-1	2.95m, ver	tical,	-		
14.07 -	С					2	spaced,	zontai , m planar to	undulating,	Jeiy	undulat	ting, smoo	th disconti	nuity.	_		
_ 14.50	c					-	smooth	with som	e clay infill.		zone of	core loss.	3.69m, ass	umed	_		
-								JGHANS F	ORMATION		Betwee	en 13.69-1	7.22m, son	ne	_		
-						-40 7	1				Betwee	s of light g en 14.69-14	rey mudsto 4.74m.	ne.	_		
–		15.00 - 16.50	6.00	100	75						horizon	ital, very c	losely spac	ed,	_		
E		(92mm)	ADDED	80	/3						planar t	to undulat liscontinui	ing, smoot ties	h to			
<u> </u>						6					Betwee	en 15.00-1	5.03m, nor	-	_		
-						NI	1				intact, r Below	recovered 15.03m h	as soft clay		-		
-15.80 -	С						1				inclined	d (15 - 45 c	leg.), close	y ly to	_		
16.15 -	с					6					mediun	n spaced,	planar to		_		
- 16.30											discont	inuities wi	th some cla	ау	_		
-16.60 -	с	16.50 - 18.00	6.00	96	70						infill.	n 15 65 1	5 76m nor		_		
16.80		(92mm)	ADDED	92							intact, r	recovered	as gravel.	-	_		
16.95 -	С					5					Betwee	en 16.41-1	6.50m, nor	-	_		
_ 17.20						5	Weak to	medium	strong reddi	sh	Betwee	en 16.50-1	6.56m, assi	umed	17.22		-6.18
_17.43 -	С						brown f	ine to meo ONF with	dium grained closely to m	ł edium	zone of	core loss.	6.61m	.	_		
- 17.51						25	spaced	horizontal	and vertical	bands	intact, r	recovered	as gravel.	-	-		
-17.80 -	C					8	of light Disconti	grey sands nuities are	stone. e inclined (1	5 - 20	Betwee	en 17.53-1	7.77m, hor	izontal	_		
-		18.00 - 18.50	6.00	30	0	AZCL	deg.), cl	osely to m	redium spac	ed,	to inclir closely	ned (20 - 4 to closelv	5 deg.), ve spaced. pla	ry Inar to	_		
F		(92mm)	ADUED			NI	planar t rough	o undulati	ng and smo	oth to	undulat	ting, smoo	th				
-18.50 -	С	18.50 - 20.00	6.00			NI		JGHANS F	ORMATION]	/	discont Betwee	nuities. n 17.77-1	8.00m,		-18.50 -		-7.46
E -0.55		(92mm)	ADDED			2	Extreme MUDST	ely weak re ONE with a	eddish brow occasional ir	n Iclined	horizon	ital, mediu	m spaced,	planar	E		
F						3	(45 deg.) beds of	grey mudsto	ne.	to undu discont	inating, rou inuities.	ıgh				
F						NI	Strong r	JGHANS F	ORMATION]	n to	Betwee	en 18.00-1	8.35m, ass	umed	- 19.20		-8.16
F							coarse g	grained SA	NDSTONE w	ith	zone of Betwee	core loss. en 18.35-1	8.50m, nor	-	-		
[19.64 - _ 19.76	С						closely s sandsto	spaced be ne.	ds of light gr	ey	intact, r	recovered	as sandy g	ravel	EI		
19.85 -	с					-	[ST MAL	JGHANS F	ORMATION]		orlight	grey sand	sione.		- 20.00		-8.96
20.00																	
Boring	·				ļ	Progress	•				Groundv	water	,		·'	· · · · ·	·
Depth	Hole Dia.	Technique		Cre	w	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	k Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on Gro	undwater
						6.05 20.00	5.50 6.00	3.10 3.10	17/08/22 17/08/22	08:00 17:00							
							-	-									
Remarks	AGS														Logged b Checked	by AC	
Symbols and	d sare														Figure	Sheet 3	8 of 4
explained or	n the ng key															05/01/20	23
sheets.	ins are in														Geo	JIGCH	NCS
metres.		Logged in accordance	e with BS593	30:2015	+ A1:2	020									geotechnica	al and gecenvironment	al apecialists

Project	Ne	wport Quinn P	hase 2				Engineer		Pinnac	le Cons	ulting Enន្	gineers	F	Project I	No.	ΡN	224395	5	
Client	Die	and consult			اء ما		National	Grid	Limite 32771	d 58 F			E	Borehol	e	BH	17A		
Client	PIr	inacie Consulti	ng Enginee	rs Limi	ted		Coordina	ates	18407	4.1 N			C	Ground	Level	11.	04 m	OD	
Samplin	g/Testing	Drilling	1 1				Strata										Scale	1:5	0
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail				Depth		Legend		Level (m OD)
Client Samplin Sample/ Sort Depth	Pir sPTN/ Type	nacle Consultin	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	National Coordina Strata General	Grid ates	32771 18407	5.8 E 4.1 N	Detail etween recovere Between intact, re	18.50-18. ed as clay. n 18.60-19 tal, widely iscontinuit n 19.20-19 ecovered a End of B	60m, non-ir 9.20m, spaced, pla ties. 9.34m, non- as gravel. orehole	anar,	Level		04 m Scale Legend		D Level (m OD)
F														ļ	:				
														F	-				
															-				
-														-	-				
Doring											Croundu								
Depth	Hole Dia	Technique		Crow		ogress epth of	Depth Carod	Depth to	Date	Time	Depth Struck	Depth Carod	Rose to	in Minc	Depth Sealer	Re	narks on	Grov	ndwater
Depth		rechnique		Crev	v	Hole	Depth Cased	Water	Date	iime	Depth Struck	Depth Cased	KUSE TO		uepth Sealed	Ker		arou	nuwater
Remarks Symbols and abbrevations explained or	i s are n the														Logged b Checked Figure	y by	AC JN Shee 05/01	et 4 /2023	of 4
accompanyi sheets. All dimensio metres.	ng key ns are in	Logged in accordan	ce with BS593	0:2015 +	A1:202	20									GCC			N	

Project	Ne	wport C	uinn Phas	ie 2			Enginee	r	Pinnac	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Pin	nacle Co	onsulting I	Fngineers	limite	ł	National	Grid	S2821	d .9.0 E				Boreno	le • • • • • •	BH23	_
			0	0			Coordina	ates	18413	3.9 N				Ground	Level	11.91 m OL)
Sampling		Sample	Depth Cased	Propertie	25		Strata									Scale 1:	:50 Level
Depth	1	Type	& (to Water)	kPa	w(%)	SPIN				Descri	ption				Depth	Legend	(m OD)
0.10 - 0.18 0.18 - 0.40		— В — В					MADE G	GROUND: E	· TARMACAD	adam. AM]				/	- 0.10		. 11.81
0.25		– D					MADE G	ROUND: F	Reddish brov	vn sandy	angular to	o subangul	ar fine to c	oarse	_		
0.25 0.55 - 0.84		_ ES _ B					gravel of	f sandston GROUND1	e and concr	ete.					_ 0.55		11.36
0.60		D					Between	n 0.18m ai	nd 0.40m, co	obble of c	concrete.				0.84		11.07
0.60		— ES - в					MADE G	ROUND: Y	ellowish bro medium sa	own mott	led greeni el is subar	ish grey slig	ghtly grave	lly fine	-		
1.00	·	– D					to coars	e of siltsto	one, sandsto	ne and bi	rick fragm	ents.	biounaca	inic	-		
1.00		ES	1 20			67	[MADE (GROUND]	e encounter	be					- 1.40 -		10.51
1.20 - 1.05	·	_	(DRY)				MADE G	ROUND: F	Reddish brov	vn mottle	ed yellow s	slightly gra	velly fine to	0			
1.20		- D					coarse s	and with s	some pocket	s of soft	clay. Grave	el is subrou	inded fine	to			
1.50 - 1.80		_ D _ B					[MADE 0	GROUND]	anu sanusu	one.					_		
2.00 - 2.45		_	2.00			C21	Medium	dense or	angish brow	n mottled	d grey very	y gravelly c	layey SANI	D.	-		
2.00		ES	(DRY)				sandsto	i subangui ne.	ar to subrou	іпаеа ппе	e to coarse	e of siltstoi	ne and		-		
2.00 - 2.50)	– B					[RIVER T	ERRACE D	EPOSITS-GR	ANULAR]						
2.20		D	3.00			C27									_		
		_	(DRY)												_		
3.00 - 3.50)	- В - р													-		
5.20															-		
4 00 4 45		_	4.00			C22									_		
4.00 - 4.45	'	_	(DRY)			C25											
4.00 - 4.30)	- B					Stiff dar	k reddish l	brown slight	ly sandy s	slightly gra	avelly CLAY	. Gravel is		- 4.30		7.61
4.20 4.50 - 5.00)	_ D - B					subangu	lar to sub	rounded fine	e to medi	ium of silts	stone (prol	oable weat	hered	-		
4.70		D			23		ST MAL). JGHANS FI	ORMATION-	UPPER CI	LAY]				-		
5.00 - 5.45		_	5.00			S37					-				_		
5 00 - 5 45		- - - D	(DRY)														
5.00 - 5.50		B													_		
5.20		_ D													-		
		-													-		
6.00 - 6.45		_	6.00 (DRY)			\$39		Boreho	le continued	d by rota	ry techniq	ues - see n	ext page		- 6.00		5.91
6.00 - 6.45		D	, ,														
		_													_		
		_													-		
		_													_		
		_															
		_													-		
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		_															•
		_															
		_													-		
Baring						Drograss					Crownal	tor					
Denth Ho	le Dia	Technia			Crew	Depth of	Denth Cased	Depth to	Date	Time	Denth Struck	Denth Cased	Rose to	in Mins	Denth Seale	d Remarks on Gro	undwater
1.20 (0.30	Inspecti	on Pit		PO/JT	Hole 0.00	Jepin caseu	Water	27/07/22	08:00	12.00	10.50	11.00	20	11.00	Slow inflow	
6.00	0.15	Cable Pe	ercussion		PO/JT	6.00	5.00	DRY	27/07/22	17:00	12.00	10.00	11.00	20	11.00		
19.50 0	0.12	Rotary C	Core		CI/IS	6.00 10.50	6.00 10.50	4.00 8.10	01/08/22	08:00 17:00							
					1 20				-,,							D)A/	
Remarks	MGS	inspection ES sample	e = 1 x 60ml	xcavated to glass vial, 2	2 x 258m	epth and amber gla	no services ass jars and	1 x 1L plas	iu stic tub.						Logged b Checked	y KW by JN	
Symbols and abbrevations are	re	Slow prog	ress: 3.50-4	00m for 6	0 minute	S.	0.011-0-0-0	احتشام ا	oction from a	00 +- ·	12 00	+h م.Ω۱-	over install	ad	Figure	Sheet 1	1 of 4
explained on th	ne key	Backfill de	etails from b	ase of hole	: benton	ite seal up	to 13.00m	, gravel filt	er up to 9.00	m, bento	nite seal u	p to 0.20m	, concrete i	up to		05/01/20	د ے
sheets. All dimensions	are in	ground le	vel.												Gec	JIGCH	NICS
metres.		Logged in	accordance w	vith BS5930:	2015 + A1	:2020									geotechnica	J and geoenvironment	al specialists

Project	Ne	wport Quinn Ph	iase 2				Enginee	r	Pinnad	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Din	nacla Concultin	a Engino	vic Line	itad		National	Grid	Limite 32821	d 9.0 F				Borehol	е	BH23	
Client	PIN		g Enginee	ers Lin	inted		Coordina	ates	18413	3.9 N				Ground	Level	11.91 m O)
Samplin	g/Testing	Drilling		700/	ROD	1	Strata									Scale 1	:50
SPT Depth	Type	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General				Detail				Depth	Legend	(m OD)
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)		Boi	rehole con technique	ntinued by ro	otary w							(m OD)
		6.00 - 7.50 (92mm)	6.00 ADDED	55 0	0	AZCL NI 25 NI	Extreme reddish [ST MAU	ly weak to brown MI JGHANS F	o very weak UDSTONE. ORMATION]		Betwee assume Betwee intact. At 6.90r disconti undulat Betwee subvert	n 6.00m a d zone of o n 6.68m a m, horizon inuities, clo ing, smoo n 6.95m a ical discon	nd 6.68m, core loss. nd 6.84m, tal osely space th, clean. nd 7.03m, ttinuity,	non- ed,			
	C50/	7.50 - 9.00 (92mm)	7.50 ADDED	67 4	0	AZCL NI 27 NI 21 NI					undulat Betwee intact. Betwee assume Betwee intact. Betwee subvert undulat Betwee	ing, smoo n 7.00m a d zone of a n 8.00m a ical discon ing, smoo n 8.53m a	th, clean. nd 7.50m, core loss. nd 8.42m, nd 8.50m, itinuity, th, clean. nd 8.75m,	non- non- and			
9.40 	255mm	9.00 - 10.50 (92mm)	10.50 ADDED	90 27	0	NI					8.89m a Betwee assume Betwee intact. F Betwee	and 9.00m n 9.00m a d zone of e n 9.15m a Recovered n 9.93m a	, non-intad nd 9.15m, core loss. nd 9.90m, as gravelly nd 10.50m	non- v clay. I,		· · · · · · · · · · · · · · · · · · ·	
Boring	<u> </u>	<u> </u>	I		 F	rogress	I				Groundv	vater					<u> </u>
Depth	Hole Dia.	Technique		Cre	w	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on Gr	oundwater
1.20 6.00 19.50	0.30 0.15 0.12	Inspection Pit Cable Percussion Rotary Core		PO/ PO/ CJ/	/JT /JT /JS	0.00 6.00 6.00 10.50	5.00 6.00 10.50	DRY 4.00 8.10	27/07/22 27/07/22 01/08/22 01/08/22	08:00 17:00 08:00 17:00	12.00	10.50	11.00	20	11.00	Slow inflow.	
Remarks Symbols and abbrevation: explained or accompanyii sheets.	s are n the ng key	nspection pit hand ES sample = 1 x 60 Slow progress: 3.5 A 50mm standpipe Backfill details fror ground level.	d excavated ml glass via 0-4.00m for was install n base of h	to 1.20 l, 2 x 25 60 mir ed to 1 ole: ber	Dm de 58ml a nutes. 3.00m ntonite	pth and i imber gla i with a g e seal up	no services ass jars and geowrappe to 13.00m	were four 1 x 1L pla d slotted s , gravel filt	nd stic tub. ection from 9 ter up to 9.00	9.00m to : Im, bento	13.00m wit	th a flush c p to 0.20m	over install	ed. up to	Logged b Checked Figure	y RW by JN Sheet 05/01/20	2 of 4 23
All dimensio metres.	ns are in	Logged in accordanc	e with BS593	80:2015	+ A1:2	020									geotechnica	i and gecenvironmen	al specialists

Project	Nev	vport Quinn Ph	ase 2				Enginee	r	Pinnac	cle Cons	sulting En	gineers		Project	No.	PN224395	
Client	Pinr	nacle Consultin	ø Fngine	≏rs Lin	nited		National	Grid	Limite 32821	d .9.0 E				Boreho	le	BH23	
			6 2.1.6.1.0.				Coordina	ates	18413	3.9 N				Ground	Level	11.91 m (
Samplin Sample /	g/Testing SPT N /	Drilling Core Run/Depth	Depth Cased	TCR/	RQD	-	Strata				Datail				Dauth	Scale	1:50 Level
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General				Detail	tal discont	inuitios d	ocoly	Depth	Legend	(m OD)
		9.00 - 10.30 (92mm)	ADDED	90 27	0	22 NI					spaced,	undulatin	g, stepped	l,	-		
E						38 NI					smooth	n 10 76m	and 10 20	m and	-		
-		10.50 - 12.00 (92mm)	10.50 ADDED	40 13	0						10.40m	and 10.50)m, non-in	tact.	-		
-		(521111)	NODED	15		AZCI					Betwee	n 10.50m	and 11.40	m,	-		
-						1.202					Betwee	n 11.40m	and 11.55	m,	_		
											non-int	act.	and 11 90		_		
-						NI	-				discont	inuities are	e horizonta	al, very	-		
-11.80 -	С					26					closely	to closely	spaced,		-		
	CEO/	12 00 - 13 50		100	10	NI]				Betwee	n 11.76m	, clean. and 11.81	m <i>,</i>	_		. [.
12.00 -	285mm	(92mm)		37	10	>50					speckle	d grey stai	ning on fra	acture	_		
_ 12.48 -	С										Betwee	s. n 11.89m	and 12.27	m,	-		
12.52						40 NI					non-int	act. Recov	ered as cla	iy.	-		
12.95 -	с						-				grey.	n 12.05m	and 12.10	m, light	-		
13.05						19					At 12.20	Om, light g	rey.		_		
-						NI	1				disconti	n 12.27m inuities are	and 12.46 e horizonta	m, al to	-		
-		13.50 - 15.00	15.00	29	0		1				subhori	zontal, ext	remely clo	sely	-		
-		(92mm)	ADDED	14							spaced, Betwee	n 12.39m	g, smooth and 12.42	m.	_		
E						AZCL					12.46m	and 12.57	m, and 12	.62m	_		
-											and 12. Betwee	89m, non- n 12 89m	intact. and 13 10	m	-		
-											disconti	inuities are	e subhorizo	ontal,	-		
-14.70 -	С					NI					very clo	sely space	d, planar,		-		
_ 14.85						19	-				Betwee	n 13.25m	and 13.50	m,	-		
_ 15.15 -	С	15.00 - 16.50	15.00	100	50		-				non-int Betwee	act. n 13.50m	and 14.57	m.	-		
- 15.28		(9211111)	ADDED	01		22					assume	d zone of	core loss.	,	-		
-	6					NI					Betwee	n 14.57m act	and 14.72	m,	-		
15.82	C					15					Below 1	.4.71m, di	scontinuiti	es are	-		
- 16.10 -	С					NI					subhori	zontal, ver	'y closely s with some	paced, sand	-		
16.37	-					5					infill.	,		Sund	-		
-16.37 -	C	16 50 - 18 00	15.00	100	79	NI	-				Betwee	n 14.93m act	and 15.10	m,	-		
16.65 -	С	(92mm)	ADDED	89	/0						Below 1	.5.00m, di	scontinuiti	es are	_		
16.90	C										horizon	tal, closely	v spaced,	e sand	-		
17.10	- C										infill.		With Som	c sund	-		
-17.10 -	С					4					Betwee	n 15.36m discontini	and 15.44 uity undul:	m, ating	-		
17.60 -	С										smooth	, clean.	arcy, and a		-		
17.90	С										Betwee	n 15.46m act	and 15.58	m,	-		
18.00	-	18.00 - 19.50	15.00	33	0		1				Betwee	n 15.88m	and 16.00	m,	-		
-		(92mm)	ADDED	0							vertical	discontinu clean	uity, undul	ating,	-		
Ē						AZCL					Betwee	n 15.91m	and 16.12	m, and	_		
-											16.50m Betwee	and 16.60)m, non-in and 16 79	tact. m	-		
-							-				grey.		20175	,	-		
E						NI					Betwee	n 17.15m I discontin	and 17.24 uity undul	m, ating	-		
	C50/										smooth	with sand	l infill.		_ 19_50		-7 59
19.92	270mm										Below 1 have cla	.7.30m, di av infill.	scontinuiti	es	_		1.55
F											At 17.7	, 5m, grey.			-		
						1											
Boring					-	Progress					Groundv	vater					
Depth	Hole Dia.	Technique		Cre	ew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on G	iroundwater
						10.50 19.50	10.50 15.00	8.10 11.00	02/08/22	08:00 17:00							
						19.50	15.00	11.00	02/08/22	17.00							
Remarks	AGS														Logged b	by RW	
Symbols and															Checked Figure	JN Shee	t 3 of 4
abbrevation explained or	s are n the															05/01/	2023
accompanyi sheets.	ng key														Geo	JIGCH	NICS
All dimensic metres.	ns are in L	ogged in accordanc	e with BS59	30:2015	+ A1:2	020									geotechnica	al and geoenvironme	ental apecialists

Project	Ne	wport Quinn Pł	nase 2				Engineer		Pinnac	cle Cons	ulting Engineers	s Project	No.	PN22439	5	
Client	Din	nacle Consultin	a Enginee	arc I im	itad		National	Grid	Limite 32821	d 9.0 E		Boreho	le	BH23		
	FII		ig Linglinee		neu		Coordina	ites	18413	3.9 N		Ground	l Level	11.91 m	OD	
Sampling	g/Testing	Core Bun/Depth	Dopth Carod	TCR/	ROD		Strata							Scale	1:5	0
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General				Detail		Depth	Legend	-	(m OD)
-											etween 18.00m	n and 19.00m, of core loss	F			
F											Between 19.00	m and 19.50m,	-			
-											non-intact. Rec	overed as gravelly	-			
-											clay.	of Doroholo	-			
-											End o	of Borenole	-			
F													-			
-													_			
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Daui						rocre					Groundwater					
Denth H	-	Technique		Cre	w	Depth of	Denth Cased	Depth to	Date	Time	Denth Struck Denth Ca	sed Rose to in Mins	Denth Seale	d Remarks or	Grou	ndwater
Beptil		leeninque				Hole		Water	bute							
Remarks	AGS						I			I	I		Logged b	y RW	'	
Symbols and	2000 (MI)												Checked Figure	by JN Shi	et 4	of 4
abbrevations explained on	are													05/0	1/2023	'
accompanyir sheets	ng key												600	ירכת	~	
All dimension	ns are in	Lengel 1		0.001-		220							geotechnica	i and geoenviror	mental	specialists
merres.		Logged in accordance	e with BS593	iu:2015 ·	+ A1:20	J20										

Project	Ne	wport C	uinn Pha	se 2			Engineer		Pinnac	le Cons	ulting En	gineers	F	Project	No.	PN224395	
Client	Die	naala C	onculting	Engineer	limitor	J	National	Grid	Limite 32800	d 64 F			E	Borehol	e	BH27	
Client	PIr	macie Co	onsulting	Engineers	Limited	1	Coordina	ates	18406	6.7 N			(Ground	Level	10.18 m O[)
Samplin	ng			Properti	es		Strata									Scale 1:	50
Dep	oth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	ption				Depth	Legend	Level (m OD)
0.15 - 0.	36	– B					MADE G	ROUND: E	Black tarmac	adam.					- 0.15		10.03
0.20		D					[MADE C	GROUND -	TARMACAD	AM]				/			3
0.20	20	– ES					MADE G	ROUND: [Dark grey mo	ottled bla	ick gravelly	y medium	to coarse sa	ind.	_ 0.36		9.82
0.36 - 1.	20	_ B					aircrete.	concrete	and brick fra	agments.		e or aspria	it, sanuston	е,	_		
0.50		ES					[MADE 0	GROUND]		8					_		
1.00		— D					Light bro	wn grave	lly medium t	o coarse	SAND. Gr	avel is sub	angular to		_		
1.00	CF	E ES	(DD)()			620	subroun	ded fine t	o coarse of s	iltstone,	sandstone	e and quar	tz (Possible		- 1.20		8.98
1.20 - 1.	65 70	в	(DRY)			C28	RIVER T	ERRACE D	EPOSITS-GR	ANULAR]			/	_		
							Medium	dense to	dense light	brown ve	ery sandy o	clayey GRA	VEL. Gravel	is	-		
		_					subangu	lar to sub	rounded fine	e to coars	se of siltsto	one, sands	stone and qu	uartz.	_		
2.00 - 2.	45	_	2.00			C36		ERRACE L	EPU3I13-GR	ANULAN	.]				_		
			(DRY)												_		
2.00 - 2.	50	– в													-		
		-													-		
2.80		- D					0.110				1. 1.1				- 2.80		7.38
3.00 - 3.4	45	-	3.00			C26	Stiπ dari	k reddisn i to subang	prown slight ular fine to r	iy sandy : nedium (slightly gra	avelly CLAN	dstone		_		
		-	(DRY)				(Weathe	red calca	eous mudst	one).					_		
3.00 - 3.	50	– В					[ST MAU	IGHANS F	ORMATION-	UPPER CI	LAY]				-		
		-													-		3
		-													-		
4.00 - 4	45	<u>–</u>	3.00			\$29									-		
		_	(DRY)			020									_		
4.00		- D													_		
4.00 - 4.	50	_ В													_		
		_													_		
5 00 - 5	15	_	3 00			\$25											
5.00 - 5.	40		(DRY)			333									_		
5.00		- D													_		
5.50 - 5.	91	_	3.00			C50/	Extreme	ly weak d	ark roddish ł	nown ca	Icareous N		F Recovered	ac h	- 5.50		4.68
		_	(DRY)			260mm	clayey gi	ravel.		JIOWIICa	icaleous in	VIODSTOIN	L. Necovere	uas	_		
		_					[ST MAU	IGHANS F	ORMATION]						- 5.91		4.27
		-						Boreho	le continued	l by rota	ry techniq	ues - see r	next page		-	T	
		-													-		
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Boring						Progress					Groundv	water					
Depth	Hole Dia.	Techniq	ue		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on Gro	oundwater
1.20	0.30	Inspecti	on Pit		RW/AC	0.00			27/07/22	08:00	16.00	10.10	6.10	20		Seepage.	
5.50	0.15	Cable Pe	ercussion fore		WO/JT	1.20			27/07/22	17:00							
20.00	0.12	NULATY				5.91	5.50	DRY	03/08/22	17:00							
		laas - : **			1 20	ant - '			- · ·								
Remarks	AGS	Inspection ES sample	n pit hand e e = 1 x 60ml	xcavated to glass vial	0 1.20m d 2 x 258ml	epth and i amber gla	no services ass jars and	1 x 1litre	a. plastic tub.						Logged b	y AC by IN	
Symbols and	ł	Chiselling	: 5.20-5.50r	n for 60 mi	nutes.										Figure	-, Sheet :	L of 4
abbrevation: explained or	s are n the	Borehole	backfilled v	ith benton	ite pellet	s and topp	ed with ari	sings on co	ompletion.							05/01/20	23
accompanyi sheets.	ng key														ദ്ദ	പറവ	
All dimensio	ns are in	1		who person	2015	2020									geotechnica	i and geoenvironment	al specialists
medes.		Logged in	accordance v	vith BS5930:	2015 + A1	:2020											

Project	Nev	wport Quinn Ph	nase 2				Enginee	r	Pinnac	le Cons	ulting En	gineers	Proje	ct No.	PN224395	
Client	Pini	nacle Consultin	g Engine	ers Lim	nited		National	Grid	Limite 32800	d 6.4 E			Bore	hole	BH27	
			6 2161100				Coordina	ates	18406	6.7 N			Grou	nd Level	10.18 m OL)
Samplin Sample /	sPT N /	Drilling Core Run/Depth	Depth Cased	TCR/	RQD		Strata				Detail			Dauth	Scale 1:	50 Level
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General	rahala ca	ation and hur	taru	Detail			Depth	Legend	(m OD)
-							601	techniqu	es - see belov	N N				-	XXXXXX	
F														-		
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F														_		
-		5.60 - 7.10 (92mm)	ADDED	65 46	18	470								-		
<u> </u>		(321111)		40		AZCL	Extreme	ly weak t	o very weak		Betwee	n 5.60-6.1	2m. assumed			
F						40	reddish	brown M	UDSTONE.		zone of	core loss.	,	_		
F						22	Disconti closely t	nuities ar	e horizontal, spaced plan	very ar and	Betwee	n 6.19-6.2	4m, non-intact	-		
-						Ň	undulati	ing, rough	and smooth		Betwee	n 6.24-6.3	9m, band of	-		
- 6.80 -	С					16	ST MAU	JGHANS F	ORMATION]		weak gr	rey sandsto	one (recovered a	s 🗌		
6.88	6										gravel). Betwee	n 6 41-6 4	9m non-intact	_		
7.10	Ľ	7.10 - 8.60	ADDED	40	0]				(recove	red as grav	vel).			
F		(92mm)		0							Betwee	n 6.55-6.6	1m, non-intact	_		
E						AZCL					Betwee	n 6.61-7.1	.0m, some sand	_		
F											infill (up	to 50mm	ı).	_		
-											Betwee with we	n 6.75-7.1 ak grev sa	.0m, interbeddec Indstone.	-		
-						NI					Betwee	n 7.10-8.0	0m, assumed	-		
F						15	1				zone of	core loss.	2m non intent	_		
8.60 -	C50/ 145mm	8.60 - 10.10	ADDED	45	16		1				(recove	red as firm	n clay).	_		
-		(92mm)		20		470					Betwee	n 8.32-8.3	7m, non-intact	-		
E						AZCL					(recove Betwee	red as grav n 8 53-8 6	vel). Om non-intact	E		
L											(recove	red as grav	vel).	_		
	-					28	1				Betwee	n 8.60-9.4	2m, assumed	-		
9.65 -	C					8					Betwee	n 9.42-9.5	0m, non-intact	-		
						40	1							-		
Boring	· 	•				Progress		a	1		Groundv	vater	1	-	· · · · ·	
Depth	Hole Dia.	Technique		Cre	ew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to in M	ns Depth Seal	ed Remarks on Gro	undwater
1.20	0.30	Inspection Pit		RW,	AC/IT	0.00		עפט	27/07/22	08:00	16.00	10.10	6.10 20		Seepage.	
20.60	0.15	Rotary Core		000	11	1.20		DRY	03/08/22	08:00						
						5.91	5.50	DRY	03/08/22	17:00						
Remarks		nspection pit han	d excavated	to 1.20	0m d	epth and	no services	were four	nd.		I	1	I	Logged	oy AC	
Symbols and	E E	S sample = 1 x 60	ml glass via 50m for 60	l, 2 x 2 minute	58ml s.	amber gla	ass jars and	1 x 1litre	plastic tub.					Checked	by JN	of 4
abbrevation	sare B	Borehole backfille	d with bent	onite p	ellets	and topp	ed with ari	isings on c	ompletion.					rigule	05/01/202	23
accompanyi	ng key													60	<u>1</u>	
All dimensio	ins are in													geotechnic	al and geoenvironment	al apecialists
metres.	L	ogged in accordanc	e with BS59	30:2015	+ A1:	2020										

Project	Ne	wport Quinn Ph	ase 2				Enginee	r	Pinnac	le Cons	ulting	Engineers	Projec	t No.	PN224395	
Client	Pin	nacle Consultin	g Enginee	ors lim	nited		Nationa	l Grid	Limite 32800	d 6.4 E			Boreh	ole	BH27	_
	FIII		g Linginee		nteu		Coordin	ates	18406	6.7 N			Grour	d Level	10.18 m Ol	D
Samplin	Ig/Testing	Drilling	0.40.4	700/	ROD	<u> </u>	Strata								Scale 1	:50
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General				Deta	ail		Depth	Legend	(m OD)
-		8.60 - 10.10 (92mm)	ADDED	45	16 26		1				(rec Belo	overed as gra w 9 57m di	avel). scontinuities are	-		
F		10.10 - 11.60	ADDED	100	20	25 NI	-				hori	izontal and s	ubhorizontal.	-		
F		(92mm)		68		20 NI	1				Betv	ween 9.81-9.	87m, non-intact	-		3
F						15 NI	Woak lij	abt grov SI			Betv	ween 9.92-10	0.20m, non-intact	- 10.81	××××××	-0.63
E							Disconti	inuities ar	e horizontal a	and	(rec	overed as gr	avel).	E		
E						15	subhori	zontal, clo	sely spaced,	planar	l (rec	overed as gr	10.50m, non-intact avel).	_ 11.26	× × × × × × × × ×	-1.08
E							infill (up	to 30mm).	lay	Betv	ween 10.60-:	10.68m, non-intact			
- 11.60 -	С	11.60 - 13.10	10.10	100	70	7	ST MAL	JGHANS F	ORMATION]		(rec	overed as gr	avel). 10.06m. non intact	1		
- 11.05		(92mm)	ADDED	78		- 33	Very we	ak to wea ONE, Disco	k reddish bro ontinuities ar	own 'e	(rec	overed as gr	avel).	/E		
-12.10 -	С						horizon	tal and sul	phorizontal,	very				-		
12.23						12	closely t	to closely	spaced, plan	ar,				_		
E							ST MAU	JGHANS F	ORMATION		Betv	ween 12.45-:	12.85m, closely			
F						33 16	-				spac	ced siltstone	laminae.	_		
E.						NI	1				und	ulating, smo	oth discontinuity.	_		
F		13.10 - 14.60	10.10	88	65	AZCL	1				Betv	ween 12.84-:	13.05m, non-intact	-		
F		(92mm)	ADDED	80		NI	1				(rec Betv	overed as graves ween 13.10-2	avel). 13.28m. assumed	-		
F											zone	e of core loss	5.	-		
13.75 -	С										Betv	ween 13.10-: red bands of	16.10m, closely	_		
-13.88						13					Betv	ween 13.28-:	13.38m, non-intact	_		
-											(rec	overed as cla	ay).	_		
L											disc	ontinuities a	re closely to	-		
F		14.60 - 16.10	10.10	100	74	- 50	1				med	dium spaced.		-		
-		(92mm)	ADDED	92		12								-		
F						NI	1				Betv	ween 15.00-:	15.03m, non-intact	-		
E						3					(rec	overed as fir	m clay).			
15.47 -	С													_		
-						24								-		
-						26]				Betv	ween 15 97-	16.07m vertical	_		
16.25 -	с	16.10 - 17.60	10.10	100	90		1				und	ulating, smo	oth discontinuity.	_		
- 16.40		(92mm)	ADDED	96		14					Betv	ween 16.07-:	16.10m, non-intact	_		
-16 70 -	C						1				(160	overeu as gr	aver).	_		
17.00						4								-		
-						20	-							-		
-						2								-		
E						NI					Betv	ween 17.44-:	17.60m, non-intact	_		
L		17.60 - 19.10	10.10	100	80						(rec	overed as gr	avel).	_		
-		(921111)	ADDED	30		10								_		
-						NI 16	1				Betv	ween 18.10-:	18.13m, vertical,	-		
F						10	1				und	ulating, roug	h discontinuity.	-		
-18.60 -	С					4								_		
⊢ ^{18.90}							-									
-		10.10 20.00	10.10	02	00	26	-					1005 10 10 I	10.21 m '	-		
F		(92mm)	ADDED	92 92	80	ALL	1				zone	ween 19.10-: e of core loss	19.21m, assumed	F		
Ē						7								E		
F						4/										
19.95 -	С					4										
21.10						1										
Boring						Progress	5	Darath da	1		Grou	ndwater	1			
Depth	Hole Dia.	Technique		Cre	ew	Depth of Hole	Depth Cased	Water	Date	Time	Depth S	truck Depth Case	ed Rose to in Mir	S Depth Seale	d Remarks on Gro	oundwater
						5.91 10.10	5.50 8.00	DRY ADDED	05/08/22	08:00 18:00						
						10.10	10.10	8.70	08/08/22	08:00						
						20.60	10.10	ADDED	08/08/22	17:00						
Remarks	AGS													Logged b	by AC	
Symbols an	d													Figure	Sheet	3 of 4
explained o	n the														05/01/20	23
sheets.	під кеу													Geo	האספונ	NICS
All dimensio metres.	ons are in	Logged in accordance	e with BS593	30:2015	+ A1:2	2020								geotechnica	al and geoenvironment	tal specialists

Project	Ne	wport Quinn Ph	nase 2				Engineer		Pinnad	cle Cons	ulting En	gineers		Project	No.	P١	1224395		
Client	Pin	nacle Consultin	o Engine	ors lim	nited		National	Grid	Limite 32800	d)6.4 E				Boreho	le	BH	+27		
					nicu		Coordina	tes	18406	6.7 N				Ground	Level	10).18 m		
Samplin Sample /	sPT N /	Drilling Core Run/Depth	Depth Cased	TCR/	RQD	51	Strata				Detail				Donth		Scale	1:50) Level
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%) 80	FI	General				Detail				Depth	-	Legend		(m OD)
		(92mm)	ADDED	92	00										-				
-						20	1								-				
E												End of E	Borehole		- 20.60 -				-10.42
E_															-				
-															-				
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Boring	I		<u> </u>	I	I	I Progress	i				Groundy	water			I				
Depth	Hole Dia.	Technique		Cre	ew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Re	emarks on	Grou	ndwater
Remarks	, in the second s														Logged b	by	AC		
Symbols and	4														Checked Figure	by	JN Shee	et 4 o	of 4
abbrevation explained or	s are n the																05/01	/2023	
accompanyi sheets.	ng key														Geo	ת	GCH	N	ICS
metres.	nis are in	Logged in accordanc	e with BS59	30:2015	+ A1:2	2020									geotechnica	il and	geoenvironn	ental	specialists

Project Ne	ewport Qu	inn Phase	e 2			Engineer	•	Pinna	cle Cons d	ulting Eng	gineers		Project	No.	PN224395	
Client Pi	nnacle Cor	nsulting E	ingineers	Limited	ł	National	Grid	32811	.0.5 E				Ground	e Level	10.83 m O	D
Sampling			Proportio	~		Coordina	ates	18410	0.0 N				Ground	Level	10.05 m 0	.50
Donth	Sample	Depth Cased	Strength	s		Slidid			Docori	ation				Donth	Scale 1	Level
Depth 0.15 - 0.60 0.20 0.50 0.50 0.60 - 1.20 1.00 1.20 - 1.27 1.20 - 1.70 2.00 - 2.25 2.00 - 2.50 2.70 3.00 - 3.26 3.00 - 3.50 3.80 4.00 - 4.45 4.00 - 4.64	Sample Type	Depth Cased 1.20 (DRY) 2.00 (DRY) 3.00 (DRY) 4.00 (DRY) 4.00 (DRY)	Strength kPa	w(%)	SPT N C50/ 30mm C50/ 115mm C38 C50/ 70mm	Grass ov rootlets. [TOPSOI] MADE G cobble c siltstone [MADE C Gravel is sandstor [RIVER T Stiff to v clay. [ST MAU Extreme are horiz undulati [ST MAU	er TOPSO Gravel is L] ROUND: L ontent. Gr and sand SROUND] t brown sl subangul e. ERRACE D ery stiff re IgHANS F(IgHANS F(IgHANS F(IL: Brown sli subrounded ight brown ravel is suba lstone.	Descrij ghtly grav I fine of si gravelly fi ngular to Hessive] n MUDST reddish b tal, very o	otion relly fine to ltstone. ine to med subround	o medium lium sand ed mediur a low cobl parse of sil vered as s DSTONE. D closely spa	sand with with a low n to coars	t. d velly ties r and	Depth		Level (m 00) 10.68 7.83 7.03 6.33
	- - - - - - -												-	- - - - - -		
Boring			1		Progress			1	1	Groundw	ater		I	I	I	·
Depth Hole Dia	. Technique	2		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Gr	oundwater
1.20 0.30 4.50 0.15 21.00 0.12	Inspection Cable Perc Rotary Cor	n Pit cussion re	,	WO/JT WO/JT CJ/JS	0.00 3.00 3.00 4.64	3.00 3.00 4.50	DRY DRY DRY	29/07/22 29/07/22 01/08/22 01/08/22	08:00 18:00 08:00 18:00						No groundwa strikes noted have been ma water added.	ter - may asked by
Remarks Symbols and abbrevations are explained on the accompanying key sheets. All dimensions are in metres.	Inspection ES sample = Slow progre Chiselling: : 50mm stand Backfill deta ground leve Logged in act	pit hand ex = 1 x 60ml g ess: 1.50-2. 1.20-1.50m dpipe was i ails from ba el. cordance wi	xcavated to glass vial, 2 .00m for 90 n for 90 mir installed to ase of hole: 	1.20m c x 258ml minutes nutes and 5.00m v bentoni	depth and amber gla s, 2.20-2.6 d 4.20-4.5 with a geov ite seal up	no services iss jars and 0m for 90 n 0m for 60 n wrapped slo to 5.00m, g	were four 1 x 1L plas ninutes an ninutes. otted secti gravel filte	nd. stic tub. Id 3.00-3.80r on from 3.00 r up to 3.00r	n for 195 Om to 5.00 n, benton	minutes. Om with a f ite seal up	lush cover to 0.20m,	installed. concrete u	p to	Logged b Checked Figure	y RW by JN Sheet 05/01/20	1 of 4 ¹²³ NICS

Project	Ne	wport Quinn Ph	ase 2			Engineer		Pinnad	cle Cons	ulting En	gineers		Project	No.	PN224395		
Client	Dim	naala Cancultin	a Engines	section	itad		National	Grid	Limite 32811	d 05 F				Boreho	le	BH28	
Client	PIN	nacie Consultin	g Enginee	ers Lim	ntea		Coordina	tes	18410	0.0 N				Ground	Level	10.83 m OE)
Samplin	g/Testing	Drilling		0			Strata									Scale 1:	50
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail				Depth	Legend	Level (m OD)
_							Bor	ehole con	tinued by ro	otary					_		
-							;	technique	es - see belo	w					-		
–															-		
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L		4.50 - 6.00	4.50	82	0	AZCL	Extreme	y weak to	very weak				_		_		,
		(92mm)	ADDED	17			Disconti	nuities are	borizontal	and	zone of	n 4.50-4.7 core loss.	/m, assum	iea	_		
_							subhoriz	ontal, ver	y closely to	closely	Betwee	n 4.77-5.5	7m, non-ir	ntact	_		
L						NI	spaced,	olanar and	d undulating	,	(recove	red as grav	vel).		_		
<u> </u>							[ST MAU	GHANS F	ORMATION]						_		
- 5.60 -	С					2					Betwee	n 5.83-6.0	0m. non-ir	ntact	-		
- 5.70 -	с					NI					(recove	red as grav	vel).		-		
5.80		6.00 - 7.50	6.00	24	0						Betwee	n 6.00-7.1	4m, assum	ied	-		
F		(92mm)	ADDED	0							Betwee	n 7.14-7.5	0m, non-ir	ntact	-		
-						A7CI					(recove	red as grav	vel).		-		
F						ALCL					Betwee	n 7.50-7.7 core loss	0m, assum	ied	-		
F											Betwee	n 7.70-7.8	7m, non-ir	ntact	-		
											(recove	red as grav	vel). Some		-		
L						NI					Betwee	ne gravei. n 7.90-8.1	4m, non-ir	ntact			
- 7.50 -	C50/	7.50 - 9.00	7.50	86	16	A7CI					(recove	red as grav	vel).		_		
_ 7.88	225mm	(92mm)	ADDED	26	-	NI					Betwee	n 8.23-8.2	6m, vertic	al, ,	_		
-						→ 50					Betwee	n 8.26-8.3	2m, non-ir	ntact			
F						>50					(recove	red as grav	vel).		_		
- 8.30 -	C					NI					l Betwee	n 8.57-9.0 red as grav	um, non-ir /el)	itact	_		
- 0.55						0					Betwee	n 9.00-9.1	2m, assum	ied	-		
-						NI					zone of	core loss.	5m non-ir	tact	-		
<u> </u>		9.00 - 10.50	9.00	92	25	AZCL					(recove	red as grav	vel).				
		(92mm)	ADDED	60	20	NI					Betwee	n 9.43-9.4	9m, non-ir	ntact	_		
F						33 NI					Betwee	eu as grav n 9.49-9.6	ven). 4m, vertica	al,	-		
9.65 -	С					25					planar,	mooth di	scontinuity		-		
9.75						25					Betwee	n 9.97-10. red as clav	26m, non-	intact	-		
-											,	cu us tidy	and Brave	.,.	-		
Boring					 P	rogress					Groundy	ater					
Depth	Hole Dia.	Technique		Cre	w	Depth of	Depth Cased	Depth to	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Gro	undwater
1.20	0.30	Inspection Pit		wo	/JT	0.00		wdter	29/07/22	08:00						No groundwat	er
4.50	0.15	Cable Percussion		WO	/JT	3.00	3.00	DRY	29/07/22	18:00						strikes noted -	may ckod bu
21.00	0.12	Notary Core		"		3.00 4.64	4.50	DRY	01/08/22	18:00						water added.	элец ру
		Inspection nit have	d excavater	 1 1 2	0m de	oth and	no services	were four	l nd.						l ogged h	v RW	
Remarks	AGS	S sample = 1 x 60r	ml glass via	l, 2 x 25	58ml a	mber gla	iss jars and	1 x 1L plas	stic tub.						Checked	by JN	
Symbols and abbrevation	i Sare	low progress: 1.50)-2.00m foi 50m for 90	r 90 mir minuto	nutes,	2.20-2.6 4 20-4 5	0m for 90 n 0m for 60 p	ninutes an	d 3.00-3.80r	n for 195	minutes.				Figure	Sheet 2	of 4
explained or accompanyi	n the ng kev	50mm standpipe w	as installed	d to 5.0	0m wi	4.20-4.5 th a geov	wrapped slo	otted secti	on from 3.00	0m to 5.00	0m with a f	lush cover	installed.			05/01/202	
sheets.	ns are in	Backfill details from	n base of h	ole: ber	ntonite	e seal up	to 5.00m, g	gravel filte	r up to 3.00n	n, benton	ite seal up	to 0.20m,	concrete u	p to	GGC	NGCHV	IICS
metres.		ogged in accordance	e with BS593	30.2015	+ A1:20	020									geotechnica	and geoenvironments	al apecialists

Project	New	Newport Quinn Phase 2				Enginee	r	Pinnac	cle Cons	ulting Engineers	Project	No.	PN224395		
Client	Pinn	acle Consultin	g Enginer	ers Lim	nited		National	Grid	Limite 32811	d .0.5 E		Boreho	le 	BH28	
			6 Engine		incea		Coordina	ates	18410	0.0 N		Ground	Level	10.83 m OI)
Sampling	/Testing	Drilling	Death Grand	T(0)/	ROD		Strata							Scale 1:	50
SPT Depth	Type	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General				Detail		Depth	Legend	(m OD)
-	_	9.00 - 10.50 (92mm)	9.00 ADDED	92 60	25	NI							-		
-10.30 -	С	(52)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	00		8							_		
-		10.50 - 12.00	9.00	100	68	AZCL	1				Between 10.50-10	0.65m, assumed	-		
_		(92mm)	ADDED	72		12 NI	4				zone of core loss. Between 10 50-11	1 00m	_		
	_					5					discontinuities are	e stepped.	_		
_ 11.15 - - 11.25	С					25					Between 10.81-10	0.85m, non-intact	_		
- 	С					NI	-				Below 11.00m, cla	ay infill in	-		
11.80						7	4				discontinuities (up	o to 30mm).	-		
-						4 NI	-				(recovered as soft	clay).	-		
12.05 -	С	12.00 - 13.50		100	68	11	1				Between 11.36-11	1.47m, non-intact	_		
- 12.15		(92mm)		72		NI 10	1				(recovered as grav Between 11 89-12	/el). 2 00m_non-intact			
_						Ň	1				(recovered as soft	clay).	_		
-						5					Between 12.00-12	2.04, band of	-		
-						NI 12	1				as gravel).	tact, recovered			
-						12	1				Between 12.22-12	2.28m, non-intact	-		
-											(recovered as soπ Between 12.88-12	ciay). 2.98m, non-intact	-		
E		13.50 - 15.00		94	0	1					(recovered as soft	clay).	El		
F		(92mm)		U							Between 13.14-13 (recovered as gray	3.50m, non-intact /el).	E		
-						NI					Between 13.50-13	3.58m, assumed	-		
-											zone of core loss.	00m non-intact	-		
-											(recovered as stiff	reddish brown	_		
-											clay).		-		
-14.88 -	С												_		
15.00		15.00 - 16.50		100	63						Below 15.00m, dis	scontinuities are			
-		(9211111)		93		4					closely to medium	i spaceu.	_		
-						NI	1						-		
-						7					Between 15.69-15	5.93m, vertical,	-		
-											planar, rough disc	ontinuity.	_		
Ē						17	1								
-													_		
-		16.50 - 18.00 (92mm)		100 100	91						(recovered as grav	vel).	-		
-		(521111)		100									-		
-17.00 - 17.12	С												-		
-						4							-		
17.55 -	С														
- 17.95													_		
-		10.00 10.50					4						_		
-		18.00 - 19.50 (92mm)		68 8	0	AZCL					zone of core loss.	3.47m, assumed	-		
F		(- <i>)</i>											-		
_											Between 18.47-19	9.19m, non-intact	_		
-						NI						ciay).			
-													- -		
È I						>50	1				Between 10 39 10	17 non intest	F		
F		19 50 - 21 00		100	67	>50	1				(recovered as grav	/el).	F		
E		(92mm)		80	0/	NI	-				Between 19.50-19	9.70m, non-intact			
- 19.90 -	С					8 26	1				(recovered as firm	ı uldy).	E		
20.00															
Boring	•	1	1		<u> </u>	Progress	, ,		1	1	Groundwater	1	ı	 _	1
Depth H	ole Dia.	Technique		Cre	ew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck Depth Cased	Rose to in Mins	Depth Seale	Remarks on Gro	oundwater
						4.50	4.50	DRY	03/08/22	08:00					
						12.00 12.00	9.00 9.00	3.10	14/08/22	14:22 08:00					
						21.00	12.00	ADDED	14/08/22	18:00					
Remarks							I		1	I		I	Logged b	y RW	
Symbols and	Web												Checked	by JN	R of 4
abbrevations	are												rigure	5neet : 05/01/20	23 23
accompanying	g key												600		
All dimension	s are in												geotechnica	and geoenvironment	al specialists
metres.	Lo	ogged in accordance	e with BS59	30:2015	+ A1:	2020									

Project	Ne	wport Quinn Ph	nase 2				Engineer		Pinna	cle Cons	ulting En	gineers		Project	No.	PN224395	
Client	Pin	nacle Consultin	g Fngine	ers I in	nited		National	Grid	Limite 32811	d .0.5 E				Boreho	e	BH28	
Constin	- /T		6 21181110				Coordina	ites	18410	0.0 N				Ground	Level	10.83 m	1.50
Samplin Sample /	SPT N /	Core Run/Depth	Depth Cased	TCR/	RQD	FI	General				Detail				Denth	Scale	1:50 Level
SPT Depth	Type	(Core Dia/Time)	& (to Water)	SCR (%)	(%) 67		General				Detail				Deptii	Legend	(m OD)
-		(92mm)		80											_		
-						2									_		
F															-		
E						21											10.17
E												End of E	Borehole				-10.17
-															-		
F															-		
E															_		
-															-		
-															_		
<u> </u>															-		
E															_		
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F															-		
Boring			•	· · · ·	<u> </u>	Progress		Dorth :			Groundv	water	1	1	I	1	
Depth I	Hole Dia.	Technique		Cre	ew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on (Groundwater
Remarks	AGS									1	1	1	I	1	Logged b Checked	y RW by IN	
Symbols and abbrevations	l s are														Figure	Shee	t 4 of 4
explained or accompanyin	- n the ng key															05/01,	2023
sheets. All dimensio	ns are in														Geo	אספר	NICS
metres.		Logged in accordanc	e with BS59	30:2015	+ A1:2	020									gestechnica	and geoerwirenin	entar apecianenti

Project	Newport Qu	uinn Phase	e 2			Engineer		Pinna	le Cons	ulting En	gineers	P	roject	No.	PN224395	
Client	Dinnacla Co	nculting E	nginoors	Limitor	4	National	Grid	Limite 32775	d 8.3 F			B	orehol	е	BH30	
Client	Pinnacie Co	insulting E	ngineers	Limited	1	Coordina	ates	18395	2.4 N			e	Ground	Level	10.99 m Ol)
Sampling			Propertie	s		Strata								r	Scale 1	:50
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N				Descri	otion				Depth	Legend	Level (m OD)
Sampling Depth 0.40 - 0.80 0.50 0.50 0.80 - 1.20 1.00 1.20 - 1.65 1.20 - 1.70 1.50 2.00 - 2.45 2.00 - 2.50 3.00 - 3.45 3.30 3.50 - 4.00 4.00 - 4.45 5.00 - 5.45 5.00 - 5.45 5.00 - 5.45	Sample Type B D ES D ES B ES B B ES B B B B B B B B B B B B B	Depth Cased & (to Water) (DRY) 2.00 (DRY) 3.00 (DRY) 4.00 (DRY) 4.50 (DRY)	Propertie Strength kPa	15	SPT N C21 C15 C22 C27 S43	Strata MADE G [MADE G sand wit subangu [MADE C Firm red subangu [ST MAU ST MAU	ROUND: G GROUND - ROUND: F h occasio lar to sub GROUND] dish brow lar to sub IGHANS Fi GHANS Fi Boreho	Grey concret CONCRETE; Reddish brov nal pockets (rounded fine) rounded fine) (RMATION- (RMATION- (RMATION- (Correct)) (Correct) (Co	2.4 N Descrip e. vn slighth of soft red e to medi rey slight e to coars UPPER CL UPPER CL UPPER CL UPPER CL	y gravelly ddish brov um of silts ly gravelly e of siltstc .AY] tly gravelly tly gravelly one, siltstc .AY]	slightly clav vn sandy cl stone and s sandy CLA one and sa y CLAY. Gra one and sau ues - see n	vey medium ay. Gravel is andstone. Y. Gravel is ndstone.	gular	Depth	Scale 1 Legend 1	Level (m 0D) 10.59 8.69 6.89 5.99
Boring Depth Hole I 0.40 0.31 1.20 0.31 5.75 0.11 20.20 0.11 Remarks Symbols and abbrevations are explained on the accompanying key	Boring Product epth Hole Dia. Technique Crew e - - -					Depth Cased 4.00 no services ass jars and owrapped s to 11.00m,	Depth to Water DRY DRY DRY Were four 1 x 1L plas ilotted sec gravel filt	Date 28/07/22 28/07/22 05/08/22 05/08/22 05/08/22 nd. stic tub. tion from 9.0 er up to 9.00	Time 15:37 17:00 08:00 18:00 00m to 11 m, bento	Groundv Depth Struck 10.00	vater Depth Cased 7.50 a flush cov p to 0.20m,	Rose to 4.30 er installed. concrete up	in Mins 20	Depth Sealed Checked b Checked b	Remarks on Gr Seepage.	oundwater
All dimensions are i metres.	n Logged in a	ccordance wi	th BS5930:2	2015 + A1:	2020									geotechnical	i and geoenvironment	al specialists

Project	Ne	wport Quinn Ph	iase 2				Engineer		Pinnac	cle Cons	ulting Enរ្	gineers		Project	No.	PN224395	
Client	Pin	nacle Consultin	g Enginee	ers lim	nited		National	Grid	Limite 32775	d 8.3 E				Boreho	le	BH30	
			g Lingiliee	JIS LIII	nicu		Coordina	ites	18395	2.4 N				Ground	Level	10.99 m OD)
Samplin Sample /	ng/Testing	Drilling Core Run/Depth	Denth Cased	TCR/	ROD		Strata									Scale 1:5	50 Level
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	FI	General				Detail				Depth	Legend	(m OD)
- 5.30 - 5.75 - 5.30 - 5.75 - 5.30 - 5.75 - 5.30 - 7.45 	D S61 C C C	5.00 - 6.00 (92mm) 6.00 - 7.50 (92mm) 7.50 - 9.00 (92mm)	5.00 ADDED 6.00 ADDED	70 68 93 71 89 86	68	AZCL NI 8 AZCL 3 8 NI 11 NI AZCL NI 29	Extreme brown m Discontii subhoriz to mediu undulatii infill. [ST MAU	ehole com technique ly weak to ottled gra nuities are ontal (up im space ng, rough IGHANS Fi	b weak reddi ey MUDSTOP e horizontal to to 20 deg.), J, planar to with some c ORMATION]	sh NE. to closely :lay	Betweel zone of Betweel recoverd Betweel zone of Betweel recoverd coarse g Betweel zone of Betweel zone do Betweel zone do Betweel Betweel zone do Betweel zone do Betweel zone zone zone zone zone zone zone zone	n 5.00-5.3 core loss. n 5.00-5.3 ed as gravn n 6.00-6.1 core loss. n 6.10-6.7 n on core loss. n n c.10-6.7 core loss. n 7.40-7.5 ed as suba gravel. n 7.40-7.5 ed as suba gravel. n 7.60-7.7 ed as suba gravel. n 7.71-9.0 nuities are graced. piaced.	Om, assun 2m, non-in el Om, assun 6m, e widely sp 2m, non-in ingular fin 0m, non-in ingular fin 6m, assun 1m, non-in ingular fin 0m, e very clos anar, smoc	ned ntact, ned bacced, ntact, e to ntact, e to ntact, e to ntact, if to ntact, for to for the to			
- 8.85 - 8.94	с						Medium	strong to	strong redd	ish \	Between zone of	n 9.00-9.1 core loss.	7m, assum	ned	- - -		
9.24 - 9.34 9.40 - 9.50 	C C	9.00 - 10.50 (92mm)	7.50 ADDED	88 67	32	AZCL NI 20 NI 19	brown m SANDSTC Discontin closely s clean. [ST MAU	outled gre DNE. nuities are paced, pla	ey fine to me e horizontal, anar, smooth ORMATION]	edium	Between recovered to coars Between (up to 2 Between	n 9.17-9.2 ed as suba e gravel. n 9.17-9.5 mm thick) n 9.53-9.6	3m, non-ii ingular me 3m, vertic of quartzi 4m, non-ii	ntact, \ edium al vein ite. ntact,	- 9.17 		1.82
Boring						Progress		Depth to			Groundw	/ater					
Depth	Hole Dia.	Technique		Cre	ew	Hole	Depth Cased	Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Seale	d Remarks on Gro	undwater
0.40 1.20 5.75 20.20	0.30 0.30 0.15 0.12	Inspection Pit Cable Percussion Rotary Core		JM/ JM/ PO/ CJ/	/DG /JT /JS	0.00 1.20 1.20 4.45	4.00	DRY DRY DRY	28/07/22 28/07/22 05/08/22 05/08/22	15:37 17:00 08:00 18:00	10.00	7.50	4.30	20		seepage.	
Remarks Symbols an abbrevatior explained o accompany sheets. All dimensio metres.	d (is are n the ing key g	Inspection pit han S sample = 1 x 60 Chiselling: 5.00-5.3 Omm standpipe v Backfill details fror round level.	d excavated ml glass via 30m for 60 r vas installed n base of ho	d to 1.2 Il, 2 x 25 minutes d to 11. ole: ber	0m de 58ml a s. 00m v ntonite	with and with a ge e seal up	no services ass jars and owrapped s to 11.00m,	were four 1 x 1L plas lotted sec gravel filt	nd. stic tub. tion from 9.0 er up to 9.00	10m to 11 m, bento	.00m with nite seal u	a flush cov p to 0.20m	ver installed	d. up to	Logged b Checked Figure	by RW by JN Sheet 2 05/01/202	of 4 3

PRELIMINARY

Project	Ne	Newport Quinn Phase 2					Engineer		Pinnac	cle Cons	ulting En	gineers	Project	No.	PN224395	
Client	Din	nacla Consultin	a Enginor	ore Line	itad		National	Grid	Limite 32775	d 8.3 E			Boreho	le	BH30	
Client	PIII		g Eligilie	EIS LIII	nteu		Coordina	ites	18395	2.4 N			Ground	l Level	10.99 m O	D
Samplin	g/Testing	Drilling					Strata							1	Scale 1	L:50
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General				Detail			Depth	Legend	Level (m OD)
-		9.00 - 10.50	7.50	88	32						recover	ed as sligh	itly clayey	-		1.
E		(92mm)	ADDED	67							subang	ular fine to	coarse gravel.	10.35		0.64
L		10.50 - 12.00	7.50	97	71	AZCL	brown m	iy weak to nottled gre	o weak reddi ev MUDSTOI	isn NE.	intact, r	ecovered a	as subangular	_	•	
L		(92mm)	ADDED	84			Disconti	nuities are	e subhorizon	ital to	medium	to coarse	e gravel.	_		,
-							inclined	(up to 40 snaced r	deg.), closel planar smoo	y to th and	zone of	n 10.50-10 core loss.	J.54m, assumed	-		L.
-							rough wi	ith occasio	onal clay infi	ll.	Betwee	n 10.54-10	0.62m, non-	-		
-11.40 -	с					12	[ST MAU	GHANS F	ORMATION]		intact, r	ecovered	as subangular	_		
11.60											Betwee	n 10.62-12	2.00m, occasional	-		
11 99	C										clay infi	II.		-		
12.00	C	12 00 - 13 50	7 50	100	33	NI	-				zone of	n 13.50-1: core loss.	3.53m, assumed	<u> </u>		
E		(92mm)	ADDED	92	55		1				Betwee	n 13.53-13	3.59m, non-	_		
E											intact, r	ecovered a	as angular to			
L											Betwee	n 14.52-14	4.56m, non-	_		
L						13					intact, r	ecovered	as subangular	_		
-											fine to r	nedium gr n 14 56-19	ravel. 5.00m	-		
F											disconti	nuities are	e horizontal,	_		
F		10.50 (5.5)		07		NU					closely	spaced, pla	anar to	F		
-		13.50 - 15.00 (92mm)	7.50 ADDED	95 91	71		1				Below 1	ing and ro 5 00m die	ugh. scontinuities are	-		11
F		(02)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	51							horizon	tal to subh	norizontal (up to	-		
_14.05 -	С					8					20 deg.	, closely s	paced, planar to	-		
- 14.30											Betwee	n 15.20-15	5.46m, vertical	-		1
F						NI					disconti	nuity, und	lulating and	_		
F						0					smooth Betwee	n 15 85-16	5.08m non-	_		
E						5					intact, r	ecovered	as subangular	Ē		
_15.10 -	С	15.00 - 16.50	7.50	100	64	15					fine to r	nedium gr	ravel.	_		
15.20		(92mm)	ADDED	68		23					zone of	core loss.	5.57m, assumed	_		10
	6					-	1				Betwee	n 16.57-16	6.77m,	_		
- 15.85	Ľ					5					disconti	nuities are	e very closely to	-		
_15.87 -	С					15 NI	-				Betwee	n 16.58-16	6.65m, vertical	-		
- 15.97 -						_	1				disconti	nuity, und	lulating and	-		
F						9					Betwee	n 17.28-17	7.58m,	-		10
F		16.50 - 18.00	7.50	95	47	AZCL 30	1				disconti	nuities are	e medium	-		
16.75 -	С	(92mm)	ADDED	63			1				spaced.	Vertical c ing and sn	liscontinuity, nooth	E		
						13					Betwee	n 17.58-17	7.61m, non-	_		
F							Medium	strong re	ddish brown	1	intact, r	ecovered	as subangular	_		
F						10	Disconti	grey SILTS	STONE.	to	Betwee	neaium gr n 18 23-18	avei. 8 39m vellow	F		10
-						NI 31	subhoriz	ontal (up	to 30 deg.),	very	staining	on discon	itinuity surfaces.	-		676
-17.80 -	C					11	closely to	o closely s	spaced, plan	ar,	Betwee	n 18.39-18	8.43m, non-	- 17.75		-0.70
-18.00 -	с	18.00 - 19.50	7.50	100	54	>50 17	ST MAU	GHANS F	ORMATION]		fine to r	nedium gr	ravel.	-		
18.14		(92mm)	ADDED	76		31	Strong re	eddish bro	own medium	n to	Betwee	n 18.51-19	9.28m,	F	× × × × × × ×	
F						36	coarse g	rained SA	NDSTONE w	ith	disconti	nuities are spaced	e closely to	_		10
E							Disconti	nuities are	e horizontal,		Betwee	n 18.52-19	9.28m, vertical			
F							medium	spaced, p	olanar, smoo	th and	disconti	nuity, plar	nar to undulating,	F	× × × × × × ×	
19.15 -	с					7	ST MAU	GHANS F	ORMATION]		surfaces	with yello 5.	ow staining on	_		
- 19.22						,	Weak re	ddish bro	wn MUDSTO	NE.	Betwee	n 19.14-19	9.20m, non-	_		
-		19.50 - 20.20	7.50	100	40		Discontin closely si	nuities are	e horizontal, anar smooth	and	fine to r	ecovered a medium gr	as subangular ravel	-19.50 -	<u> </u>	-8.51
F		(92mm)	ADDED	64			clean.	pueca) pre		. and	Betwee	n 19.28-19	9.39m,	- -		
F							ST MAU	GHANS F	ORMATION]		disconti	nuities are	e subhorizontal	- 19.90		8.91
Boring					F	Progress		Depth to			Groundv	/ater				
Depth	Hole Dia.	Technique		Cre	w	Hole	Depth Cased	Water	Date	Time	Depth Struck	Depth Cased	Rose to in Mins	Depth Seale	d Remarks on G	roundwater
						4.45 5.75	4.00 4.50	DRY DRY	08/08/22	08:00 18:00						
						5.75	4.50	DRY	09/08/22	08:00						
						16.50	7.50	ADDED	09/08/22	17:00						
Remarks	MGS													Logged b	y RW	
Symbols and	4													Cnecked Figure	Dy JN Sheet	3 of 4
abbrevation explained or	s are n the													2	05/01/2	023
accompanyi sheets.	ng key													GCY	ภาวาก	
All dimensio metres.	ins are in	loggod in accordance	a with BSED	20.2015	± A1-2	000								peotechnica	al and geoenvironme	ntal specialists

Logged in accordance with BS5930:2015 + A1:2020

metres.

Project	Ne	wport Quinn Ph	nase 2				Engineer		Pinnac	cle Cons	ulting En	gineers	Pro	ject No.	PN224395		
Client	Pin	nacle Consultin	g Enginee	rs Limi	ted		National	Grid	Limite 32775	d 8.3 E			Bor	ehole	BH30		
			0 211011100				Coordina	ites	18395	2.4 N			Gro	und Level	10.99 m		
Samplin Sample /	spt N /	Core Run/Depth	Depth Cased	TCR/	RQD	E1	Strata				Dotail			Dopth	Scale	1:50 Li	evel
SPT Depth	Туре	(Core Dia/Time)	& (to Water)	SCR (%)	(%)	41	General				to inclin	ned (un to	45 deg)	Deptii	Legend	m)	OD)
		(92mm)	ADDED	64	-0	ŇÎ					Betwee	n 19.50-19	9.90m, vertical,	20.20		9- 1	.21
-											undulat	ing, smoo	th discontinuity	<u>·</u>			
-												End of B	sorenole	_			
E														-			
L														-			
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Boring	1		1		Pr	ogress	l		1	1	Groundv	vater		I	1		
Depth	Hole Dia.	Technique		Crev	v ^D	epth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to in N	Vins Depth Seale	d Remarks on (Groundv	vater
					1	L6.50 20.20	7.50 7.50	3.10 ADDED	10/08/22	08:00 17:00							
									, 00/22	_/.50							
Remarks	AGS										1			Logged b	by RW		
Symbols and	d s are													Figure	Shee	t 4 of 4	1
explained or	n the														05/01,	2023	
sheets.	ing NCY													GGC	אספר	NIC	25
metres.	no are ifi	Logged in accordanc	e with BS593	0:2015 +	A1:202	20								geotechnica	al and geoenvironm	ental spec	ialists

BH01

BH01

BH01

BH01

BH01

BH01

1.20

2.00

3.00

4.00

5.00

6.00

9.66

8.86

7.86

6.86

5.86

4.86

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S

(mm)

1

1

4

4

2

10

(mm)

1

1

4

3

4

15

Project	Newport (Quinn Phase	e 2			Engineer		Pinnacle (Engineers	Consulting Limited	I	Proje	ct No.	PN224395
Client	Pinnacle C	onsulting E	ingineer	s Limited									
					Seatin	g Drive		Test	Drive				
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75	75 - 150	0 - 75	75 - 150	150 - 225	225 - 300	SPT 'N' Value	Uncorre	cted SPT 'N' value

(mm)

2

2

5

4

3

15

(mm)

2

3

7

3

2

15

(mm)

3

3

6

4

2

20

(mm)

4

4

4

3

2

11

12

22

14

9

50/225

10

20

30

50

40

Hami	mer No.:	JB14	Remarks	
Ener	gy Ratio, Er (%):	63		
-/-	Blows/penetration (mm) after	seating S - SPT v	vith split spoon sampler	
-*/-	Total blows/penetration (mm)	C - SPT	with cone	GOMACHNICS

SWP Penetration under own weight (mm)

- - - -
- L Split Spoon liner used

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AGS



Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395	
Client	Disease Consulting Engineers Limited					

Client Pinnacle Consulting Engineers Limited

	Seating Dr							Test	Drive							
Hole	Depth (m bgl)	Depth (m OD)	SPT Туре	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unc	orrecte	d SPT 'I	l' value 40	50
BH01	7.50	3.36	С		4	5	4	6	8	8	26		2.5			
BH01	9.00	1.86	С		3	7	9	8	11	14	42					
BH01	10.50	0.36	С		11	14	50				50/40					
							Remarke									
Hammer Energy R	No.: atio, Er (%):		TEC 130	0133			menidi KS									
-/- Bl	ows/penetratior	n (mm) after	seating		S - SPT w	/ith split spc	on sample	r								
-*/- Te	otal blows/penet	ration (mm)			C - SPT v	vith cone				1	രഹ	nre				
SWP Pe	enetration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geo	environ	mental :	speciali) sts

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AGS

SWP

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive	Test Drive									
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncoi	rrected	30 3 0	N' valu 40	e 50
BH04A	1.20	9.66	С		8	12	24	26		. ,	50/115	10	20	30		50
BH04A	2.00	8.86	С		9	16	19	31			50/145					
BH04A	3.00	7.86	С		10	8	7	6	7	7	27					
BH04A	4.00	6.86	S		9	12	14	16	17	3	50/237					
							Remarke									
Hammer Energy Ra	No.: tio, Er (%):		SAM1 75				Remarks									
-/- Blows/penetration (mm) after seating S - SPT with split spor							on sampler	r			~~~					_
- /- i utai utows/perietration (mm) C - SPT with cone SWP Penetration under own weight (mm) L - Split Space liner							used									

SWP Penetration under own weight (mm)

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AGS

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
Client	Pinnacle Consulting Engineers Limited				

		Seating Drive Test Drive														
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unc (orrecte	ed SPT	'N' valı	ue 50
BH07	1.20	11.48	С		5	6	7	8	8	9	32	10	20	50	4 0	50
BH07	2.00	10.68	С		6	7	7	9	9	9	34					
BH07	3.00	9.68	С		8	10	12	16	14	8	50/265					
BH07	4.00	8.68	С		7	9	9	8	9	10	36					
BH07	5.00	7.68	S		7	7	8	8	9	8	33					
BH07	6.00	6.68	S		9	16	15	16	16	3	50/240					
Hammer No.: SAM1				Remarks												
Energy Ratio, Er (%): 75																
-/- Blov	vs/penetratior	ו (mm) after	seating		S - SPT w	ith split spo	on sampler									
-*/- Tota	al blows/penet	ration (mm)			C - SPT w	ith cone					GCO	nr	C	-1		S
SWP Pen	etration under	own weight	(mm)		L - Split S	Spoon liner	used				geotechnical a	and geos	environ	mental	specia	alists
							Printed:	07/09/2022	?	AGS						
Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395											
---------	---------------------------------------	----------	--	-------------	----------	--										
Client	Pinnacle Consulting Engineers Limited															

Seating Drive **Test Drive** Depth Uncorrected SPT 'N' value SPT 'N' Depth SPT SWP 150 -225 -Hole 75 - 150 0 - 75 75 - 150 0 - 75 (mm) (m bgl) (m OD) Туре Value 225 300 (mm) (mm) (mm) (mm) (mm) (mm) 40 50 10 20 30 BH10 1.20 9.80 С 2 4 4 3 4 3 15 BH10 2.00 9.00 С 3 5 4 5 5 5 19 BH10 3.00 8.00 С 3 5 5 6 7 7 25 9 BH10 4.80 С 16 16 15 19 50/225 6.20 Remarks SAM1 Hammer No.: Energy Ratio, Er (%): 75 -/-Blows/penetration (mm) after seating S - SPT with split spoon sampler -*/-C - SPT with cone Total blows/penetration (mm) Geolech 5 L - Split Spoon liner used SWP Penetration under own weight (mm) geotechnical and geoenvironmental specialists AGS

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
Client	Pinnacle Consulting Engineers Limited				

С ng Engi

					Seatin	ng Drive Test Drive						
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' value 10 20 30 40 50
BH14A	1.20	9.71	S		4	4	10	10	10	10	40	
BH14A	2.00	8.91	S		2	3	25	25			50/150	
BH14A	3.00	7.91	S		3	3	4	5	6	6	21	
BH14A	4.00	6.91	S		2	3	3	4	4	4	15	
BH14A	5.00	5.91	S		2	4	5	5	10	10	30	
BH14A	6.00	4.91	S		5	7	7	7	16	20	50/230	
Hammer No	o.:		JB14				Remarks					
Energy Rati	o, Er (%):		63									
-/- Blow	s/penetratior	n (mm) after	seating		S - SPT v	vith split spo	on sample	r				
-*/- Tota	blows/penet	tration (mm)			C - SPT v	vith cone					Gec	NECHNICS
SWP Pene	tration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geoenvironmental specialists

AGS

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
Client	Pinnacle Consulting Engineers Limited				

					Seatin	g Drive		Test	Drive							
Hole	Depth (m bgl)	Depth (m OD)	SPT Туре	SWP (mm)	0 - 75	75 - 150	0 - 75	75 - 150	150 - 225	225 - 300	SPT 'N' Value	Unco	orrecte	d SPT '	N' valu	e
					(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		10	20	30	40	50
BH17A	1.20	9.84	С		3	3	4	4	3	4	15					
BH17A	2.00	9.04	С		3	4	5	4	5	5	19					
BH17A	3.00	8.04	С		4	6	6	7	7	6	26					
BH17A	4.00	7.04	S		7	7	6	8	7	7	28					
BH17A	5.00	6.04	С		8	10	10	10	12	13	45					
BH17A	5.60	5.44	С		7	9	8	12	14	16	50					
Hammer Me			ςαινί				Remarks									
Hammer No).: 		SAM1				Kemarks									
Energy Ratio	o, Er (%):		75													
-/- Blows	s/penetration	ı (mm) after	seating		S - SPT w	vith split spo	on sampler									
-*/- Total	blows/penet	ration (mm)			C - SPT w	ith cone					Gec	ne	C			5
SWP Penet	tration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geo	environ	mental	specia	lists
							Printed:	07/09/202.	2	AGS						

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
Client	Pinnacle Consulting Engineers Limited				

					Seatin	g Drive		Test	Drive							
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75	75 - 150	0 - 75	75 - 150	150 - 225	225 - 300	SPT 'N' Value	Unco	orrecte	d SPT	'N' valı	Je
			L		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		10	20	30	40	50
BH23	1.20	10.71	С		1	1	2	1	2	2	7					
BH23	2.00	9.91	С		2	4	4	5	7	5	21					
BH23	3.00	8.91	С		3	5	7	7	6	7	27					
BH23	4.00	7.91	С		4	5	6	5	6	6	23					
BH23	5.00	6.91	S		7	8	9	9	9	10	37					
BH23	6.00	5.91	S		7	9	9	10	10	10	39					
Hammer N			ςαΜ1				Remarks									
Hammer N	io.:		SAM1				Remarks									
Lifergy rdl	, LI (/0).		,,,													
-/- Blow	vs/penetratior	n (mm) after	seating		S - SPT w	/ith split spc	on sampler									
-*/- Tota	al blows/penet	ration (mm)			C - SPT v	vith cone					GAC	ກົດ	C	-1		5
SWP Pen	etration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geos	environ	mental	specia	lists
							Printed:	07/09/2022	2	AGS		-				

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

			1		Spatin	g Drive	rive Test Drive					1			
	Depth	Depth	SPT	SWP	Jeaun	5 Drive		rest	150	22⊑	SPT 'N'	Unco	orrected	d SPT 'I	N' value
Hole	(m bgl)	(m OD)	Туре	(mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	225 (mm)	300 (mm)	Value	10	20	30	40 50
BH23	9.00	2.91	С		12	13	18	17	15		50/255				
BH23	12.00	-0.09	С		7	13	21	29			50/285				
BH23	19.50	-7.59	С		3	11	27	23			50/270				
							Bomorke								
Hammer N Energy Rat	o.: io, Er (%):		TEC 130	0133			ineniai KS								
-/- Blow	vs/penetration	n (mm) after	seating		S - SPT w	vith split spo	on sample	r							
-*/- Tota	Il blows/penet	ration (mm)			C - SPTv	vith cone	211 331119/01				600	nr			
SWP Pene	etration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geor	environr	nental	specialists

SWP Penetration under own weight (mm)

- L Split Spoon liner used

Printed: 07/09/2022

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395
Client	Pinnacle Consulting Engineers Limited				

С ng Engi

					Spatin	g Drive		Toc+	Drive			1			
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unc	orrected	SPT 'N	l' value
BH27	1.20	8.98	C		5	6	6	7	7	8	28	10	20	30	40 5
BH27	2.00	8.18	c c		7	8	8	9	, 9	10	36				
BH27	3.00	7.18	c		5	7	6	7	6	7	26				
BH27	4.00	6.18	S		6	6	7	7	8	7	29				
BH27	5.00	5.18	S		7	7	8	9	9	9	35				
BH27	5.50	4.68	С		9	10	12	13	14	11	50/260				
							Derry								
Hammer	No.:		SAM1				Remarks	i							
⊧nergy R	atio, Er (%):		/5												
-/- Bl	ows/penetratior	n (mm) after	seating		S - SPT w	vith split spo	oon sample	r							
-*/- Тс	tal blows/penet	ration (mm)			C - SPT v	vith cone					GCC	nc	C-	N	
SWP Pe	netration under	own weight	(mm)		L - Split	Spoon liner	used				geotechnical	and geo	environm	ental s	pecialist

Penetration under own weight (mm) SWP

L - Split Spoon liner used

Printed: 07/09/2022

Project	Newport Quinn Phase 2				Engineer Pinnacle Consulting Engineers Limited					Proje	ct No.	PN	1224395	5	
Client	Pinnacle C	onsulting E	ingineer	s Limited	I										
					Seatin	g Drive		Test	Drive						
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225	225 - 300	SPT 'N' Value	Uncor	rected	SPT 'N	' value
									(mm)	(mm)		10	20	30	40 50
BH27	8.60	1.58	С		6	13	22	28			50/145				
Hammer N Energy Rat	o.: io, Er (%):		TEC 13(71	0133			Remarks								
-/- Blow -*/- Tota	-/-Blows/penetration (mm) after seatingS-SPT with split*/-Total blows/penetration (mm)C-SPT with cone						on sample	r			GGC	ne	CH-	N	CS

Penetration under own weight (mm) SWP

L - Split Spoon liner used

Printed: 07/09/2022



Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting Engineers Limited	Project No.	PN224395

Client Pinnacle Consulting Engineers Limited

SWP

			Seating Drive Test Drive													
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco	orrecte	d SPT '	N' valu	e 50
BH28	1.20	9.63	С		25		50		. ,	、 ,	50/30	10	20	50	40	50
BH28	2.00	8.83	С		6	19	36	14			50/100					
BH28	3.00	7.83	С		10	12	31	19			50/115					
BH28	4.00	6.83	С		7	8	9	10	10	9	38					
BH28	4.50	6.33	С		25		50				50/70					
							Remarks									
Hammer	No.:		SAM1				Remarks									
Energy R	atio, Er (%):		75													
-/- Bl	ows/penetratior	n (mm) after	seating		S - SPT w	vith split spo	on sample	r								
-*/- To	tal blows/penet	ration (mm)	č		C - SPT v	vith cone					Geo	nre	C I-			ς
SWP Penetration under own weight (mm) L Split Spoon liner							used				geotechnical	and geoe	viron	mental	specia	lists

AGS

Project	Newport C	Quinn Phase	e 2			Engineer		Pinnacle Consulting Engineers Limited			Project No. PN224395				
Client	Pinnacle C	onsulting E	ingineer	s Limited	1			0							
					Seatin	g Drive		Test	Drive						
Hole	Depth (m bgl)	Depth (m OD)	SPT Туре	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225	225 - 300	SPT 'N' Value	Uncor	rected	SPT 'N'	value
81120	7.50	2.22	6				24	24	(mm)	(mm)	50/225	10	20	30 4	.0 50
BH28	7.50	3.33	Ĺ			8	21	24	5		50/225				
Hammer N	D.:		TEC 130	0133			Remarks								
Energy Rati	io, Er (%):		71												
-/- Blow -*/- Tota	- Blows/penetration (mm) after seating S - SPT with split spo - Total blows/penetration (mm) C - SPT with cone							r			GGO	חרב	<u></u>	N	<u>C5</u>

SWP Penetration under own weight (mm)

- L Split Spoon liner used
 - Printed: 07/09/2022

AGS

geotechnical and geoenvironmental specialists

Project	Newport Quinn Phase 2	Engineer	Pinnacle Consulting	Project No.	PN224395
			Engineers Limited		

Client Pinnacle Consulting Engineers Limited

					Seatin	g Drive	Test Drive								
	Depth	Depth	Depth SPT	SPT SW	SWP	Jeating Drive		150 -			225 -	SPT 'N'	Uncorrected SPT 'N' value		
Hole	(m bgl)	(m OD)	Туре	(mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	225	300	Value				
					()	,	()	,	(mm)	(mm)		10 20	30 40	50	
BH30	1.20	9.79	C		2	3	5	5	6	5	21				
BH30	2.00	8.99	C		2	3	3	4	5	3	15				
BH30	3.00	7.99	C		3	4	6	6	5	5	22				
BH30	4.00	6.99	C		4	6	6	7	7	7	27				
Hammo	ſ No :		ςΔΜ1				Remarks								
Hamme Energy F	r No.: Ratio, Er (%):		SAM1 75												
-/- B	lows/penetration	n (mm) after	seating		S - SPT w	/ith split spo	on sampler	r							
-*/- т	otal blows/penet	tration (mm)			C - SPT v	vith cone					GCC	NGCH	<i>î</i> NIC	3	
WP Penetration under own weight (mm) L - Split Spoon liner							used				geotechnical	and geoenvironm	ental spec	ialists	

SWP Penetration under own weight (mm)

Printed: 07/09/2022

Project	Newport (Quinn Phase	e 2			Engineer Pinnacle Consulting Engineers Limited			B	Project No. PN224395					
Client	Pinnacle C	Consulting E	ingineer	s Limited	l										
		Seating Drive Test Drive													
Hole	Depth (m bgl)	Depth (m OD)	SPT Type	SWP (mm)	0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)	SPT 'N' Value	Unco 10	prrected	30	' value 40 50
внзо	5.30	5.69	S		9	12	14	15	16	16	61		20		
Hammer N	lo.:		TEC 13(0133			Remarks								
Energy Rat	io, Er (%):		71												
					c c==										
-/- Blov -*/- Tota	ws/penetration al blows/penet	n (mm) after tration (mm)	seating		S - SPT w C - SPT v	vith split spo vith cone	ion samplei	r			GCC	DG	Cŀ	-N	

SWP Penetration under own weight (mm)

- L Split Spoon liner used
 - Printed: 07/09/2022



Unit 25 Stella Gill Industrial Esatate Pelton Fell Chester-le-Street DH2 2RG

Instrumented Rod Data

Diameter d _r (mm):	54
Wall Thickness tr (mm):	6.5
Assumed Modulus E _a (GPa):	208
Accelerometer No.1:	5991
Accelerometer No.2:	5990

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref:	TEC 130133
Test Date:	17/12/2020
Report Date:	17/12/2020
File Name:	1904052.spt
Test Operator:	BP

SPT Hammer Information

Hammer Mass	m (kg):	63.5
Falling Height	h (mm):	760
SPT String Len	gth L (m):	14.1

Comments / Location

4

3

2

1

0

Mass and drop supplied by client

2

3 4





Displacement

5 6

Time (ms)

8 9

10

7

Velocity



Calculations

Energy Ratio E _r (%):	71	
Measured Energy E _{meas} (J):	334	
Theoretical Energy Etheor (J):	473	
Area of Rod A (mm2):	970	

Brook

Signed: Brian Proctor Title: Technician

The recommended calibration interval is 12 months

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APPENDIX 5

Rotary Core Photographs

Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





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Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BHI0 - Box I



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH10 - Box 2



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BHI0 - Box 3



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH10 - Box 4



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH10 - Box 5



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BHI4A - Box I


Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





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Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH23 - Box I



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH23- Box 2



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH23- Box 3



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH23- Box 4



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

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Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales





Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH30 - Box I



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH30 - Box 2



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH30 - Box 3



Project Number : PN224395

Project : Former Quinn Radiator Factory Site, Newport, Wales



BH30 - Box 4



APPENDIX 6

In-Situ Plate Load Test Results

Project	Newport Quinn - Phase 2 Test Location		tion	PLT01				
	•			Project N	0	PN22439	5	
Client	Pinnacle Consulti	ng Engineers		, Date		02 August	2022	
		0 0		Test No		I		
		Test carried	out in acc	ordance	with			
BS 1377	7-9:1990 & Desi	gn Manual for	Roads &	Bridges	IAN 73/	06 Revisio	n I (2009)
Soil Description	MG - Reddish bro slightly silty fine t	own gravelly o coarse sand.	Plate Diam	ieter (mm)	300			
Test Depth (m bgl)	0.23		Kentledge	Туре	JCB 3C	x		
Carried out by	AJ		Checked t	у	jsj			
		٦	Fest Result	ts	-			
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Settlement				
0.00	0.00	0.00			Applied	l Stross (kNl/n	n ²)	
5.30	74.98	0.25	1	0 100			·)	
8.16	115.44	0.54			200	300 400	500 6	
10.44	147.70	0.76		\mathbb{N}				
13.18	186.46	1.02	L L L	1				
18.01	254.79	1.30	1 U 0.5					+
25.08	354.81	1.55	eme	1	\			
32.09	453.98	1.88			\sum			
41.48	586.82	2.16	te S					
0.00	0.00	1.18	Pla	: \				
			ຍິສ 1.5 ເອ		\rightarrow			
			Wer	1				
			2					
								•
			2.5	J	1			



Georechnics geotechnical and geoenvironmental specialists

Project	Newport Quinn	- Phase 2		Test Locat	ion	PLT02		
	, ,			Project No	C	PN224395		
Client	Pinnacle Consulti	ng Engineers		, Date		03 August 2	022	
		5 5		Test No		I		
		Test carried	out in acc	ordance	with			
BS 1377	7-9:1990 & Desi	gn Manual for	Roads &	Bridges	AN 73/0	6 Revision	l (2009)	
Soil Description	MG - Reddish brown gravelly slightly silty fine to coarse sand.		Plate Dian	neter (mm)	300			
Test Depth (m bgl)	0.44		Kentledge	Туре	ЈСВ ЗСХ			
Carried out by	AJ		Checked t	ру	jsj			
	•	٦	est Resul	ts				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)	Applied Stress vs Average Plate Settlement					
0.00	0.00	0.00			Applied S	tress (kN/m ²))	
3.47	49.09	0.27		0	FO	10 10	, 10	150
4.98	70.45	0.51	0	• •		л — · · · · —		
5.78	81.77	0.77	<u> </u>	:				
6.42	90.82	1.02	um)	1				
7.28	102.99	1.27	u 0.5	1		•		
7.96	112.61	1.53	eme	1		Ì		
8.60	121.67	1.79	l jett	-				
10.01	4 .6	2.08	te S	1		\sim	~	
0.00	0.00	l.87	Pla	-			•	
			Ba 1.5	-			È.	
			Aver	1				
			2					
			1	1				
				1				
			2.5	4				



Remarks



Project	Newport Quinn	Phase 2		Test Locat	ion	PI T03		
				Project No	ווסוז. ר	PN22439	5	
Client	Pinnacle Consulti	ng Engineers		Date	5		· 2022	
				Test No		I		
				-		•		
BS 137	7-9.1990 & Dosi	Test carried (out in acc Roads &	ordance Bridges	with	06 Rovisio	n I (2009)	
Soil Description	MG - Reddish br			bridges i	1300			
	slightly silty fine t	o coarse sand.			500			
Test Depth (m bgl)	0.23		Kentledge	Туре	JCB 3C>	<		
Carried out by	AJ		Checked b	у	JSJ			
		1	est Result	ts				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Applied S	Settlement			
0.00	0.00	0.00			Applied	Stross (kN/r	n ²)	
4.18	59.13	0.25		0	rophice	100	150	200
5.43	76.82	0.53] 0		50 		150	200
6.86	97.05	0.74			\checkmark			
8.29	117.28	1.05	L L	-				
9.74	137.79	1.32	t 0.5	-	+			
10.89	154.06	1.54	eme					
12.32	174.29	1.81		-				
13.46	190.42	2.06	te S			•		
0.00	0.00	1.25	Pla					
			ຍ ສູ 1.5	-	\rightarrow			
			ver	-				
				-				\sum
				-				
				-				
			2.5	<u> </u>		Í	1]



Georechnics geotechnical and geoenvironmental specialists

Project	Newport Quinn	Newport Quinn - Phase 2		Test Location		PLT04			
	• -			Project No	o	PN224	395		
Client	Pinnacle Consulti	ng Engineers		, Date		04 Aug	ust 2022		
				Test No		I			
		Test carried	out in acc	ordance	with				
BS 137	-9:1990 & Desig	gn Manual for	Roads &	Bridges	IAN /3	06 Revis	ion I (2	2009)	
Soil Description	MG - Reddish bro slightly silty fine t	own gravelly o coarse sand.	Plate Dian	neter (mm)	300				
Test Depth (m bgl)	0.22		Kentledge	Туре	JCB 3C	X			
Carried out by	AJ		Checked t	у	JSJ				
	•	٦	Fest Resul	ts	-				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)	Applied Stress vs Average Plate Se					ment	
0.00	0.00	0.00			ممانور	l Stross (kl	N/m^2		
6.52	92.24	0.22					N /111)	400	500
10.39	146.99	0.52				200	300	400	500
3.4	189.71	0.78							
16.17	228.76	1.06	L L	1					
19.56	276.72	1.29	1 U 0.5	-					
22.51	318.45	1.61	eme	1					
24.10	340.95	1.79		1		$\underline{\mathbb{N}}$			
27.63	390.88	2.16	teS	1					
0.00	0.00	1.32	Pla	•					
			98 1.5 Average 2					•	
	1		1	1	1	1	1		



geotechnical and geoenvironmental specialists

Proiect	Newdort Ouinn -	- Phase 2		Test Locat	ion	PLT05		
				Project No	 ר	PN22439	5	
Client	Pinnacle Consulti	ng Engineers		Date	-	04 August	2022	
				Test No				
		Test carried	out in acc	ordance	with			
BS 1377	7-9:1990 & Desig	gn Manual for	• Roads &	Bridges	AN 73/	06 Revisio	n I (2009)	
Soil Description	MG - Reddish brown gravelly slightly silty fine to coarse sand.		Plate Dian	neter (mm)	300			
Test Depth (m bgl)	0.19		Kentledge	Туре	ЈСВ ЗСХ	X		
Carried out by	AJ		Checked b	у	JSJ			
	•	7	Fest Resul	ts				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Settlement				
0.00	0.00	0.00			Applied	l Stress (kN/n	n^2)	
5.29	74.84	0.21	1	0	100	200	200	400
8.87	125.48	0.52	0	•		200	300	400
11.76	166.37	0.78	<u> </u>					
13.69	193.67	I.04	L L L	1	\mathbf{X}			
16.13	228.19	1.28	1, 0.5	-				
18.59	262.99	1.54	eme	1				
21.61	305.72	1.79	1 jett	-				
24.43	345.61	2.05	te S	1				
0.00	0.00	1.57	Pla	1				
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				1			\rightarrow	
				1				,
				1				
			2.5	1		1	I	



Georechnics geotechnical and geoenvironmental specialists

Project	Newport Quinn - Phase 2		ewport Quinn - Phase 2 Test Location		tion	PLT07			
				Project N	0	PN2243	95		
Client	Client Pinnacle Consulting Engineers			, Date		01 Augu	st 2022		
		0		Test No		I			
		Test carried	out in acc	ordance	with				
BS 1377	7-9:1990 & Desi	gn Manual for	Roads &	Bridges	IAN 73	8/06 Revisio	on I (20	09)	
Soil Description	MG - Reddish bro slightly silty fine t	own gravelly o coarse sand.	Plate Diam	neter (mm)	300				
Test Depth (m bgl)	0.20		Kentledge	Туре	JCB 3C	X			
Carried out by	AJ		Checked t	у	JSJ				
		1	est Resul	ts	•				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)	Applied Stress vs Average Plate Set					ent	
0.00	0.00	0.00			Applie	d Stress (kN	/m ²)		
6.98	98.75	0.26		0 100	200	200 400	тор Гор	600	700
12.48	176.56	0.59	0	•••••	200 	300 400			
17.75	251.11	0.81	Ē						
23.97	339.11	1.01	<u>ل</u> ٤ 0.2	+ + + + + + + + + + + + + + + + + + +					_
32.78	463.74	1.21	ent						
44.47	629.12	1.30	Ĕ 0.4		\sim				-
0.00	0.00	0.11	ettl	1	\sum				
			9.0 te						\neg
			age 	-		$\overline{\mathbf{N}}$			
			Je 1	1			\searrow		
				3					
			1.2	<u>}</u>				\searrow	
]					
			1.4						



Georechnics geotechnical and geoenvironmental specialists

Project	Newport Quinn	- Phase 2		Test Locat	ion	PLT08			
	•			Project No	C	PN2243	95		
Client	Pinnacle Consulti	ng Engineers		Date		02 Augu	st 2022		
			Test No		I				
		Test carried	out in ac	ordance	with				
BS 1377	7-9:1990 & Desi	gn Manual for	Roads &	Bridges	AN 73/0	6 Revisi	on I (2	009)	
Soil Description	MG - Reddish brown gravelly slightly silty fine to coarse sand.		Plate Dian	neter (mm)	300				
Test Depth (m bgl)	0.20		Kentledge	Туре	ЈСВ ЗСХ				
Carried out by	AJ		Checked I	ру	jsj				
	•	٢	est Resul	ts	•				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)	Applied Stress vs Average Plate Settlement						
0.00	0.00	0.00			Applied	Stross (kN	$/m^2$)		
9.06	128.17	0.24		0 100	200	200	400	500	600
l 5.07	213.20	0.53	0		200	300	400		
19.77	279.69	0.73	<u> </u>						
26.03	368.25	1.05			•				
30.28	428.37	1.27	t 0.4		\rightarrow			<u> </u>	
36.89	521.89	1.59] e		<u>)</u>				
0.00	0.00	0.91	ett]						
			8.0 <u>t</u> e						_
						$ \rightarrow$	_		
			age				\neg		
			A Fei						
			1.4	+		\rightarrow	\rightarrow		_
			1.6				\rightarrow		
				1					



GEOTECHNICS geotechnical and geoenvironmental specialists
Project	Newport Ouinn -	Phase 2		Test Locat	ion	PI T09			
				Project No	ווסוז. ר	PN2243	95		
Client	Pinnacle Consulti	ng Engineers		Date	5	03 Διισι	1st 2022		
Cherre				Test No		I			
				-					
BS 137	7-9·1990 & Desi	Test carried of Manual for	out in ace Roads &	ordance Bridges l	with	/06 Rovisi	on I (20	09)	
Soil Description	MG - Reddish bro	Sin i nandai ioi		Diluges i	300		0111 (20		
	slightly silty fine t	o coarse sand.			500				
Test Depth (m bgl)	0.24		Kentledge	Туре	JCB 3C	Х			
Carried out by	AJ		Checked I	у	JSJ				
		1	est Resul	ts					
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Applied S	Stress vs .	Average Plat	te Settleme	ent	
0.00	0.00	0.00			مالمم	d Stross (kN	(m^2)		
3.91	55.32	0.27		о г	, (pplie)	100 1	, , , , , , , , , , , , , , , , , , ,	00 2	
5.94	84.03	0.51] ₀		0 	100 1	50 2 +	00 2 +	.50 -
7.38	104.41	0.76			_				
9.26	131.00	1.05	L L L]					
10.83	153.21	1.28	t 0.5	-					-
12.08	170.90	1.52	eme	1					
13.52	191.27	1.75		1					_
14.92	211.07	2.05	teS	1		│			
0.00	0.00	1.23	Pla						
			ຍ ສູ່ 1.5	1		\downarrow		+	-
			ver	1					
			2	1				λ	
] -	1					
				1					
			2.5						



Remarks



							Sheet I -	i est nesules
Project	Newport Quinn	- Phase 2		Test Loca	tion	PLT10		
				Project N	0	PN224395		
Client	Pinnacle Consulti	ng Engineers		Date		01 August	2022	
				Test No		I		
BS 137	7-9:1990 & Desi	Test carried of Manual for	out in acc • Roads &	ordance Bridges	with IAN 73/	06 Revisior	n (2009)	
Soil Description	MG - Reddish bro	own gravelly	Plate Diam	eter (mm)	300		()	
	slightly silty fine t	o coarse sand.		()				
Test Depth (m bgl)	0.20		Kentledge	Туре	ICB 3C	X		
Carried out by	Al		Checked b	<u>у</u>	ISI			
,	,	1	L Fest Result	, S				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Applied S	Stress vs /	Average Plate :	Settlement	
0.00	0.00	0.00			Applied	Stross (kNI/m	2)	
7.43	105.11	0.24	1		Applied		()	
15.14	214.19	0.49			200	400	600	800
26.73	378.15	0.77		\mathbf{N}				
38.13	539.43	1.04	E 0.2					
48.32	683.59	1.20	ut (-				
0.00	0.00	0.55	<u> </u>	<u> </u>	\searrow			
			ettle					
			6.0 ک 4		+			
			Pla	; `	\searrow			
			o.o age	-		$\overline{\langle }$		
			Je 1	1		\rightarrow		
			⊲	1				
			1.2	<u> </u>				
]				
			1.4	1				
	Applie	ed Stress & Ave	erage Plate	Settlem	ent vs Ti	me		
800.00						···· ·		0.00
₹ 700.00					ļ			0.20 E



geotechnical and geoenvironmental specialists

Project	Nourport Ouinn	Phase 2		Tastlass	ion			- rest nesu
Project	Newport Quinn	- Fhase Z		Project No	ion		E	
Client	Dinnada Canaulti	na Enaineene)	CIN22437	5 4 2022	
Client	Finnacie Consulu	ng Engineers				04 Augus	t 2022	
				l est ino		I		
		Test carried	out in acc	ordance	with			
BS 1377	7-9:1990 & Desi	gn Manual for	Roads &	Bridges	AN 73/	06 Revisio	n I (200	9)
Soil Description	MG - Reddish bro	own gravelly	Plate Diam	neter (mm)	300			
	slightly silty fine t	o coarse sand.						
Test Depth (m bgl)	0.21		Kentledge	Туре	ЈСВ ЗСХ	<		
Carried out by	AJ		Checked b	у	JSJ			
		7	Fest Result	ts				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Applied S	tress vs A	Average Plate	Settlemen	t
0.00	0.00	0.00			Applied	Stross (kNI/		
8.72	123.36	0.25			Applied		11-) 	
10.87	153.78	0.50	1 .			200 300) 400) 500
14.28	202.02	0.75						
16.66	235.69	1.00	Ē	_				
19.44	275.02	1.26	t 0.5		-×			
21.72	307.28	1.51	ame	-				
24.59	347.88	1.77		-				
27.64	391.03	2.02	e S -	-				
0.00	0.00	1.38	Plat					
			ല്ല് 1.5	\square			k	
			vera					
			·				\sim	
				-				
				-				
			2.5	1				



Georechnics geotechnical and geoenvironmental specialists

Project	Newport Quinn -	Phase 2		Test Locat	ion	PLT12		
,				Project No	5	PN22439	5	
Client	Pinnacle Consulti	ng Engineers		Date		05 August	2022	
		0 0 0		Test No				
		Test carried	out in acc	ordance	with			
BS 1377	7-9:1990 & Desig	gn Manual for	Roads &	Bridges	AN 73	06 Revisio	n I (2009)	
Soil Description	MG - Reddish bro slightly silty fine t	own gravelly o coarse sand.	Plate Diam	eter (mm)	300			
Test Depth (m bgl)	0.15		Kentledge	Туре	JCB 3C	X		
Carried out by	AJ		Checked b	у	jsj			
	•	٦	Fest Result	:s	•			
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Applied S	Stress vs A	Average Plate	Settlement	
0.00	0.00	0.00			Applied	l Stross (kNl/r	n ²)	
6.51	92.10	0.28	1	0	100	200	200	400
8.92	126.19	0.54	0	U		200	300	400
11.63	164.53	0.80						
14.38	203.44	1.06	um)	1				
16.81	237.81	1.32	t, 0.5	-				
19.78	279.83	1.57	eme					
22.64	320.29	1.85	l jett	-				
25.89	366.27	2.04	te 3					
0.00	0.00	1.68	Pla	1		<u> </u>		
			ຍິສ 1.5 ເອ	-				
			Aver					
			2	-				<u> </u>
								•
				1				
			2.5	_		I	11]



geotechnical and geoenvironmental specialists

Project	Nowport Ouinn	Phase 2	-	Tost	ion	כו דום	,	
rioject		- r nase z					E	
Clinat		F		Project No	2	PIN22435	5	
Client	Pinnacie Consulti	ng Engineers		Date		04 Augus	t 2022	
				l est No				
		Test carried	out in acc	ordance	with			
BS 1377	7-9:1990 & Desig	gn Manual for	[•] Roads &	Bridges	AN 73	3/06 Revisio	n I (200	19)
Soil Description	MG - Reddish bro	own gravelly	Plate Diam	eter (mm)	300			
	slightly silty fine t	o coarse sand.						
Test Depth (m bgl)	0.45		Kentledge	Туре	JCB 3C	X		
Carried out by	AJ		Checked b	у	JSJ			
			Test Result	s				
Applied Load	Applied Stress	Average Plate Settlement		Applied S	Stress vs	Average Plate	Settleme	nt
(kN)	(kN/m²)	(mm)						-
0.00	0.00	0.00			Addlie	d Stress (kN/	m ²)	
11.73	165.95	0.27		0 100	200	200 400	, 500	600 700
17.05	241.21	0.54	0	• 100	200	<u> </u>		
22.47	317.89	0.78	Ē					
28.46	402.63	1.05	<u></u> <u>6</u> 0.2	\vdash				
33.76	477.61	1.28	sut ($\overline{\mathbf{N}}$			
41.15	582.15	1.51						
0.00	0.00	1.05	10.6	╡──┤─				
			te S	1				
			Bg 1					
			verg					
			√ 1.2	+	\rightarrow		$\searrow \vdash$	
			1 1 4					
			1 .4					
			1.6					



geotechnical and geoenvironmental specialists

Form INS016 Rev 1

Project	Newport Quinn	- Phase 2		Test Loca	tion	PLT14		
	•			Project N	o	PN22439	5	
Client	Pinnacle Consulti	ng Engineers		Date		01 August	2022	
				Test No		I		
		Test carried	out in acc	ordance	with			
BS 1377	7-9:1990 & Desi	gn Manual for	Roads &	Bridges	IAN 73	/06 Revisio	n I (200	9)
Soil Description	MG - Reddish bro slightly silty fine t	own gravelly o coarse sand.	Plate Diam	neter (mm)	300			
Test Depth (m bgl)	0.20		Kentledge	Туре	ЈСВ ЗС	Х		
Carried out by	AJ		Checked t	ру	jsj			
		٦	est Resul	ts	•			
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Applied	Stress vs	Average Plate	Settlemer	nt
0.00	0.00	0.00			ماامم	d Stress (kN/r	n ²)	
12.20	172.59	0.26		0 100	200	200 400	F00	600 700
22.38	316.61	0.57	0	0 100	200	300 400		
29.08	411.40	0.78] <u>_</u>					
34.38	486.38	0.97	<u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> .2	$ \rightarrow $				
39.75	562.35	1.14	ent					
43.04	608.89	1.27	Ĕ 0.4	\vdash	\rightarrow			
0.00	0.00	0.29	ettl	1				
			0.0 te					
			386	1			\mathbf{X}	
			I ↓ 1	1				
			1.2	+			\rightarrow	\mathbf{A}
			1	1				



Georechnics geotechnical and geoenvironmental specialists

Project	Newport Quinn	Phase 2		Test Loca	tion	PLT15			
•	•			Project N	0	PN22439	5		
Client	Pinnacle Consulti	ng Engineers		Date		02 Augus	t 2022		
				Test No		I			
		Test carried	out in acc	ordance	with				
BS 1377	7-9:1990 & Desi	gn Manual for	Roads &	Bridges	IAN 73	8/06 Revisio	on I (20	009)	
Soil Description	MG - Reddish bro slightly silty fine t	own gravelly o coarse sand.	Plate Dian	neter (mm)	300				
Test Depth (m bgl)	0.20		Kentledge	Туре	JCB 3C	X			
Carried out by	AJ		Checked t	у	jsj				
		٦	Fest Resul	ts	-				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Applied	Stress vs	Average Plate	e Settler	ient	
0.00	0.00	0.00			مالمم	d Stress (kN/	m ²)		
7.06	99.88	0.26		0 100	200	200 400	то) ГОО	600	700
12.55	177.55	0.50	0	•••••					
20.03	283.37	0.75] <u>_</u>						
29.03	410.69	1.01	<u></u>	+ +					
43.71	618.37	1.31	ent	1 N					
0.00	0.00	0.50	Ĕ 0.4	+	\mathbf{X}				
			Sett						
			0.0 te						
					\searrow				
			age	1		\searrow			
			I A						
			1.2	1					
			1	1				1	
			1.4	4		I	1	I	



Georechnics geotechnical and geoenvironmental specialists

Project	Newport Ouinn	Phase 2		Test Locat	ion	PLT16		
,				Proiect No	5	PN22439	5	
Client	Pinnacle Consulti	ng Engineers		Date		02 Augus	t 2022	
		0 0		Test No		l		
		Test carried	out in acc	ordance	with			
BS 137	7-9:1990 & Desi	gn Manual for	Roads &	Bridges	AN 73/	06 Revisio	n I (2009)
Soil Description	MG - Reddish bro slightly silty fine t	own gravelly o coarse sand.	Plate Diam	neter (mm)	300			
Test Depth (m bgl)	0.20		Kentledge	Туре	JCB 3CX	(
Carried out by	AJ		Checked b	у				
	•	-	Fest Result	ts	•			
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Applied S	Stress vs A	verage Plate	Settlement	
0.00	0.00	0.00			ماامط	Stross (kNI/r	m ²)	
2.78	39.33	0.26	1	0 20			100 1	20 140
3.63	51.35	0.56			40 	- 00 - 80	1 001	
4.48	63.38	0.80						
5.29	74.84	1.06	L L L					
6.28	88.84	1.32	eut eut	\pm				
7.01	99.17	1.58	em	1				
7.40	104.69	1.79	1 Sett		\rightarrow			
8.28	7. 4	2.07	ate	1		\checkmark \checkmark		
0.00	0.00	0.27	Pla a				<	
			ຍິສ 1.5 ເອ					
			Aver					
			2	1				
			4	1				ή
			4	1				
			1 25	-				



Remarks



Project	Nourport Ouinn	Phase 2	Tast Lassi	ian			suit
Froject		- Flidse Z	Project No	ion	FLII/ DNI224205		
Client	Pinnacla Consulti	ng Enginooro)	02 August 20'		
Client	Fillinacie Consulu	ng Engineers			US August 20.	22	
			Test No		1		
		Test carried	out in accordance v	with			
BS 1377	7-9:1990 & Desi	gn Manual for	Roads & Bridges I	AN 73/06	Revision I	(2009)	
Soil Description	MG - Reddish bro	own gravelly	Plate Diameter (mm)	300			
	slightly silty fine t	o coarse sand.					
Test Depth (m bgl)	0.45		Kentledge Type	JCB 3CX			
Carried out by	AJ		Checked by	JSJ			
		1	est Results				
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)	Applied St	tress vs Ave	rage Plate Set	tlement	
0.00	0.00	0.00		Applied St	$coss (kNl/m^2)$		
3.76	53.19	0.28	1			400 5	
4.83	68.33	0.45			300	400 5	-00 -
7.33	103.70	0.82					
9.56	135.25	1.10					
12.90	182.50	1.29] ະ ^{0.5}				-
18.29	258.75	l.58	l 🖁 🕴 🔪				
26.03	368.25	1.79					
33.22	469.97	2.13	te				
0.00	0.00	1.25	Pla				
				\rightarrow			-
			, ver		$ \rightarrow $	~	
]				
			2.5	1		I	J



Remarks



Project	Newport Quinn ·	Phase 2		Test Locat	tion	PLT18		
	·			Project No	c	PN22439	95	
Client	Pinnacle Consulti	ng Engineers		Date		03 Augus	st 2022	
				Test No		I		
		Test carried	out in acc	ordance	with			
BS 1377	7-9:1990 & Desig	gn Manual for	Roads &	Bridges	IAN 73	06 Revisio	on I (20	09)
Soil Description	MG - Reddish bro slightly silty fine t	own gravelly o coarse sand.	Plate Diam	eter (mm)	300			
Test Depth (m bgl)	0.40		Kentledge	Туре	ICB 3C	x		
Carried out by	AI		Checked t	у У	İsi			
		1	Fest Result	; :S	5 5			
Applied Load (kN)	Applied Stress (kN/m ²)	Average Plate Settlement (mm)		Applied S	Stress vs .	Average Plat	e Settleme	ent
0.00	0.00	0.00			Appliq	l Stross (kN)	(m^2)	
5.62	79.51	0.25	1	o 50				200 250
8.48	119.97	0.51	1 0	0 50			250	300 350
11.11	157.17	0.83						
12.90	182.50	1.05	L L					
l 6.06	227.20	1.39	t 0.5		- \`			
18.00	254.65	l.66	eme	: N				
20.83	294.68	1.91	l jett		\rightarrow			
22.42	317.18	2.19	te 3			\checkmark		
0.00	0.00	0.36	Pla					
			ຍິ 1.5 ອ			+		
			Avei	1				
			2	╡───┤─			\rightarrow	
				1				
			2 5	<u>] </u>				
			2.5					





APPENDIX 7

Monitoring Results

FIELDWORK - In Situ Gas Monitoring - Visit Record

Project		Newport Q	uinn Phase 2								Client		Pinnacle Co	onsulting	Engineers Lim	ited		Project No.		PN224395
											Instrume	ent used						Date		13/09/2022
Meteorologi	cal Con	ditions:		Ground (Condition:	0	Prec	ipitation:	0	ļ	Wind:	0	Clo	ud Cover:	0	Atmo	spheric Pre	ssure Trend:	0]
Location ID	Pipe Ref.	Installation Diameter (mm)	Time of Reading (hh:mm:ss)	Flow (Peak) (l/hr)	Flow (Steady) (l/hr)	Methane (Peak) (% v/v)	Methane (Steady) (% v/v)	Carbon Dioxide (Peak) (% v/v)	Carbon Dioxide (Steady) (% v/v)	Oxygen (Peak) (% v/v)	Oxygen (Steady) (% v/v)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	PID (ppm)	Air Temperature (°C)	Atmospheric Pressure (mb)	Diff. Pressure (Pa)	Depth to Water (m bgl)	Depth to Base (m bgl)	Remarks
BH01	1	50		0.0	0.0	0.0	0.0	0.2	0.2	20.0	20.0	0	0		16.0	1012	0	2.63	17.62	
BH04A	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.1	20.1	0	0		16.0	1012	0	2.56	16.99	
BH06	1	50		0.0	0.0	0.0	0.0	1.5	1.5	19.0	19.0	0	0		16.0	1012	0	1.77	2.70	
BH07	1	50		0.0	0.0	0.0	0.0	0.8	0.8	19.7	19.7	0	0		16.0	1012	0	4.84	20.30	
									1											
				1																
				1																
				1																
				İ																
				1																



FIELDWORK - In Situ Gas Monitoring - Visit Record

Project		Newport Q	uinn Phase 2								Client		Pinnacle Co	onsulting	Engineers Lim	ited		Project No.		PN224395
											Instrume	ent used						Date		20/09/2022
Meteorologic	al Con	nditions:		Ground (Condition:	Dry	Prec	ipitation:	None	Ì	Wind:	Still	Clo	oud Cover:	Cloudy	Atmo	spheric Pre	ssure Trend:	Falling]
Location ID	Pipe Ref.	Installation Diameter (mm)	Time of Reading (hh:mm:ss)	Flow (Peak) (l/hr)	Flow (Steady) (I/hr)	Methane (Peak) (% v/v)	Methane (Steady) (% v/v)	Carbon Dioxide (Peak) (% v/v)	Carbon Dioxide (Steady) (% v/v)	Oxygen (Peak) (% v/v)	Oxygen (Steady) (% v/v)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	PID (ppm)	Air Temperature (°C)	Atmospheric Pressure (mb)	Diff. Pressure (Pa)	Depth to Water (m bgl)	Depth to Base (m bgl)	Remarks
BH01	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.4	20.4	0	0		17.0	1028	0	2.68		
BH03	1	50		0.0	0.0	0.0	0.0	0.0	0.1	20.4	20.4	0	0		17.0	1028	0	2.25		
BH04A BH06	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.4	20.4	0	0		17.0	1028	0	2.62		
BH07	1	50		0.0	0.0	0.0	0.0	0.4	0.6	19.6	19.6	0	0		17.0	1027	0	4.95		
BH09	1	50		-28.0	0.0	1.0	1.0	1.7	1.7	18.7	18.7	0	0		17.0	1026	-198	2.28		
BH10	1	50		0.0	0.0	0.0	0.0	0.7	0.7	17.6	17.6	0	0		17.0	1025	0	2.83		
BH13	1	50																		
BH17A	1	50		9.0	0.0	0.0	0.0	0.1	0.1	19.8	19.8	0	0		17.0	1026	0	3.44		
BH19	1	50																3.03		Unable to monitor gas concentrations as no gas bung installed.
BH23	1	50																4.75		Unable to monitor gas concentrations as
BH25	1	50		0.0	0.0	0.0	0.0	0.5	0.5	8.5	8.5	0	0		20.0	1026	0	4.56		no gas bang instanca.
BH28	1	50																3.45		Unable to monitor gas concentrations as gas bung open.
BH30	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.1	20.1	0	0		20.0	1026	0	3.25		
CP-BH101	2	50																2.10		Unable to monitor gas concentrations as installation flooded. Groundwater level measured after opening bung to allow surface water to drain into installation.
CP-BH102	1	50																4.69		Unable to monitor gas concentrations as installation flooded. Groundwater level measured after opening bung to allow surface water to drain into installation.
CP-BH103	1	50																1.30		Unable to monitor gas concentrations as installation flooded. Groundwater level measured after opening bung to allow surface water to drain into installation.
RC-BH101	1	50		4.3	0.0	0.0	0.0	0.5	0.5	20.2	20.2	0	0		20.0	1026	0	2.26		
RC-BH102	1	50																2.66		Unable to monitor gas concentrations as gas bung open.
RC-BH103	1	50		0.0	0.0	0.0	0.0	0.3	0.3	15.0	13.3	0	0		20.0	1026	0	4.10		
RC-BH104	1	50																2.66		Unable to monitor gas concentrations as gas bung open.
RC-BH105	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.1	20.1	0	0		18.0	1023	0	3.12		
WS-BH102	1	50		0.0	0.0	0.0	0.0	0.9	0.9	20.0	20.0	0	0		18.0	1027	0	DRY		
WS-BH103	1	50		0.0	0.0	0.0	0.0	0.5	0.5	20.3	19.5	0	0		18.0	1025	0			
WS-BH104	1	50		4.3	0.0	0.0	0.0	0.0	0.0	20.3	20.2	0	0		18.0	1025	0	0.73		
	-											-	-				-			

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FIELDWORK - In Situ Gas Monitoring - Visit Record

Project		Newport Q	uinn Phase 2		Client Pinnacle Consulting Engineers Limited								ited		Project No.		PN224395			
		Instrument used nditions: Ground Condition: Dry Precipitation: None Wind: Light Cloud Cover: Cloudy At											Date		26/09/2022					
Meteorologi	cal Cor	nditions:		Ground	Condition:	Dry	Prec	ipitation:	None]	Wind:	Light	Clo	oud Cover:	Cloudy	Atmo	spheric Pre	essure Trend:	Steady]
Location ID	Pipe Ref.	Installation Diameter (mm)	Time of Reading (hh:mm:ss)	Flow (Peak) (l/hr)	Flow (Steady) (I/hr)	Methane (Peak) (% v/v)	Methane (Steady) (% v/v)	Carbon Dioxide (Peak)	Carbon Dioxide (Steady)	Oxygen (Peak) (% v/v)	Oxygen (Steady) (% v/v)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	PID (ppm)	Air Temperature (°C)	Atmospheric Pressure (mb)	Diff. Pressure (Pa)	Depth to Water (m bgl)	Depth to Base (m bgl)	Remarks
BH01	1	50		0.0	0.0	0.0	0.0	0.3	0.3	20.0	19.7	0	0		15.0	1005	0	2.63		
BH03	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.4	20.4	0	0		15.0	1005	0	2.13		
BH04A	1	50		22.0	0.0	0.0	0.0	0.0	0.0	20.4	20.4	0	0		15.0	1005	230	2.60		
BH06	1	50		0.0	0.0	0.0	0.0	0.3	0.3	20.3	20.3	0	0		15.0	1006	0	1.79		
BH07	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.5	20.5	0	0		15.0	1005	0	4.95		
BH09	1	50		24.0	0.0	0.0	0.0	0.2	0.2	20.4	20.3	0	0		15.0	1004	240	2.29		
BH10	1	50		0.0	0.0	0.0	0.0	0.2	0.2	19.9	19.9	0	0		15.0	1004	0	2.79		
BH13	1	50		15.0	0.0	0.0	0.0	0.0	0.0	20.5	20.5	0	0		15.0	1004	90	2 5 6		
BH17A BH19	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.5	20.5	0	0		15.0	1004	0	3.00		
BH23	1	50		-26.0	0.0	0.0	0.0	0.0	0.0	20.5	20.5	0	0		17.0	1005	206	4.73		
BH25	1	50		0.0	0.0	0.0	0.0	0.0	0.0	19.1	19.1	0	0		17.0	1004	0	3.07		
BH28	1	50		0.8	0.6	0.0	0.0	0.0	0.0	20.6	20.6	0	0		17.0	1005	5	3.50		
BH30	1	50		47.0	0.0	0.0	0.0	0.0	0.0	20.6	20.6	0	0		17.0	1004	640	3.22		
CP-BH101	2	50																1.95		Unable to monitor gas concentrations as installation flooded. Groundwater level measured after opening bung to allow surface water to drain into installation.
CP-BH102	1	50																3.92		Unable to monitor gas concentrations as installation flooded. Groundwater level measured after opening bung to allow surface water to drain into installation.
CP-BH103	1	50																1.36		Unable to monitor gas concentrations as installation flooded. Groundwater level measured after opening bung to allow surface water to drain into installation.
RC-BH101	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.6	20.6	0	0		17.0	1005	0	2.32		
RC-BH102	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.6	20.6	0	0		17.0	1004	0	2.64		
RC-BH103	1	50																2.35		Unable to monitor gas concentrations as installation flooded. Groundwater level measured after opening bung to allow surface water to drain into installation.
RC-BH104	1	50																2.62		Unable to monitor gas concentrations as installation flooded. Groundwater level measured after opening bung to allow surface water to drain into installation.
RC-BH105	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.6	20.6	0	0		15.0	1005	0	3.08		
WS-BH102	1	50		0.0	0.0	0.0	0.0	0.0	0.0	20.6	20.5	0	0		15.0	1005	0	DRY		
WS-BH103	1	50					0.0								15.0					

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APPENDIX 8

Laboratory Test Results - Geotechnical

Classification and Strength Symbol C - Clay М-Silt (0 - containing organic matter) Plasticity L -Low 1 Intermediate H - High V Very High -Extremely High Е lр **Plasticity Index** % % retained on 425 µm sieve, shown under lp value Liquid Limit W **Plastic Limit** WP NP Non-Plastic NAT Sample tested in natural state Water Content w Particle Density Pd Quick undrained triaxial tests Test SS Single stage - 102mm diameter. S3 Single stage - set of 3 38mm diameter. MS Multistage - 102mm diameter. D **Drained Test**

- HV Hand Vane PP Pocket Penetrometer (kg/cm²)
- NST Not suitable for test
- γ_b Bulk Density
- σ₃ Triaxial Cell Pressure
- $\sigma_1 \sigma_3$ Deviator Stress
- ## Excessive Strain
- c_u Undrained Cohesion
- c Cohesion Intercept
- φ Angle of Shearing Resistance
- Linear Linear Shrinkage Shrink

Stab add- Stabiliser which is added

Consolidation

m _v	Coefficient of Volume Compressibility
C _{v50}	Coefficient of Consolidation - Log t

 c_{v50} Coefficient of Consolidation - Log c_{v90} Coefficient of Consolidation - \sqrt{t}

Rock

UF Unacceptable Failure

Chemical Analysis

Acid Soluble	Total sulphate in specimen, expressed as SO3 %, value in brackets expressed as SO4 $\%$
Water Soluble	Soluble sulphate in 2:1 water : soil extract, expressed as SO ₃ g/l, value in brackets expressed as SO ₄ g/l
In Water	Sulphate content of groundwater, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
pН	pH value
Organic content	Organic content expressed as a percentage of dry weight
Chloride	Chloride Ion content expressed as a percentage of dry weight

MCV, Compaction, CBR

MCV	Moisture Condition Value at natural water content Moisture Condition Calibration								
MCC	Moistu	ire	Condition Calibration						
CCV	Chalk	Cri	ushing Value						
Compac	tion								
Туре	2.5 4.5 V	= = =	2.5 kg Rammer 4.5 kg Rammer Vibrating Hammer						
γ_{b}	Bulk D	en	sity						
γ_{d}	Dry D	ens	ity						
CBR Ca	lifornia	В	earing Ratio						
Туре	2.5	=	Test on Specimen Recompacted using 2.5 kg Rammer						
	4.5	=	As above but using 4.5 kg Rammer						
	۷	=	As above but using Vibrating Hammor						
	Μ	=	Test on open drive mould						
	S	=	Soaked Specimen						
Тор	CBR a	t to	op of mould						
Bottom	CBR a	t bo	ottom of mould						
ND	None	De	tected						

* In the Sample Description denotes a laboratory only description

Laboratory Test Certificate

Issued To	Geotechnics Ltd	Date of issue	01.11	.22	
	The Geotechnical Centre	Issue No.	1		
	Control Control Control The Geotechnical Centre Issue No. 203 Torrington Avenue Client Ref. No. Tile Hill Samples / Ma Coventry, CV4 9AP Samples Recv				
	203 Torrington Avenue Client Ref. No. Tile Hill Samples / Mater Coventry, CV4 9AP Samples Recv'd Ig Start Date 30.09.22 Sample State Ig Complete 31.10.22 Sampled by				
		Samples Recv'd	26.09	.22	
Testing Start Date	30.09.22	Sample State	As rece	vived	
Testing Complete	31.10.22	Sampled by	Geotechnic	s Limited	
Comments					
Project No	PN224395				
Project Name	Newport Quinn Phase 2.				
	Summary of Tests				
Standard	Test Description		Test Quantity	UKAS	
BS EN ISO 17892-1:2014	Water Content		32	Yes	
BS EN ISO 17892-12:2018 Cl. 5.3 & 5.5	Liquid Limit and Plastic Limit (4 Points Metho	od)	29	Yes	
BS EN ISO 17892-4:2016 Cl. 5.2	Particle Size Distribution by Sieving Methor	d	18	Yes	
BS EN ISO 17892-4:2016 Cl. 5.4	Particle Size Distribution by Pipette Method	d	14	Yes	
BS EN ISO 17892-8:2018	Shear Strength by Unconsolidated Undrained Triaxial Tes	st - Single Stage	2	Yes	
BS EN ISO 17892-5:2017	Incremental Loading Oedometer		1	Yes	
BS 1377-4:1990 Cl. 3.3	2.5 kg Rammer Dry Density/Moisture Content Relationshi	ip (Compaction)	7	Yes	
BS 1377-4:1990 Cl. 3.5	4.5 kg Rammer Dry Density/Moisture Content Relationshi	ip (Compaction)	7	Yes	
BS 1377-4:1990 Cl. 7.2	California Bearing Ratio (CBR)		13	Yes	
ASTM D5334-14	Determination of Thermal Conductivity of Soil and Soft Rock by	Thermal Needle Probe	22	No	

Note: Any descriptions, opinions or interpretations are outside the scope of UKAS accreditation. The results within this report relate only to the samples tested and received from the client.



Test Results checked and approved for issue. Signed for and on behalf of Geotechnics Limited

Ret

GEOTECHNICS geotechnical and gecenvironmental specialists

Paul Smart (Laboratory Testing Manager)

203 Torrington Avenue, Tile Hill, Coventry, CV4 9UT

LABORATORY RESULTS - Classification and Strength

Project NEWPORT QUINN PHASE 2

Sampl	е				Cla	ssific	atior	ו		Str	rength				
Hole	Depth (Specimen Depth) M	Туре	Sample Ref	Description	Symbol	lp (>425) %	w _L %	w p %	w (p _d) %	Test	$\gamma_{b} \ (\gamma_{d}) \ Mg/m^{3}$	σ ₃ kN/m ²	σ ₁ −σ ₃ kN/m ²	c _u kN/m²	c _{Avg} kN/m
BH01	4.80 (4.80)	D	N84040	Brown clayey very sandy GRAVEL (See Test Remarks Sheet for further information)		NST (76%)			15.7						
BH02	6.80 (6.80)	D	N84046	Brown slightly clayey GRAVEL.* (See Test Remarks Sheet for further information)		NST (86%)			12.0						
BH03	2.00- 2.50 (2.00)	В	N84047	Brown slightly gravelly slightly sandy CLAY.	CL	13 (65%)	32	19	10.6						
BH03	5.80 (5.80)	D	N84049	Brown mottled red slightly gravelly silty CLAY.	MH	23 (36%)	53	30	31.8						
BH04A	2.00- 2.50 (2.00)	В	N84051	Brown gravelly sandy CLAY.					11.0						
BH05	2.60 (2.60)	D	N84053	Brown slightly gravelly slightly sandy CLAY.	M∨	34 (8%)	77	43	39.5						
BH06	1.20- 1.70 (1.20)	В	N84054	Brown slightly gravelly sandy CLAY.	CL	11 (7%)	26	15	9.3						
BH07	0.50 (0.50)	D	N84055	Brown mottled grey slightly gravelly slightly sandy CLAY.	CL	14 (32%)	31	17	13.5						
BH07	3.00 (3.00)	D	N84059	Brown slightly sandy clayey GRAVEL.					6.3						
BH07	5.05 (5.05)	D	N84060	Red mottled brown slightly sandy slightly gravelly CLAY.					26.2						
BH08	5.00- 5.45 (5.00)	D	N84063	Red mottled brown slightly sandy slightly gravelly CLAY.	CI	21 (14%)	43	22	27.8						
ВН09	3.80 (3.80)	D	N84064	Brown slightly sandy slightly gravelly CLAY.	MI	17 (8%)	44	27	27.0						
ВН09	4.00- 4.45 (4.00)	UT	N84065	Brown slightly sandy slightly gravelly CLAY.	CI	23 (1%)	49	26	33.3						
BH09	5.45- 5.50 (5.45)	D	N84067	Black mottled brown slightly gravelly CLAY with organic material.		(13%)	156	NP	141						
BH10	3.10 (3.10)	D	N84070	Brown mottled black slightly sandy slightly gravelly CLAY.	МН	20 (12%)	54	34	41.2						
BH10	4.20 (4.20)	D	N84071	Grey mottled brown slightly gravelly slightly sandy CLAY.	CL	11 (9%)	28	17	19.6						
BH10	5.00- 5.45 (5.14)	UT	N84072	Brown slightly gravelly sandy silty CLAY					32.2 <26.2>	SS	1.98	100	152	76	76
Remar	ks Ags	NST For S w% - QUT	- Not suit tandards ^ = Rock Water Co	able for Test followed see Laboratory Test Certficate water content test; x = Aggregate moistr ontents: <failure zone="">, [After test]</failure>	ure co	ntent te	st			0					S:

LABORATORY RESULTS - Classification and Strength

Project NEWPORT QUINN PHASE 2

Samp	le				Cla	ssific	atior	า		Sti	rength				
Hole	Depth (Specimen Depth) m	Туре	Sample Ref	Description	Symbol	I _р (>425) %	w _L %	w p %	w (p _d) %	Test	${\gamma_b \atop (\gamma_d)} Mg/m$	σ ₃ kN/m ²	σ ₁ −σ ₃ kN/m ²	c _u kN/m	c _{Avg} kN/m
BH11	1.20- 1.40 (1.20)	D	N84074	Brown slightly sandy slightly gravelly CLAY with cobbles. (See Test Remarks Sheet for further information)	CL	14 (74%)	32	18	11.3						
BH11	3.00- 3.50 (3.00)	В	N84075	Red mottled brown slightly gravelly slightly sandy CLAY.	MH	26 (34%)	60	34	35.7						
BH13	3.00- 3.45 (3.00)	D	N84081	Brown mottled red and grey slightly sandy slightly gravelly CLAY.	CI	25 (36%)	49	24	20.6						
BH13	4.80 (4.80)	D	N84082	Brown slightly clayey GRAVEL. (See Test Remarks Sheet for further information)		NST (83%)			9.5						
BH14A	2.80 (2.80)	D	N84083	Brown slightly gravelly CLAY.	CL	9 (48%)	24	15	12.1						
BH15	3.00- 3.45 (3.14)	UT	N84086	Firm reddish brown slightly gravelly silty CLAY					23.6 <24.8>	SS	2.00	60	127	64	64
BH15	3.50 (3.50)	D	N84087	Red mottled brown slightly sandy slightly gravelly CLAY. (See Test Remarks Sheet for further information)	CI	19 (61%)	40	21	22.4						
BH17A	2.30 (2.30)	D	N84094	Brown slightly sandy gravelly CLAY. (See Test Remarks Sheet for further information)	CL	17 (58%)	33	16	10.4						
BH17A	4.05 (4.05)	D	N84095	Red mottled brown slightly gravelly slightly sandy CLAY.	CL	17 (38%)	33	16	17.2						
BH18	3.80 (3.80)	D	N84099	Brown slightly gravelly slightly sandy CLAY.	CL	15 (63%)	32	17	11.5						
BH23	4.70 (4.70)	D	N84115	Red mottled brown slightly gravelly CLAY.	CI	15 (1%)	40	25	23.0						
BH24	2.00 (2.00)	D	N84118	Brown slightly gravelly sandy CLAY.	СІ	17 (33%)	36	19	9.2						
BH25	1.00 (1.00)	D	N84120	Brown slightly sandy slightly gravelly CLAY.	CI	19 (51%)	41	22	10.9						
BH26	1.80 (1.80)	D	N84123	Brown slightly sandy slightly gravelly CLAY.	CL	15 (48%)	31	16	10.9						
BH26	4.00- 4.45 (4.00)	D	N84126	Brown mottled grey slightly sandy slightly gravelly CLAY. (See Test Remarks Sheet for further information)	MH	23 (12%)	52	29	32.5						
BH29	1.80 (1.80)	D	N84133	Brown gravelly sandy CLAY.	CL	12 (66%)	27	15	8.3						
Remar	rks AGS	NST For S w% - QUT	- Not suit tandards ^ = Rock Water Co	able for Test followed see Laboratory Test Certficate water content test; x = Aggregate moist ontents: <failure zone="">, [After test]</failure>	ure co	ntent te	st			0					25 stalists

LABORATORY RESULTS - Classification and Strength

Project NEWPORT QUINN PHASE 2

Sample	9				Classification					Strength					
Hole	Depth (Specimen Depth) M	Туре	Sample Ref	Description	Symbol	lp (>425) %	w _L %	w _p %	w (p _d) %	Test	${\gamma_b \atop (\gamma_d)} Mg/m$	σ ₃ kN/m	σ ₁ −σ ₃ kN/m ²	c _u kN/m	c _{Avg} kN/m
BH30	3.30 (3.30)	D	N84135	Brown mottled grey slightly gravelly CLAY.	CL	14 (22%)	29	15	14.6						
Remar	ks 📙	NST - For S	- Not suit tandards	Lable for Test followed see Laboratory Test Certificate		ntent te	l			G	Sec.	ກັດ	C⊢		25
		QUT	– Rock Water Co	water content test, x - Aggregate moisti ontents: <failure zone="">, [After test]</failure>			51			ge	otechnical	and geo	environme	ental spec	cialists

Project NEWPORT QUINN PHASE 2

Sample	e				Results							
Hole	Depth (Specimen Depth) m	Туре	Sample Ref	Description	Test Type	Point Cone Pene.	Data Water % (Factor)	Sym- bol	р %	>425 sieve µm	w _L %	w p %
BH01	4.80 (4.80)	D	N84040	Brown clayey very sandy GRAVEL (See Test Remarks Sheet for further information) Test Remark: Unsuitable for testing due to insufficient fine material.	Not suitable for Test							
BH02	6.80 (6.80)	D	N84046	Brown slightly clayey GRAVEL.* (See Test Remarks Sheet for further information) Test Remark: Unsuitable for testing due to insufficient fine material.	Not suitable for Test							
BH03	2.00- 2.50 (2.00)	В	N84047	Brown slightly gravelly slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	65%	32	19
BH03	5.80 (5.80)	D	N84049	Brown mottled red slightly gravelly silty CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			МН	23	36%	53	30
BH05	2.60 (2.60)	D	N84053	Brown slightly gravelly slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			M∨	34	8%	77	43
BH06	1.20- 1.70 (1.20)	В	N84054	Brown slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	11	7%	26	15
BH07	0.50 (0.50)	D	N84055	Brown mottled grey slightly gravelly slightly sandy CLAY.	Fall Cone 4pt with decreasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	32%	31	17
BH08	5.00- 5.45 (5.00)	D	N84063	Red mottled brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	21	14%	43	22
ВН09	3.80 (3.80)	D	N84064	Brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			MI	17	8%	44	27
Remar	ks 🖶											



Project NEWPORT QUINN PHASE 2

Sample	e				Results							
Hole	Depth (Specimen Depth) M	Туре	Sample Ref	Description	Test Type	Point Cone Pene.	Data Water % (Factor)	Sym- bol	ф %	>425 sieve µm	w _L %	w p %
BH09	4.00- 4.45 (4.00)	UT	N84065	Brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	23	1%	49	26
BH09	5.45- 5.50 (5.45)	D	N84067	Black mottled brown slightly gravelly CLAY with organic material.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					13%	156	NP
BH10	3.10 (3.10)	D	N84070	Brown mottled black slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			мн	20	12%	54	34
BH10	4.20 (4.20)	D	N84071	Grey mottled brown slightly gravelly slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	11	9%	28	17
BH11	1.20- 1.40 (1.20)	D	N84074	Brown slightly sandy slightly gravelly CLAY with cobbles. (See Test Remarks Sheet for further information)	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	74%	32	18
BH11	3.00- 3.50 (3.00)	В	N84075	Red mottled brown slightly gravelly slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			мн	26	34%	60	34
BH13	3.00- 3.45 (3.00)	D	N84081	Brown mottled red and grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	25	36%	49	24
BH13	4.80 (4.80)	D	N84082	Brown slightly clayey GRAVEL. (See Test Remarks Sheet for further information) Test Remark: Unsuitable for testing due to insufficient fine material.	Not suitable for Test							
BH14A	2.80 (2.80)	D	N84083	Brown slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	9	48%	24	15
Remar	ks 🗗											



Project NEWPORT QUINN PHASE 2

Sampl	e				Results							
Hole	Depth (Specimen Depth) M	Туре	Sample Ref	Description	Test Type	Point Cone Pene.	Data Water % (Factor)	Sym- bol	ф %	>425 sieve µm	w _L %	w _p %
BH15	3.50 (3.50)	D	N84087	Red mottled brown slightly sandy slightly gravelly CLAY. (See Test Remarks Sheet for further information) Test Remark: 1-point cone Insufficient sample for 4 point test.	Fall Cone 1pt with increasing water content, cone type: 80g/30, washed over 425um sieve	20.2 20.6	36.99 36.79 (1.094)	CI	19	61%	40	21
BH17A	2.30 (2.30)	D	N84094	Brown slightly sandy gravelly CLAY. (See Test Remarks Sheet for further information) Test Remark: 1-point cone Insufficient sample for 4 point test.	Fall Cone 1pt with increasing water content, cone type: 80g/30, washed over 425um sieve	20.0 20.0	30.95 30.57 (1.057)	CL	17	58%	33	16
BH17A	4.05 (4.05)	D	N84095	Red mottled brown slightly gravelly slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	17	38%	33	16
BH18	3.80 (3.80)	D	N84099	Brown slightly gravelly slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	15	63%	32	17
BH23	4.70 (4.70)	D	N84115	Red mottled brown slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	15	1%	40	25
BH24	2.00 (2.00)	D	N84118	Brown slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	17	33%	36	19
BH25	1.00 (1.00)	D	N84120	Brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	19	51%	41	22
BH26	1.80 (1.80)	D	N84123	Brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	15	48%	31	16
BH26	4.00- 4.45 (4.00)	D	N84126	Brown mottled grey slightly sandy slightly gravelly CLAY. (See Test Remarks Sheet for further information)	Fall Cone 4pt with decreasing water content, cone type: 80g/30, washed over 425um sieve			мн	23	12%	52	29
Remar	ks 🔐						G					CS cialists

Project NEWPORT QUINN PHASE 2

Samp	le				Results							
Hole	Depth (Specimer Depth)	Туре	Sample Ref	Description	Test Type	Point Cone	Data Water %	Sym- bol	þ	>425 sieve	wL	w p
ВН29	1.80 (1.80)	D	N84133	Brown gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve		(Factor)	CL	% 12	μm 66%	27	15
внзо	3.30 (3.30)	D	N84135	Brown mottled grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	22%	29	15
Rema	rks 🖶						GC			CH-		2S



geotechnical and geoenvironmental special

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roject: roject N	NE I o: PN	WPORT QUINN PH	IASE 2			Hole Sample Sample Sample	e Depth ^{2.0} e Type ^B e Ref ^{N8.}	07 0-2.50m 4058
Sample	e Desc	ription						
Brown	slightly	clayey slightly sand	y GRAVEL.					
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Jassificatio n	CLAY	Fine Medium SILT	Coarse	Fine Medium SAND	Coarse Fine	Medium Coar Gravel	se Cobbles	Boulders
Classific	ation	% of each	Size	% Finer	Size	% Finer	Uniformity	Coefficient
CLAY		6	125 mm 100 mm	100 100	63 μm 20 μm	18 12	68	35.74
SILT		12	75 mm 63 mm 50 mm	100 100 100	ο μπ 2 μm	6	Sieving We	y Method t sieve
SAND		33	37.5 mm 20 mm 14 mm	97 78 73			Fine Partie	cle Analysis
GRAVE		49	10 mm 6.3 mm	66 59			Pre-treated	Hydrogen
COBBLE	ES	0	2 mm 1.18 mm	57 51 49			% loss on Pre-treatment	0.00
BOULDI	ERS	0	600 μm 300 μm 150 μm	45 36 23			Particle Density	2.65 (Assumed)
		- -	L	·	L	<u>.</u>		

roject N	NE\ o: PN:	WPORT 224395	QUINN PH	HASE 2				Hole Sample Dept Sample Type Sample Ref	BH08 h 3.00-3.50m B N84062	
Sample	Desc	ription								
Brown	slightly s	sandy cla	ayey GRA\	/EL with cobble	S.					
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U.U	01	Fine	U.UT Medium	Coarse	0.1	1 Particle Size (mm)	Fine Med	ium Coarse C	100 Cohhles Boulders	ו
n	CLAY		SILT		SAND		Gra	avel		
Classific	ation	% of e	ach	Size	% Finer	Size	% Fi	ner Unif	ormity Coefficient	t
CLAY			8	120 mm 100 mm 75 mm	100 100 100	20 µ	ιm – ιm 1 ιm 1		4787.32	
SILT		1	15	63 mm 50 mm	96 87	2 µ	ιm ε		Wet sieve	
SAND		1	19	37.5 mm 20 mm	79 63 58			Fine	Particle Analysis	;
			51	10 mm 6.3 mm	53 48			Pre-tre	ated Hydrogen	
				5 mm 2 mm	46 42			with % loss	Peroxide	
COBBLE	<u>is</u>		4	1.18 mm 600 μm 300 μm	40 38 33			Pre-tre Particle	atment 2.65	
BOULDE	ERS		0	150 μm	28			Density	y (Assumed)	1

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GRAVL	L		-	5 mm 2 mm		60 56									with	1		Peroxi	de	
COBBLE	ES	0	4	1.18 mm 600 μm		53 49									‰ n Pre	oss . etrea	on atment	0.00		
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LABORATORY RESULTS - Particle Size Distribution **Project: NEWPORT QUINN PHASE 2** BH16 Hole 2.00-2.50m Sample Depth В Sample Type Project No: PN224395 N84089 Sample Ref **Sample Description** Brown slightly sandy slightly gravelly clayey SILT. 100 90 80 70 60 % Finer 50 40 30 20 10 0 0.001 0.01 0.1 10 100 1000 1 Particle Size (mm) Classificatio Medium Coarse Medium Coarse Fine Cobbles Boulders Fine Fine Medium Coarse n CLAY SILT SAND Gravel Classification % of each Size % Finer Size % Finer **Uniformity Coefficient** 26 125 mm 100 63 µm 138.53 CLAY 8 100 mm 100 20 µm 18 75 mm 100 6 μm 13 Sieving Method 63 mm 100 2 μm 8 Wet sieve SILT 18 50 mm 100 37.5 mm 96 **Fine Particle Analysis** 20 mm 87 SAND 49 Pipette 14 mm 84 Method 10 mm 81 Hydrogen Pre-treated 6.3 mm 79 GRAVEL 25 Peroxide with 5 mm 78 2 mm 75 % loss on 0.00 COBBLES 0 1.18 mm 73 Pre-treatment 600 µm 68 2.65 300 µm 54 Particle BOULDERS 0 (Assumed) Density 150 μm 34 02/11/2022 Remarks Sieve:-Test performed as "Non Standard" due to sample mass not being in accordance with BS EN ISO 17892-4:2016 Geolech Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016 geotechnical and geoenviron

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Brown clayey sity very sandy GRAVEL.           100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100	Samp	le De	scri	ptio	on																																			-
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SILT         10         75 mm         100 $6 \ \mu m$ 8         Sieving Method           SILT         10         50 mm         100 $2 \ \mu m$ 6         Wet sieve         Wet sieve           SAND         35         20 mm         77         10         Method         Pipette           37.5 mm         100         77         14 mm         74         Method         Pipette           3RAVEL         49         6.3 mm         60         10 mm         67         Method         Pipette           20 mm         5 mm         58         2 mm         51         No         No         Pre-treated         Hydroger           20 mm         5 mm         58         2 mm         51         No         No         Pre-treated         Preoxide           300 µm         330 µm         333         300 µm         333         No         Particle         2.65           0         150 µm         21         10         10         Method         Particle         2.65	CLAY				(	6	]		1	125 100	m m	m			1 1	00 100			I			63 20	μı μı	m m	Ţ		1 1	6  1		]					52	6.38	8			_
SILT         10         50 mm         100           SAND         35         35         100         20 mm         77           SAND         35         14 mm         74         Method         Pipette           SAND         49         6.3 mm         60         Pre-treated         Hydroger           SAND         5 mm         58         2 mm         51         % loss on         Peroxide           COBBLES         0         1.18 mm         48         600 μm         43         300 μm         33         Particle         2.65           OULDERS         0         150 μm         21         Method         Particle         2.65							-			75 63	m m	m m			1 1	00 100			I			6 2	μı μı	m m			{ (	8 6					5	Siev	ving	Me t sie	the	)d		_
SAND $35$ $20 \text{ mm}$ $77$ SAND $35$ $14 \text{ mm}$ $74$ $GRAVEL$ $49$ $63 \text{ mm}$ $67$ $6.3 \text{ mm}$ $60$ $5 \text{ mm}$ $58$ $2 \text{ mm}$ $51$ $96 \text{ loss on}$ $COBBLES$ $0$ $1.18 \text{ mm}$ $48$ $300 \mu \text{ m}$ $33$ $300 \mu \text{ m}$ $33$ $30ULDERS$ $0$ $150 \mu \text{ m}$ $21$	51L I		$\dashv$			J	$\frac{1}{1}$		3	50 7.5	mi m	m m			1 1	00 100			I												$\mid$	F	ine	e Pa	artic	le /	Ana	lvsi	is	_
GRAVEL49 $10 \text{ mm}$ $67$ Pre-treated withHydroger PeroxideCOBBLES0 $5 \text{ mm}$ $58$ $2 \text{ mm}$ $51$ COBBLES0 $1.18 \text{ mm}$ $48$ $\% \text{ loss on}$ Pre-treatment $\% \text{ loss on}$ Pre-treatment $0.00$ 3OULDERS0 $150 \ \mu\text{m}$ $33$ $21$ $M \text{ loss on}$ Particle $2.65$ Density	SAND		-		35	5				20 14	mi mi	m m			-	77 74 97			I												Ν	Vet	hoo	ł		Pip	ette	3		_
COBBLES         0         2 mm         51           1.18 mm         48 $600 \ \mu m$ 43 $300 \ \mu m$ 33 $150 \ \mu m$ 21	GRAVI	EL			49	9			I	6.3	m	m			1	57 60 58			I												F	Pre- with	-tre	ate	d	Hyo Per	drog roxi	jen de		
BOULDERS0 $100 \ \mu m$ 43Pre-treatmentBOULDERS0 $150 \ \mu m$ 21Particle2.65Density(Assume)	COBBI	I FS			(	0	1		1	2 .18	m	m			;	51 48			I												9	% Ic	oss	on		0.0	0			-
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#### LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test BH10 **NEWPORT QUINN PHASE 2 Project:** Hole 5.00-5.45m Sample Depth UT Sample Type Project No: PN224395 N84072 Sample Ref The following samples were combined to perform this test: **Sample Description** Brown slightly gravelly sandy silty CLAY BS EN ISO 17892-8:2018 160 140 120 Deviator Stress kN/m² 100 80 60 40 20 0 0 2 4 6 8 Strain % Corrected Corrected Strain Strain Stage 1 Stage 2 Stage 3 Deviator Deviator % % Stress kN/m² Stress kN/m* Test Type Single Stage 0.2 29.4 Sample Condition Undisturbed 47.6 0.5 Orientation of sample Vertical 0.7 63.4 102.18 Initial Diameter (mm) 0.9 77.0 Initial Length (mm) 210.62 91.9 1.4 102.5 Initial Water Content (%) 32.2 1.9 2.4 111.6 Initial Bulk Density $(Mg/m^3)$ 1.98 119.1 2.8 Initial Dry Density (Mg/m³) 1.50 125.7 3.3 2.65 Assumed Particle Density (Mg/m³) 3.8 131.2 **Cell Pressure** (kPa) 100 135.5 4.3 'Specimen Height' at start 210.56 (mm) 4.7 139.4 of Shearing Stage 5.2 145.3 Membrane (mm/kPa) 100 / 0.0000 Thickness/Correction 5.7 149.6 6.2 150.9 Rate of Strain (%/min) 1.9 6.6 151.3 **Corrected Deviator Stress** (kPa) 152 7.1 151.7 Undrained Shear Strength (kPa) 76 7.6 151.7 (%) 7.6 Strain at Failure 8.1 150.6 Failure Zone Water Content 26.2 (%) 8.5 149.7 Water Content (after test) (%) Mode of Failure Intermediate 02/11/2022 Remarks AGS

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#### LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test BH15 **NEWPORT QUINN PHASE 2 Project:** Hole 3.00-3.45m Sample Depth UT Sample Type Project No: PN224395 N84086 Sample Ref The following samples were combined to perform this test: **Sample Description** Firm reddish brown slightly gravelly silty CLAY BS EN ISO 17892-8:2018 140 120 100 Stress kN/m² 80 Deviator 60 40 20 0 0 2 4 6 8 10 12 14 16 18 Strain % Corrected Corrected Strain Strain Stage 2 Stage 3 Stage 1 Deviator Deviator % % Stress kN/m² Stress kN/m* Test Type Single Stage 0.2 24.0 9.9 118.7 Sample Condition Undisturbed 32.0 0.5 10.4 120.1 Orientation of sample Vertical 0.7 37.4 10.9 121.0 102.34 Initial Diameter (mm) 0.9 45.1 11.4 121.7 Initial Length (mm) 211.24 54.1 123.0 1.4 11.8 Initial Water Content (%) 23.6 1.9 62.0 12.3 123.8 2.4 68.5 12.8 124.5 Initial Bulk Density $(Mg/m^3)$ 2.00 74.3 13.3 125.1 2.8 Initial Dry Density (Mg/m³) 1.62 79.2 125.5 3.3 13.7 2.65 Assumed Particle Density (Mg/m³) 3.8 83.7 14.2 125.6 **Cell Pressure** (kPa) 60 88.1 4.3 14.7 125.8 'Specimen Height' at start 211.19 (mm) 4.7 91.5 15.1 126.2 of Shearing Stage 5.2 94.9 15.6 126.9 Membrane (mm/kPa) 100 / 0.0000 Thickness/Correction 5.7 98.7 16.1 127.3 6.2 103.2 16.6 126.8 Rate of Strain (%/min) 1.9 6.6 106.9 126.1 17.0 **Corrected Deviator Stress** (kPa) 127 7.1 109.1 17.5 125.3 Undrained Shear Strength (kPa) 64 7.6 110.7 18.0 124.3 (%) 16.1 Strain at Failure 8.0 112.0 Failure Zone Water Content 24.8 (%) 8.5 113.6 Water Content (after test) (%) 9.0 115.1 Mode of Failure Plastic 9.5 117.1 02/11/2022 AGS Remarks

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#### Sheet 1 of 2









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Remarks





Remarks






























Project NEWPORT QUINN PHASE 2

Sampl	e				мс	V	Con	npact	ion			CBR				
Hole	Depth	Туре	Sample	Description	MCV	w	Туре	w	ρ,	γ.	γ.,	Туре	Т	ор	Bott	om
	(Specimen Depth) M		Ref			%		(Opt) %	ra Mg/m³	'b Mg/m³	۰ d _(Max) Mg/m³		CBR %	w %	CBR %	w %
BH01	0.50 (0.50)	D	N84035	Reddish brown clayey gravelly SAND. (See Test Remarks Sheet for further information)						2.20	2.11	2.5kg	37	3.1	58	5.4
BH01	1.20- 1.70 (1.20- 1.70)	В	N84036	Brown sandy gravelly CLAY (See Test Remarks Sheet for further information)						2.16	2.02	2.5kg	47	7.5	25	7.3
BH02	0.55- 1.20 (0.55- 1.20)	В	N84041	Brown gravelly SAND with cobbles.						2.14	1.98	2.5kg	18	8.0	23	8.1
BH02	1.20- 1.70 (1.20- 1.70)	В	N84042	Brown slightly gravelly SAND.			4.5kg	(6.3) 11.8* 13.3 5.9 8.7 3.2	2.65a	*2.21 2.11 2.30 2.31 2.06	(2.18) *1.97 1.86 2.17 2.12 2.00					
BH04A	1.20- 1.70 (1.20- 1.70)	В	N84050	Brown slightly gravelly sandy CLAY.			2.5kg	(9.0) 12.6* 14.7 6.3 8.2 10.1	2.65a	*2.22 2.15 2.18 2.25 2.28	(2.09) *1.97 1.87 2.05 2.08 2.07					
BH05	2.00- 2.50 (2.00- 2.50)	В	N84052	Brow slightly gravelly slightly sandy CLAY.			4.5kg	(9.0) 12.4* 19.6 7.6 9.9 15.2 4.7	2.65a	*2.15 2.05 2.19 2.20 2.13 1.94	(2.03) *1.92 1.71 2.03 2.00 1.85 1.85					
BH06	1.20- 1.70 (1.20- 1.70)	В	N84054	Brown slightly gravelly sandy CLAY.						2.28	2.06	2.5kg	0.86	11.0	2.4	10.4
BH07	0.60- 0.90 (0.60- 0.90)	В	N84056	Brown slightly gravelly SAND.						2.20	2.02	2.5kg	27	8.7	27	9.2
BH08	1.20- 1.70 (1.20- 1.70)	В	N84061	Brown slightly sandy clayey GRAVEL.			2.5kg	(8.5) 9.4* 12.0 14.3 4.4 7.5	2.75a	*2.35 2.30 2.28 2.06 2.27	(2.16) *2.15 2.05 1.99 1.98 2.12					
Remai	rks 🔜	Pai w% # = NS Foi	rticle Der 5 - * = at stabilise T = Not s	nsity - a=assumed, m=measured natural moisture content; x = aggre ed, see relevant test plot for details suitable for Test rds followed see Laboratory Test Ce	egate mo	oistur	e conte	nt			GC		<b>CC</b>	H		S

Project NEWPORT QUINN PHASE 2

Sample	e				мс	v	Con	npact	ion			CBR				
Hole	Depth	Туре	Sample	Description	MCV	w	Туре	w	ρ,	γ.	γ.	Туре	Т	ор	Bott	om
	(Specimen Depth) M		Ref			%		(Opt) %	Pd Mg/m³	'b Mg/m³	'd _(Max) Mg/m ³		CBR %	w %	CBR %	w %
BH12	1.20- 1.70 (1.20- 1.70)	В	N84077	Brown slightly sandy gravelly CLAY with cobbles.						2.24	2.03	2.5kg	1.3	11.0	1.2	10.4
BH13	1.20- 1.70 (1.20- 1.70)	В	N84079	Brown slightly gravelly clayey SAND.			4.5kg	(7.5) 12.1* 3.7 8.7 13.8 6.4	2.70a	*2.25 2.18 2.31 2.19 2.26	(2.15) *2.01 2.10 2.13 1.92 2.12					
BH14A	3.00- 3.45 (3.00- 3.45)	D	N84084	Brown mottled red slightly gravelly CLAY. (See Test Remarks Sheet for further information)			2.5kg	(17.5) 23.2* 24.5 14.9 16.8 19.1	2.65a	*2.01 1.98 1.94 2.02 2.06	(1.75) *1.63 1.59 1.69 1.73 1.73					
BH16	1.20- 1.70 (1.20- 1.70)	В	N84088	Brown slightly sandy slightly gravelly clayey SILT.						2.16	1.89	2.5kg	2.0	14.7	1.1	14.4
BH16	3.00- 3.50 (3.00- 3.50)	В	N84090	Brown slightly sandy slightly gravelly clayey SILT.			4.5kg	(7.5) 13.7* 6.0 7.3 10.0 16.2 3.8	2.75a	*2.24 2.25 2.35 2.31 2.19 2.03	(2.18) *1.97 2.12 2.19 2.10 1.88 1.96					
BH17A	2.00- 2.50 (2.00- 2.50)	В	N84093	Brown slightly gravelly slightly sandy CLAY.			4.5kg	(6.0) 6.2 8.1 2.4 12.2* 4.4 10.2	2.75a	2.32 2.29 2.16 *2.22 2.26 2.24	(2.19) 2.18 2.12 2.11 *1.97 2.16 2.03					
BH18	1.20- 1.70 (1.20- 1.70)	В	N84096	Brown slightly gravelly CLAY.						2.24	1.96	2.5kg	1.3	13.7	1.3	13.9
ВН19	2.00- 2.50 (2.00- 2.50)	В	N84101	Brown clayey sandy GRAVEL.			2.5kg	(7.5) 9.3* 3.9 5.8 8.6 12.3 15.9	2.70a	*2.26 2.05 2.20 2.27 2.24 2.18	(2.10) *2.07 1.97 2.08 2.09 1.99 1.88					
Remar	rks 🔜	Pai w% # = NS For	rticle Der - * = at stabilise T = Not s	nsity - a=assumed, m=measured natural moisture content; x = aggre ed, see relevant test plot for details suitable for Test rds followed see Laboratory Test Ce	gate m	oistur	e conte	nt			GC		CC pecenvir	H		S

Project NEWPORT QUINN PHASE 2

Sample					МС	v	Con	npact	ion			СВ	२			
Hole	Depth	Туре	Sample	Description	MCV	w	Туре	w	ρ,	γ.	γ.,	Туре	Т	ор	Bott	om
	(Specimen Depth) M		Ref			0/		(Opt)	'd Ma/m ³	' D	' d (Max)		CBR	w	CBR	W 0/
BH20	3.00- 3.50 (3.00- 3.50)	В	N84105	Brown clayey silty very gravelly SAND.		%	4.5kg	% (7.0) 11.9* 2.7 6.1 8.6 13.5	2.70a	*2.30 2.21 2.33 2.29 2.21	(2.21) *2.05 2.15 2.19 2.11 1.95		%	%	90	70
BH21	1.20- 1.70 (1.20- 1.70)	В	N84106	Brown clayey silty very sandy GRAVEL.						2.29	2.06	2.5kg	2.4	11.3	1.9	10.9
BH22	0.30- 1.20 (0.30- 1.20)	В	N84138	Brown silty/clayey very sandy GRAVEL						2.12	2.01	2.5kg	51	5.3	32	5.4
BH23	1.50- 1.80 (1.50- 1.80)	В	N84112	Brown clayey silty very gravelly SAND.						2.12	1.96	2.5kg	5.4	8.2	12	8.2
BH24	1.20- 1.70 (1.20- 1.70)	В	N84116	Brown slightly sandy slightly gravelly CLAY with cobbles.			2.5kg	(7.5) 12.5* 3.4 5.4 8.8 10.2	2.75a	*2.28 2.10 2.23 2.37 2.33	(2.20) *2.03 2.03 2.12 2.18 2.12					
BH25	1.20- 1.70 (1.20- 1.70)	В	N84121	Brown slightly sandy slightly gravelly CLAY.			4.5kg	(7.5) 14.6* 2.9 6.4 9.3 11.6	2.75a	*2.23 2.15 2.29 2.36 2.31	(2.18) *1.95 2.09 2.15 2.16 2.07					
BH26	2.00- 2.50 (2.00- 2.50)	В	N84124	Brown slightly sandy slightly gravelly CLAY.						2.23	1.97	2.5kg	0.73	13.2	0.59	13.2
BH27	0.36- 1.20 (0.36- 1.20)	В	N84127	Brown gravelly SAND.			2.5kg	(8.0) 6.1* 5.0 8.2 9.5 11.9	2.70a	*2.21 2.14 2.33 2.30 2.27	(2.16) *2.09 2.04 2.15 2.10 2.03					
BH29	0.90- 1.20 (0.90- 1.20)	В	N84131	Brown slightly clayey gravelly SAND.						2.20	2.05	2.5kg	55	7.2	51	7.0
Remar	Remarks R Particle Density - a=assumed, m=measured w% - * = at natural moisture content; x = aggregate moisture content # = stabilised, see relevant test plot for details NST = Not suitable for Test For Standards followed see Laboratory Test Certificate															

Project NEWPORT QUINN PHASE 2

Sample	ample						Con	npact	ion			СВІ	R			
Hole	Depth	Туре	Sample	Description	MCV	w	Туре	w	ρ,	γ.	γı	Туре	Т	ор	Botte	om
	(Specimen Depth) M		Ref			0/		(Opt)	'a Ma(m ³	' D	(Max)		CBR	w	CBR	W
BH29	2.00- 2.50 (2.00- 2.50)	В	N84134	Brown gravelly sandy CLAY.			2.5kg	(7.5) 9.5* 12.1 14.0 3.9 6.4	2.70a	*2.33 2.25 2.25 2.13 2.28	(2.16) *2.13 2.00 1.98 2.05 2.14			70		,
Remark		Pat	ticle Der	sity - a=assumed. m=measured												
	w% - * = at natural moisture content; x = aggregate moisture content # = stabilised, see relevant test plot for details NST = Not suitable for Test For Standards followed see Laboratory Test Certificate															

### LABORATORY RESULTS - Consolidation e/logp Plot

Project Clìent	Newpoi	rt Quinn												Project N <b>Borehole</b> Sample I Sample 1	lo Depth Type	РN ВН 4. U	224395 09 00 - 4	5 4.45	r	n
														Symbols:	Voids	Ratio	o ●,¢ _v	50 <b>A</b>	,c _{vg}	, ∧
1.02																				
0.98								• • • •												
0.94														-					10	
/oids Ratio (6 .0 06									•								· · ·		8	
0.86							Δ.	-											6	/year)
0.82	····																		4.	د (m ²
0.78							•			· · · · · · · · · · · · · · · · · · ·				 					2	
0.74	10		•			10	•		<b>▲</b>			1	000	-				100	0 00	
						Ap	plied Effe	ective I	Pre	ssure	• <b>p</b> (	kN/	m²)							
Applied Pre	essure	kN/m²	0-40	40	)-80		<b>80-</b> 160	160-32	20	320	-640	64	0-160	160-40						
m _v		m²/MN	0.44		0.3	4	0.29	0.	19	(	0.22		0,03	0.21			<u> </u>		-	
e _{v50} Log Ti	ime	m ² /yr	-		0.5	3 n	0.60	0.8	80 De		).70		1,35	0,29			<b></b>		$\vdash$	
Voids Batir	)		1.026	(	).99	9	0.953	0_8	93	0	.762		0.788	0.834			<u> </u>			
Description N84065 - gravelly	firm ro silty (	eddish bra CLAY	own sligh	itly		-	Specimen Initial Heig Particle De Initial Void	Diamete pht ensity ds Ratio	er	74.55 18.70 2.6 1.06	0 0 5 Ase 3	Umeo	mm mm 1000	Initial Wat Final Wat Initial Sau Initial Bull Initial Dry	L ter Cont ar Cont uration C Densit Densit	tent lent ty V	4' 34 ,	1.35 4.73 100 1.82 1.28	1 9 9 N N	6 6 6 Ag/m ³ Ag/m ³
Remarks		Laborator Specimen Test perf Average l	y temper cut vert ormed in aborator	ature icall acco y tem	20' yf ordai Nper	°C rom hce atu	± 3°C n middle o e with BS H ure during	f sampl EN ISO test 2	e 178 0°C	92-5:	2017				0			ы Т	nile	33 



### LABORATORY REPORT



4043

#### **Contract Number: PSL22/7077**

Report Date: 22 November 2022

Client's Reference: PN224395

Client Name: Geotechnics 203 Torrington Avenue Tile Hill Coventry CV4 9UT

#### For the attention of: Paul Smart

Contract Title: Newport Quinn Phase 2

 Date Received:
 2/11/2022

 Date Commenced:
 2/11/2022

 Date Completed:
 22/11/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director) R Berriman (Quality Manager) S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager) S Eyre (Senior Technician)

T Watkins (Senior Technician)

Page 1 of

5 – 7 Hexthorpe Road, Hexthorpe, Doncaster DN4 0AR tel: +44 (0)844 815 6641 fax: +44 (0)844 815 6642 e-mail: rberriman@prosoils.co.uk awatkins@prosoils.co.uk

## SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH09	N84066	UT	5.00	5.45	Dark brown very clayey PEAT.

8			<b>Contract No:</b>
(≱≮)-		Nowport Quinn	PSL22/7077
UKAS		Newport Quinn	Client Ref:
4043	Professional Solis Laboratory		PN224395

# **ONE DIMENSIONAL CONSOLIDATION TEST**

#### BS 1377: Part 5: 1990: Clause 3





Certificate Number	22-18896
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Client Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ

- *Our Reference* 22-18896
- Client Reference PN224395
  - Order No ON34492
  - Contract Title Newport Quinn Phase 2
  - Description 28 Soil samples.
  - Date Received 23-Sep-22
  - Date Started 23-Sep-22
- Date Completed 29-Sep-22
- Test Procedures Identified by prefix DETSn (details on request).
  - *Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Emord

Kirk Bridgewood General Manager



Derwentside Environmental Testing Services Limited Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY Tel: 01207 582333 • email: info@dets.co.uk • www.dets.co.uk

Issued: 29-Sep-22



### **Summary of Chemical Analysis**

### **Soil Samples**

Our Ref 22-18896

Client Ref PN224395

*Contract Title* Newport Quinn Phase 2

			Lab No	2062081	2062082	2062083	2062084	2062085	2062086	2062087	2062088	2062089	2062090	2062091
		.Sa	mple ID	BH01	BH01	BH03	BH04	BH05	BH06	BH10	BH11	BH12	BH14A	BH15
			Depth	1.20	5.80	2.00-2.50	3.00-3.50	1.00	2.00-2.50	1.00	2.00-2.50	1.00	1.80	1.80
		C	Other ID											
		Samp	ole Type	D	D	D	D	D	D	D	D	D	D	D
		Sampli	ng Date	n/s	10/08/2022	n/s	n/s	n/s	n/s	n/s	n/s	11/08/2022	04/08/2022	02/08/2022
		Sampli	ng Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units											
Metals														
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Inorganics														
рН	DETSC 2008#		рН	7.8	8.8	7.1	8.3	7.9	8.3	8.4	7.1	7.7	10.5	8.0
Organic matter	DETSC 2002#	0.1	%											
Ammonia Aqueous Extract as N	DETSC 2119	10	mg/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloride Aqueous Extract	DETSC 2055	1	mg/l	6.8	18	4.7	7.0	13	6.0	4.7	3.7	6.2	23	4.1
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.7	< 1.0	< 1.0	< 1.0	< 1.0
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	15	34	16	14	12	12	27	< 10	12	64	15
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01	0.02	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.05	< 0.01
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.02	0.04	0.02	0.03	0.02	0.01	0.02	< 0.01	< 0.01	0.07	< 0.01



### **Summary of Chemical Analysis**

### **Soil Samples**

*Our Ref* 22-18896

Client Ref PN224395

*Contract Title* Newport Quinn Phase 2

			Lab No	2062092	2062093	2062094	2062095	2062096	2062097	2062098	2062099	2062100	2062101	2062102
		.Sa	mple ID	BH18	BH18	BH20	BH21	BH22	BH23	BH24	BH25	BH27	BH28	BH28
			Depth	4.00-4.45	4.80	0.80	5.00-5.45	3.90	1.00	4.00	0.55	1.00	2.70	3.80
		C	Other ID											
		Samp	ole Type	D	D	D	D	D	D	D	D	D	D	D
		Sampli	ng Date	03/08/2022	03/08/2022	n/s	31/08/2022	02/08/2022	26/07/2022	n/s	28/07/2022	n/s	n/s	29/07/2022
		Sampli	ng Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units				•	•			•			
Metals														
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Inorganics							•	•			•			
рН	DETSC 2008#		pН	7.4	7.0	8.0	7.0	7.3	7.7	8.8	11.1	10.7	7.5	7.0
Organic matter	DETSC 2002#	0.1	%											
Ammonia Aqueous Extract as N	DETSC 2119	10	mg/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloride Aqueous Extract	DETSC 2055	1	mg/l	6.4	5.7	4.2	8.3	6.3	15	11	29	5.9	3.5	5.3
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	24	29	32	19	17	13	29	99	13	17	15
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.21	0.01	< 0.01	< 0.01
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.02	0.02	0.03	0.01	< 0.01	0.02	0.03	0.29	0.02	0.01	< 0.01



### **Summary of Chemical Analysis**

### **Soil Samples**

Our Ref 22-18896

Client Ref PN224395

*Contract Title* Newport Quinn Phase 2

			Lab No	2062103	2062104	2062105	2062106	2062107	2062108
		.Sa	mple ID	BH29	BH29	BH30	BH30	BH09	BH26
			Depth	1.00	4.00	1.00	5.00-5.45	4.50-5.00	4.80
		(	Other ID						
		Sam	ple Type	D	D	D	D	D	D
		Sampl	ing Date	n/s	28/07/2022	28/07/2022	05/08/2022	n/s	11/08/2022
		Sampli	ing Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units						
Metals									
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l	< 10	< 10	< 10	< 10		
Inorganics									
рН	DETSC 2008#		рН	8.5	6.6	7.2	11.2		
Organic matter	DETSC 2002#	0.1	%					0.7	21
Ammonia Aqueous Extract as N	DETSC 2119	10	mg/l	< 10	< 10	< 10	< 10		
Chloride Aqueous Extract	DETSC 2055	1	mg/l	2.1	11	6.3	30		
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l	< 1.0	< 1.0	< 1.0	< 1.0		
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	20	42	25	92		
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01	< 0.01	< 0.01	0.07		
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.01	0.02	0.01	0.25		



### Information in Support of the Analytical Results

Our Ref 22-18896 Client Ref PN224395 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

					Inappropriate
	6 I I5	Date			container for
Lab No	Sample ID	Sampled	Containers Received	Holding time exceeded for tests	tests
2062081	BH01 1.20 SOIL		PI 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062082	BH01 5.80 SOIL	10/08/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062083	BH03 2.00-2.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062084	BH04 3.00-3.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062085	BH05 1.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062086	BH06 2.00-2.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062087	BH10 1.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062088	BH11 2.00-2.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062089	BH12 1.00 SOIL	11/08/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062090	BH14A 1.80 SOIL	04/08/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062091	BH15 1.80 SOIL	02/08/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	



### Information in Support of the Analytical Results

Our Ref 22-18896 Client Ref PN224395 Contract Newport Quinn Phase 2

		Data			Inappropriate
Lab No	Sample ID	Sampled	Containers Received	Holding time exceeded for tests	tests
2062092	BH18 4.00-4.45 SOIL	03/08/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062093	BH18 4.80 SOIL	03/08/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062094	BH20 0.80 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062095	BH21 5.00-5.45 SOIL	31/08/22	PT 1L	Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), pH + Conductivity (7 days)	
2062096	BH22 3.90 SOIL	02/08/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062097	BH23 1.00 SOIL	26/07/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062098	BH24 4.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062099	BH25 0.55 SOIL	28/07/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062100	BH27 1.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062101	BH28 2.70 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2062102	BH28 3.80 SOIL	29/07/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062103	BH29 1.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	



### Information in Support of the Analytical Results

Our Ref 22-18896 Client Ref PN224395 Contract Newport Quinn Phase 2

		Date			container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	Holding time exceeded for tests	tests
2062104	BH29 4.00 SOIL	28/07/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062105	BH30 1.00 SOIL	28/07/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062106	BH30 5.00-5.45 SOIL	05/08/22	PT 1L	Anions 2:1 (30 days), Ammonia Aqueous Extract (3 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2062107	BH09 4.50-5.00 SOIL		PT 1L	Sample date not supplied, Organic Matter (Manual) (28 days)	
2062108	BH26 4.80 SOIL	11/08/22	PT 500ml	Organic Matter (Manual) (28 days)	

#### Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

#### **Soil Analysis Notes**

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425μm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



### LABORATORY REPORT



4043

#### Contract Number: PSL22/6080

Report Date: 05 October 2022

Client's Reference: PN224395

Client Name: Geotechnics 203 Torrington Avenue Tile Hill Coventry CV4 9UT

#### For the attention of: Josh Noble

Contract Title: Newport Quinn Phase 2

 Date Received:
 21/9/2022

 Date Commenced:
 21/9/2022

 Date Completed:
 5/10/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director) R Berriman (Quality Manager) S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager) S Eyre (Senior Technician)

T Watkins (Senior Technician)

Page 1 of

5 – 7 Hexthorpe Road, Hexthorpe, Doncaster DN4 0AR tel: +44 (0)844 815 6641 fax: +44 (0)844 815 6642 e-mail: rberriman@prosoils.co.uk awatkins@prosoils.co.uk

**ISRM Suggested Methods : 2007** 

Borehole	Depth (m)	Sample Ref	Test Type	Orientation	Dimer (m	1sions m)	Area	D _e ²	De	Failure	Load (P)	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Number		Ku	rype	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH01	8.18		Ι	Perp	75	30	2250	2864.79	53.52	-	0.71	0.25	1.031	0.26	Valid	
BH01	8.26		Α	Perp	80	27	2160	2750.20	52.44	-	0.18	0.07	1.022	0.07	Valid	
BH01	8.61		Α	Perp	80	28	2240	2852.06	53.40	-	0.31	0.11	1.030	0.11	Valid	
BH01	8.73		Α	Perp	80	28	2240	2852.06	53.40	-	0.27	0.09	1.030	0.10	Valid	
BH01	8.86		Α	Perp	80	30	2400	3055.77	55.28	-	0.17	0.06	1.046	0.06	Valid	
BH01	10.70		Α	Perp	80	26	2080	2648.34	51.46	-	0.89	0.34	1.013	0.34	Valid	
BH01	12.50		Α	Perp	80	28	2240	2852.06	53.40	-	0.30	0.11	1.030	0.11	Valid	
BH01	12.83		Α	Perp	80	27	2160	2750.20	52.44	-	0.17	0.06	1.022	0.06	Valid	
BH01	13.05		Α	Perp	80	30	2400	3055.77	55.28	-	2.88	0.94	1.046	0.99	Valid	
BH01	13.40		Α	Perp	80	32	2560	3259.49	57.09	-	0.84	0.26	1.062	0.27	Valid	
BH01	15.37		Α	Perp	80	28	2240	2852.06	53.40	-	1.81	0.63	1.030	0.65	Valid	
BH01	16.42		Α	Perp	80	28	2240	2852.06	53.40	-	1.21	0.42	1.030	0.44	Valid	
BH01	18.00		Α	Perp	80	25	2000	2546.48	50.46	-	0.88	0.35	1.004	0.35	Valid	
BH01	18.92		Α	Perp	80	30	2400	3055.77	55.28	-	1.20	0.39	1.046	0.41	Valid	
BH01	19.95		Α	Perp	80	48	3840	4889.24	69.92	-	3.11	0.64	1.163	0.74	Valid	

**Note* All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular



Borehole Number	Depth	Sample Ref	Test Type	Orientation	Dimer (m	nsions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{\$50}	Failure	Remarks
Tumber	(11)	Kei	турс	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH01	8.26		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
BH01	8.61		D	Par	-	80	6400	80.00	-	0.22	0.034	1.236	0.04	Valid	
BH01	8.73		D	Par	-	80	6400	80.00	-	0.44	0.069	1.236	0.08	Valid	
BH01	8.86		D	Par	-	80	6400	80.00	-	0.11	0.017	1.236	0.02	Valid	
BH01	10.70		D	Par	-	80	6400	80.00	-	1.00	0.156	1.236	0.19	Valid	
BH01	12.50		D	Par	-	80	6400	80.00	-	0.20	0.031	1.236	0.04	Valid	
BH01	12.83		D	Par	-	80	6400	80.00	-	0.12	0.019	1.236	0.02	Valid	
BH01	13.05		D	Par	-	80	6400	80.00	-	2.63	0.411	1.236	0.51	Valid	
BH01	13.40		D	Par	-	80	6400	80.00	-	0.91	0.142	1.236	0.18	Valid	
BH01	15.37		D	Par	-	80	6400	80.00	-	1.26	0.197	1.236	0.24	Valid	
BH01	16.42		D	Par	-	80	6400	80.00	-	1.03	0.161	1.236	0.20	Valid	
BH01	18.00		D	Par	-	80	6400	80.00	-	0.97	0.152	1.236	0.19	Valid	
BH01	18.92		D	Par	-	80	6400	80.00	-	1.14	0.178	1.236	0.22	Valid	
BH01	19.95		D	Par	-	80	6400	80.00	-	2.78	0.434	1.236	0.54	Valid	
*Note	All testing of	carried out or	n samples a	tt as received wa	ater conte	ent		Par =	parallel, Perj	p = perpendi	cular, U = R	andom			
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**ISRM Suggested Methods : 2007** 

Borehole	Depth (m)	Sample Ref	Test Type	Orientation	Dimer (m	nsions m)	Area	D _e ²	De	Failure 1	Load (P)	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Tumber		Kei	Type	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH04A	5.52		Α	Perp	80	38	3040	3870.65	62.21	-	0.22	0.06	1.103	0.06	Valid	
BH04A	5.60		Α	Perp	80	47	3760	4787.38	69.19	-	0.17	0.04	1.157	0.04	Valid	
BH04A	5.78		Α	Perp	80	40	3200	4074.37	63.83	-	0.22	0.05	1.116	0.06	Valid	
BH04A	6.65		Α	Perp	80	38	3040	3870.65	62.21	-	0.11	0.03	1.103	0.03	Valid	
BH04A	6.80		Α	Perp	80	39	3120	3972.51	63.03	-	0.38	0.10	1.110	0.11	Valid	
BH04A	8.10		Α	Perp	80	42	3360	4278.08	65.41	-	0.18	0.04	1.128	0.05	Valid	
BH04A	9.95		Α	Perp	80	28	2240	2852.06	53.40	-	0.27	0.09	1.030	0.10	Valid	
BH04A	10.93		Α	Perp	80	25	2000	2546.48	50.46	-	0.18	0.07	1.004	0.07	Valid	
BH04A	12.21		Α	Perp	80	28	2240	2852.06	53.40	-	0.28	0.10	1.030	0.10	Valid	
BH04A	14.45		Α	Perp	80	30	2400	3055.77	55.28	-	0.74	0.24	1.046	0.25	Valid	
BH04A	15.87		Α	Perp	80	30	2400	3055.77	55.28	-	0.37	0.12	1.046	0.13	Valid	
BH04A	16.43		Α	Perp	80	28	2240	2852.06	53.40	-	0.80	0.28	1.030	0.29	Valid	
BH04A	17.40		Α	Perp	80	34	2720	3463.21	58.85	-	0.14	0.04	1.076	0.04	Valid	
BH04A	19.20		Α	Perp	80	38	3040	3870.65	62.21	-	0.20	0.05	1.103	0.06	Valid	

**Note* All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular



**ISRM Suggested Methods : 2007** 

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimer (m	nsions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Tumber	(111)	Kei	гурс	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH04A	5.52		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
BH04A	5.60		D	Par	-	80	6400	80.00	-	0.21	0.033	1.236	0.04	Valid	
BH04A	5.78		D	Par	-	80	6400	80.00	-	0.16	0.025	1.236	0.03	Valid	
BH04A	6.65		D	Par	-	80	6400	80.00	-	0.06	0.009	1.236	0.01	Valid	
BH04A	6.80		D	Par	-	80	6400	80.00	-	0.24	0.038	1.236	0.05	Valid	
BH04A	8.10		D	Par	-	80	6400	80.00	-	0.11	0.017	1.236	0.02	Valid	
BH04A	9.95		D	Par	-	80	6400	80.00	-	0.23	0.036	1.236	0.04	Valid	
BH04A	10.93		D	Par	-	80	6400	80.00	-	0.10	0.016	1.236	0.02	Valid	
BH04A	12.21		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
BH04A	14.45		D	Par	-	80	6400	80.00	-	0.63	0.098	1.236	0.12	Valid	
BH04A	15.87		D	Par	-	80	6400	80.00	-	0.40	0.063	1.236	0.08	Valid	
BH04A	16.43		D	Par	-	80	6400	80.00	-	0.76	0.119	1.236	0.15	Valid	
BH04A	17.40		D	Par	-	80	6400	80.00	-	0.18	0.028	1.236	0.03	Valid	
BH04A	19.20		D	Par	-	80	6400	80.00	-	0.15	0.023	1.236	0.03	Valid	
*Note	All testing of	carried out or	n samples a	t as received wa	ater conte	ent		Par =	parallel, Perp	o = perpendi	cular, $U = R$	andom			
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**ISRM Suggested Methods : 2007** 

Borehole	Depth (m)	Sample	Test	Orientation	Dimer (m	1sions m)	Area	D _e ²	D _e	Failure	Load (P)	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Number		KU	гурс	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH07	7.86		Ι	Perp	37	24	888	1130.64	33.62	-	0.30	0.27	0.836	0.22	Valid	
BH07	8.32		Α	Perp	80	28	2240	2852.06	53.40	-	0.20	0.07	1.030	0.07	Valid	
<b>BH07</b>	9.94		Α	Perp	80	27	2160	2750.20	52.44	-	0.18	0.07	1.022	0.07	Valid	
<b>BH07</b>	10.10		Ι	Perp	32	21	672	855.62	29.25	-	0.21	0.25	0.786	0.19	Valid	
BH07	10.40		Α	Perp	80	27	2160	2750.20	52.44	-	0.22	0.08	1.022	0.08	Valid	
BH07	12.69		Α	Perp	80	25	2000	2546.48	50.46	-	0.11	0.04	1.004	0.04	Valid	
BH07	13.43		Α	Perp	80	28	2240	2852.06	53.40	-	0.22	0.08	1.030	0.08	Valid	
BH07	13.70		Α	Perp	80	27	2160	2750.20	52.44	-	0.20	0.07	1.022	0.07	Valid	
BH07	15.27		Α	Perp	80	36	2880	3666.93	60.56	-	0.21	0.06	1.090	0.06	Valid	
BH07	15.60		Α	Perp	80	48	3840	4889.24	69.92	-	0.26	0.05	1.163	0.06	Valid	
BH07	16.90		Α	Perp	80	47	3760	4787.38	69.19	-	0.20	0.04	1.157	0.05	Valid	
<b>BH07</b>	17.21		Α	Perp	80	33	2640	3361.35	57.98	-	0.47	0.14	1.069	0.15	Valid	
BH07	18.00		Α	Perp	80	27	2160	2750.20	52.44	-	0.18	0.07	1.022	0.07	Valid	
BH07	18.90		Α	Perp	80	38	3040	3870.65	62.21	-	0.22	0.06	1.103	0.06	Valid	
BH07	19.85		Α	Perp	80	43	3440	4379.94	66.18	-	0.37	0.08	1.134	0.10	Valid	

**Note* All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular



Borehole Number	Depth	Sample Ref	Test Type	Orientation	Dime (m	nsions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{\$50}	Failure	Remarks
Tumber	(11)	i i i i i i i i i i i i i i i i i i i	турс	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH07	8.32		D	Par	-	80	6400	80.00	-	0.28	0.044	1.236	0.05	Valid	
BH07	9.94		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
BH07	10.40		D	Par	-	80	6400	80.00	-	0.17	0.027	1.236	0.03	Valid	
BH07	12.69		D	Par	-	80	6400	80.00	-	0.20	0.031	1.236	0.04	Valid	
BH07	13.43		D	Par	-	80	6400	80.00	-	0.21	0.033	1.236	0.04	Valid	
BH07	13.70		D	Par	-	80	6400	80.00	-	0.16	0.025	1.236	0.03	Valid	
BH07	15.27		D	Par	-	80	6400	80.00	-	0.20	0.031	1.236	0.04	Valid	
BH07	15.60		D	Par	-	80	6400	80.00	-	0.22	0.034	1.236	0.04	Valid	
BH07	16.90		D	Par	-	80	6400	80.00	-	0.21	0.033	1.236	0.04	Valid	
BH07	17.21		D	Par	-	80	6400	80.00	-	0.33	0.052	1.236	0.06	Valid	
BH07	18.00		D	Par	-	80	6400	80.00	-	0.20	0.031	1.236	0.04	Valid	
BH07	18.90		D	Par	-	80	6400	80.00	-	0.23	0.036	1.236	0.04	Valid	
BH07	19.85		D	Par	-	- <u>80</u> <u>6400</u> <u>80.00</u> - <u>0.49</u> <u>0.077</u> <u>1.236</u> <u>0.09</u>								Valid	
*Note	All testing of	carried out or	n samples a	at as received wa	ater conte	ent		Par =	parallel, Perj	p = perpendi	cular, U = Ra	andom			
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**ISRM Suggested Methods : 2007** 

Borehole	Depth (m)	Sample Ref	Test Type	Orientation	Dimer (m	nsions m)	Area	D _e ²	De	Failure	Load (P)	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Number		Ku	турс	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH10	6.74		Α	Perp	80	28	2240	2852.06	53.40	-	0.77	0.27	1.030	0.28	Valid	
BH10	7.50		Α	Perp	80	25	2000	2546.48	50.46	-	1.01	0.40	1.004	0.40	Valid	
BH10	8.45		Α	Perp	80	30	2400	3055.77	55.28	-	0.38	0.12	1.046	0.13	Valid	
BH10	8.98		Α	Perp	80	31	2480	3157.63	56.19	-	1.01	0.32	1.054	0.34	Valid	
BH10	9.47		Α	Perp	80	38	3040	3870.65	62.21	-	0.27	0.07	1.103	0.08	Valid	
BH10	11.30		Α	Perp	80	30	2400	3055.77	55.28	-	2.71	0.89	1.046	0.93	Valid	
BH10	11.90		Α	Perp	80	31	2480	3157.63	56.19	-	2.37	0.75	1.054	0.79	Valid	
BH10	12.33		Α	Perp	80	27	2160	2750.20	52.44	-	1.30	0.47	1.022	0.48	Valid	
BH10	12.82		Α	Perp	80	27	2160	2750.20	52.44	-	4.21	1.53	1.022	1.56	Valid	
BH10	13.08		Α	Perp	80	28	2240	2852.06	53.40	-	2.01	0.70	1.030	0.73	Valid	
BH10	14.16		Α	Perp	80	31	2480	3157.63	56.19	-	1.53	0.48	1.054	0.51	Valid	
BH10	16.20		Α	Perp	80	27	2160	2750.20	52.44	-	1.94	0.71	1.022	0.72	Valid	
BH10	17.43		Α	Perp	80	30	2400	3055.77	55.28	-	0.88	0.29	1.046	0.30	Valid	
BH10	19.05		Α	Perp	80	37	2960	3768.79	61.39	-	1.94	0.51	1.097	0.56	Valid	
BH10	20.24		Α	Perp	80	28	2240	2852.06	53.40	-	0.89	0.31	1.030	0.32	Valid	

**Note* All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular



Borehole	Depth	Sample Ref	Test Type	Orientation	Dime (m	nsions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Number	(11)	Kei	турс	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH10	6.74		D	Par	-	80	6400	80.00	-	0.11	0.017	1.236	0.02	Valid	
BH10	7.50		D	Par	-	80	6400	80.00	-	0.22	0.034	1.236	0.04	Valid	
BH10	8.45		D	Par	-	80	6400	80.00	-	0.43	0.067	1.236	0.08	Valid	
BH10	8.98		D	Par	-	80	6400	80.00	-	0.88	0.138	1.236	0.17	Valid	
BH10	9.47		D	Par	-	80	6400	80.00	-	0.36	0.056	1.236	0.07	Valid	
BH10	11.30		D	Par	-	80	6400	80.00	-	1.98	0.309	1.236	0.38	Valid	
BH10	11.90		D	Par	-	80	6400	80.00	-	2.45	0.383	1.236	0.47	Valid	
BH10	12.33		D	Par	-	80	6400	80.00	-	1.17	0.183	1.236	0.23	Valid	
BH10	12.82		D	Par	-	80	6400	80.00	-	3.04	0.475	1.236	0.59	Valid	
BH10	13.08		D	Par	-	80	6400	80.00	-	3.85	0.602	1.236	0.74	Valid	
BH10	14.16		D	Par	-	80	6400	80.00	-	1.48	0.231	1.236	0.29	Valid	
BH10	16.20		D	Par	-	80	6400	80.00	-	2.64	0.413	1.236	0.51	Valid	
BH10	17.43		D	Par	-	80	6400	80.00	-	0.71	0.111	1.236	0.14	Valid	
BH10	19.05		D	Par	-	80	6400	80.00	-	1.84	0.288	1.236	0.36	Valid	
BH10	20.24		D	Par	-	80	6400	80.00	-	0.70	0.109	1.236	0.14	Valid	
*Note	All testing c	carried out or	n samples a	at as received wa	ater conte	ent		Par =	parallel, Perj	p = perpendi	cular, U = Ra	andom			
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**ISRM Suggested Methods : 2007** 

Borehole	Depth (m)	Sample	Test	Orientation	Dimer (m	1sions m)	Area	D _e ²	D _e	<b>Failure</b> ]	Load (P)	Is	Corr Fac	I _{s50}	Failure	Remarks
Tumber		Nei	турс	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH14A	7.15		Α	Perp	80	37	2960	3768.79	61.39	-	0.24	0.06	1.097	0.07	Valid	
BH14A	8.03		Α	Perp	80	37	2960	3768.79	61.39	-	0.20	0.05	1.097	0.06	Valid	
BH14A	8.50		Α	Perp	80	34	2720	3463.21	58.85	-	0.22	0.06	1.076	0.07	Valid	
BH14A	10.80		Α	Perp	80	28	2240	2852.06	53.40	-	0.18	0.06	1.030	0.07	Valid	
BH14A	11.80		Α	Perp	80	30	2400	3055.77	55.28	-	0.19	0.06	1.046	0.07	Valid	
BH14A	12.00		Α	Perp	80	44	3520	4481.80	66.95	-	0.20	0.04	1.140	0.05	Valid	
BH14A	12.80		Α	Perp	80	32	2560	3259.49	57.09	-	0.22	0.07	1.062	0.07	Valid	
BH14A	13.40		Α	Perp	80	36	2880	3666.93	60.56	-	0.18	0.05	1.090	0.05	Valid	
BH14A	13.90		Α	Perp	80	32	2560	3259.49	57.09	-	0.16	0.05	1.062	0.05	Valid	
BH14A	14.00		Α	Perp	80	40	3200	4074.37	63.83	-	0.27	0.07	1.116	0.07	Valid	
BH14A	14.90		Ι	Perp	72	38	2736	3483.58	59.02	-	0.24	0.07	1.078	0.07	Valid	
BH14A	16.15		Α	Perp	80	32	2560	3259.49	57.09	-	0.20	0.06	1.062	0.07	Valid	
BH14A	16.77		Α	Perp	80	40	3200	4074.37	63.83	-	0.20	0.05	1.116	0.05	Valid	
BH14A	17.77		Α	Perp	80	38	3040	3870.65	62.21	-	0.19	0.05	1.103	0.05	Valid	
BH14A	18.80		Α	Perp	80	30	2400	3055.77	55.28	-	0.22	0.07	1.046	0.08	Valid	
BH14A	20.22		Α	Perp	80	30	2400	3055.77	55.28	-	0.22	0.07	1.046	0.08	Valid	

**Note* All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

Newport Quinn Phase 2

A = Axial, D = Diametral, I = Irregular



<b>Contract No:</b>
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PN224395

**ISRM Suggested Methods : 2007** 

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimer (m	nsions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Tumber	(III)	Kei	турс	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH14A	7.15		D	Par	-	80	6400	80.00	-	0.22	0.034	1.236	0.04	Valid	
BH14A	8.03		D	Par	-	80	6400	80.00	-	0.16	0.025	1.236	0.03	Valid	
BH14A	8.50		D	Par	-	80	6400	80.00	-	0.19	0.030	1.236	0.04	Valid	
BH14A	10.80		D	Par	-	80	6400	80.00	-	0.16	0.025	1.236	0.03	Valid	
BH14A	11.80		D	Par	-	80	6400	80.00	-	0.15	0.023	1.236	0.03	Valid	
BH14A	12.00		D	Par	-	80	6400	80.00	-	0.18	0.028	1.236	0.03	Valid	
BH14A	12.80		D	Par	-	80	6400	80.00	-	0.17	0.027	1.236	0.03	Valid	
BH14A	13.40		D	Par	-	80	6400	80.00	-	0.11	0.017	1.236	0.02	Valid	
BH14A	13.90		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
BH14A	14.00		D	Par	-	80	6400	80.00	-	0.19	0.030	1.236	0.04	Valid	
BH14A	16.15		D	Par	-	80	6400	80.00	-	0.11	0.017	1.236	0.02	Valid	
BH14A	16.77		D	Par	-	80	6400	80.00	-	0.18	0.028	1.236	0.03	Valid	
BH14A	17.77		D	Par	-	80	6400	80.00	-	0.17	0.027	1.236	0.03	Valid	
BH14A	18.80		D	Par	-	80	6400	80.00	-	0.24	0.038	1.236	0.05	Valid	
BH14A	20.22		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
*Note	All testing of	carried out or	n samples a	t as received wa	ater conte	ent		Par =	parallel, Perp	o = perpendi	cular, U = R	andom			
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**ISRM Suggested Methods : 2007** 

Borehole	Depth (m)	Sample	Test	Orientation	Dimer (m	1sions m)	Area	D _e ²	D _e	<b>Failure</b> ]	Load (P)	Is	Corr Fac	I _{s50}	Failure	Remarks
Number		KU	турс	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH17A	6.50		Α	Perp	80	44	3520	4481.80	66.95	-	0.38	0.08	1.140	0.10	Valid	
BH17A	7.05		Α	Perp	80	38	3040	3870.65	62.21	-	0.32	0.08	1.103	0.09	Valid	
BH17A	7.60		Α	Perp	80	38	3040	3870.65	62.21	-	0.36	0.09	1.103	0.10	Valid	
BH17A	9.30		Α	Perp	80	40	3200	4074.37	63.83	-	0.24	0.06	1.116	0.07	Valid	
BH17A	10.25		Α	Perp	80	34	2720	3463.21	58.85	-	0.14	0.04	1.076	0.04	Valid	
BH17A	11.40		Α	Perp	80	40	3200	4074.37	63.83	-	0.40	0.10	1.116	0.11	Valid	
BH17A	12.00		Α	Perp	80	44	3520	4481.80	66.95	-	0.31	0.07	1.140	0.08	Valid	
BH17A	12.50		Α	Perp	80	36	2880	3666.93	60.56	-	0.30	0.08	1.090	0.09	Valid	
BH17A	15.80		Α	Perp	80	38	3040	3870.65	62.21	-	0.48	0.12	1.103	0.14	Valid	
BH17A	16.15		Α	Perp	80	37	2960	3768.79	61.39	-	0.37	0.10	1.097	0.11	Valid	
BH17A	16.60		Α	Perp	80	45	3600	4583.66	67.70	-	0.88	0.19	1.146	0.22	Valid	
BH17A	16.95		Α	Perp	80	30	2400	3055.77	55.28	-	0.94	0.31	1.046	0.32	Valid	
BH17A	17.43		Α	Perp	80	47	3760	4787.38	69.19	-	1.08	0.23	1.157	0.26	Valid	
BH17A	17.80		Α	Perp	80	50	4000	5092.96	71.36	-	0.41	0.08	1.174	0.09	Valid	
BH17A	19.64		Α	Perp	80	38	3040	3870.65	62.21	-	18.99	4.91	1.103	5.41	Valid	
BH17A	19.85		Α	Perp	80	28	2240	2852.06	53.40	-	9.21	3.23	1.030	3.33	Valid	

**Note* All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

Newport Quinn Phase 2

A = Axial, D = Diametral, I = Irregular



<b>Contract No:</b>
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**ISRM Suggested Methods : 2007** 

Borehole Number	Depth	Sample Ref	Test Type	Orientation	Dimer (m	nsions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Tumber	(III)	Ku	турс	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH17A	6.50		D	Par	-	80	6400	80.00	-	1.04	0.163	1.236	0.20	Valid	
BH17A	7.05		D	Par	-	80	6400	80.00	-	0.40	0.063	1.236	0.08	Valid	
BH17A	7.60		D	Par	-	80	6400	80.00	-	0.47	0.073	1.236	0.09	Valid	
BH17A	9.30		D	Par	-	80	6400	80.00	-	0.38	0.059	1.236	0.07	Valid	
BH17A	10.25		D	Par	-	80	6400	80.00	-	0.17	0.027	1.236	0.03	Valid	
BH17A	11.40		D	Par	-	80	6400	80.00	-	0.36	0.056	1.236	0.07	Valid	
BH17A	12.00		D	Par	-	80	6400	80.00	-	0.43	0.067	1.236	0.08	Valid	
BH17A	12.50		D	Par	-	80	6400	80.00	-	0.32	0.050	1.236	0.06	Valid	
BH17A	15.80		D	Par	-	80	6400	80.00	-	0.41	0.064	1.236	0.08	Valid	
BH17A	16.15		D	Par	-	80	6400	80.00	-	0.50	0.078	1.236	0.10	Valid	
BH17A	16.60		D	Par	-	80	6400	80.00	-	0.47	0.073	1.236	0.09	Valid	
BH17A	16.95		D	Par	-	80	6400	80.00	-	0.26	0.041	1.236	0.05	Valid	
BH17A	17.43		D	Par	-	80	6400	80.00	-	1.54	0.241	1.236	0.30	Valid	
BH17A	17.80		D	Par	-	80	6400	80.00	-	0.21	0.033	1.236	0.04	Valid	
BH17A	19.64		D	Par	-	80	6400	80.00	-	22.14	3.459	1.236	4.27	Valid	
BH17A	19.85		D	Par	-	80	6400	80.00	-	10.82	1.691	1.236	2.09	Valid	
*Note	All testing c	carried out or	n samples a	t as received wa	ater conte	ent		Par =	parallel, Perj	o = perpendi	cular, U = Ra	andom			
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**ISRM Suggested Methods : 2007** 

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimer (m	nsions m)	Area	D _e ²	D _e	Failure	Load (P)	I _s	Corr Fac	I _{s50}	Failure Type	Remarks
Tumber		itter	Type	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH23	11.80		Α	Perp	80	32	2560	3259.49	57.09	-	0.31	0.10	1.062	0.10	Valid	
BH23	12.48		Ι	Perp	74	24	1776	2261.27	47.55	-	0.20	0.09	0.978	0.09	Valid	
BH23	12.95		Α	Perp	80	40	3200	4074.37	63.83	-	0.27	0.07	1.116	0.07	Valid	
BH23	14.70		Α	Perp	80	37	2960	3768.79	61.39	-	0.12	0.03	1.097	0.03	Valid	
BH23	15.15		Α	Perp	80	38	3040	3870.65	62.21	-	0.40	0.10	1.103	0.11	Valid	
BH23	15.68		Α	Perp	80	30	2400	3055.77	55.28	-	0.30	0.10	1.046	0.10	Valid	
BH23	16.37		Α	Perp	80	34	2720	3463.21	58.85	-	0.30	0.09	1.076	0.09	Valid	
BH23	16.90		Α	Perp	80	40	3200	4074.37	63.83	-	0.30	0.07	1.116	0.08	Valid	
BH23	17.10		Α	Perp	80	38	3040	3870.65	62.21	-	0.20	0.05	1.103	0.06	Valid	
BH23	17.90		Α	Perp	80	32	2560	3259.49	57.09	-	0.24	0.07	1.062	0.08	Valid	
*Note	All testing o	carried out of	n samples a	at as received wa	ater conte	ent		Par =	parallel, Per	p = perpendi	cular, U = R	andom		A = Axial, D	) = Diametral,	, I = Irregular
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Borehole Number	Depth	Sample Ref	Test Type	Orientation	Dime (m	nsions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{s50}	Failure	Remarks
Tumber	(11)	Ref	rype	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	Type	
BH23	11.80		D	Par	-	80	6400	80.00	-	0.24	0.038	1.236	0.05	Valid	
BH23	12.95		D	Par	-	80	6400	80.00	-	0.30	0.047	1.236	0.06	Valid	
BH23	14.70		D	Par	-	80	6400	80.00	-	0.11	0.017	1.236	0.02	Valid	
BH23	15.15		D	Par	-	80	6400	80.00	-	0.22	0.034	1.236	0.04	Valid	
BH23	15.68		D	Par	-	80	6400	80.00	-	0.22	0.034	1.236	0.04	Valid	
BH23	16.37		D	Par	-	80	6400	80.00	-	0.29	0.045	1.236	0.06	Valid	
BH23	16.90		D	Par	-	80	6400	80.00	-	0.27	0.042	1.236	0.05	Valid	
BH23	17.10		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
BH23	17.90		D	Par	-	80	6400	80.00	-	0.26	0.041	1.236	0.05	Valid	
*Note	All testing o	carried out or	n samples a	at as received wa	ater cont	ent		Par =	parallel, Per	p = perpendi	cular, $U = R$	andom			
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Borehole	Depth (m)	Sample	Test	Orientation	Dimer (m	nsions m)	Area	D _e ²	D _e	Failure	Load (P)	Is	Corr Fac	I _{s50}	Failure	Remarks
Number		KCI	Type	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	туре	
BH27	6.80		Α	Perp	80	37	2960	3768.79	61.39	-	0.23	0.06	1.097	0.07	Valid	
BH27	7.03		Α	Perp	80	42	3360	4278.08	65.41	-	0.27	0.06	1.128	0.07	Valid	
BH27	9.65		Α	Perp	80	38	3040	3870.65	62.21	-	0.18	0.05	1.103	0.05	Valid	
BH27	12.10		Α	Perp	80	38	3040	3870.65	62.21	-	0.70	0.18	1.103	0.20	Valid	
BH27	13.75		Α	Perp	80	42	3360	4278.08	65.41	-	0.27	0.06	1.128	0.07	Valid	
BH27	15.47		Α	Perp	80	30	2400	3055.77	55.28	-	0.40	0.13	1.046	0.14	Valid	
BH27	16.25		Α	Perp	80	40	3200	4074.37	63.83	-	0.20	0.05	1.116	0.05	Valid	
BH27	19.95		Α	Perp	80	37	2960	3768.79	61.39	-	0.21	0.06	1.097	0.06	Valid	
*Note	All testing c	arried out or	n samples a	at as received wa	ater conte	ent		Par =	parallel, Per	p = perpendi	cular, U = R	andom		A = Axial, D	= Diametral,	, I = Irregular
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Borehole Number	Depth (m)	Sample	Test Type	Orientation	Dimer (m	1sions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{s50}	Failure	Remarks
Tumber	(11)	Ker	Type	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	Type	
BH27	6.80		D	Par	-	80	6400	80.00	-	0.20	0.031	1.236	0.04	Valid	
BH27	7.03		D	Par	-	80	6400	80.00	-	0.30	0.047	1.236	0.06	Valid	
BH27	9.65		D	Par	-	80	6400	80.00	-	0.20	0.031	1.236	0.04	Valid	
BH27	12.10		D	Par	-	80	6400	80.00	-	0.53	0.083	1.236	0.10	Valid	
BH27	13.75		D	Par	-	80	6400	80.00	-	0.30	0.047	1.236	0.06	Valid	
BH27	15.47		D	Par	-	80	6400	80.00	-	0.44	0.069	1.236	0.08	Valid	
BH27	16.25		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
BH27	19.95		D	Par	-	80	6400	80.00	-	0.24	0.038	1.236	0.05	Valid	
<u>*Note</u>	All testing of	carried out or	n samples a	at as received wa	ater conte	ent		Par =	parallel, Per	p = perpendi	cular, U = Ra	andom			
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Borehole	Depth (m)	Sample Bof	Test	Orientation	Dime (m	nsions m)	Area	D _e ²	D _e	Failure	Load (P)	Is	Corr Fac	I _{s50}	Failure	Remarks
Number		KU	турс	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH28	5.60		Α	Perp	80	26	2080	2648.34	51.46	-	0.22	0.08	1.013	0.08	Valid	
BH28	5.70		Α	Perp	80	30	2400	3055.77	55.28	-	0.30	0.10	1.046	0.10	Valid	
BH28	9.65		Α	Perp	80	27	2160	2750.20	52.44	-	0.16	0.06	1.022	0.06	Valid	
BH28	10.30		Α	Perp	80	30	2400	3055.77	55.28	-	0.17	0.06	1.046	0.06	Valid	
BH28	11.15		Α	Perp	80	32	2560	3259.49	57.09	-	0.20	0.06	1.062	0.07	Valid	
BH28	12.05		Α	Perp	80	40	3200	4074.37	63.83	-	0.18	0.04	1.116	0.05	Valid	
BH28	14.88		Α	Perp	80	34	2720	3463.21	58.85	-	0.34	0.10	1.076	0.11	Valid	
BH28	17.00		Α	Perp	80	26	2080	2648.34	51.46	-	0.22	0.08	1.013	0.08	Valid	
BH28	19.90		Α	Perp	80	40	3200	4074.37	63.83	-	0.24	0.06	1.116	0.07	Valid	
*Note	All testing c	arried out or	n samples a	at as received wa	ater cont	ent		Par =	parallel, Per	p = perpendi	cular, U = R	andom		A = Axial, D	= Diametral	, I = Irregular
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Borehole	Depth	Sample Ref	Test Type	Orientation	Dime (m	nsions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Tumber	(11)	itti	Type	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	Type	
BH28	5.60		D	Par	-	80	6400	80.00	-	0.21	0.033	1.236	0.04	Valid	
BH28	5.70		D	Par	-	80	6400	80.00	-	0.21	0.033	1.236	0.04	Valid	
BH28	9.65		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
BH28	10.30		D	Par	-	80	6400	80.00	-	0.12	0.019	1.236	0.02	Valid	
BH28	11.15		D	Par	-	80	6400	80.00	-	0.13	0.020	1.236	0.03	Valid	
BH28	12.05		D	Par	-	80	6400	80.00	-	0.11	0.017	1.236	0.02	Valid	
BH28	14.88		D	Par	-	80	6400	80.00	-	0.22	0.034	1.236	0.04	Valid	
BH28	17.00		D	Par	-	80	6400	80.00	-	0.16	0.025	1.236	0.03	Valid	
BH28	19.90		D	Par	-	80	6400	80.00	-	0.20	0.031	1.236	0.04	Valid	
*Note	All testing o	carried out or	n samples a	at as received wa	ater conte	ent		Par =	parallel, Per	p = perpendi	cular, U = Ra	andom			
ġ.															Contract No:
$( \downarrow \downarrow )$									Nev	vnort Ou	iinn Phas	e 2			PSL22/6080
UKAS	Drot	loccie			orat	on				Port Qu		~ #			Client Ref:
4043	Pro	essio	nal S	ons Lab	orat	ory									PN224395

Borehole	Depth (m)	Sample Ref	Test	Orientation	Dimer (m	1sions m)	Area	D _e ²	De	Failure	Load (P)	Is	Corr Fac	I _{s50}	Failure Type	Remarks
Number		Ku	rype	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	турс	
BH30	5.75		Α	Perp	80	43	3440	4379.94	66.18	-	0.23	0.05	1.134	0.06	Valid	
BH30	7.30		Α	Perp	80	50	4000	5092.96	71.36	-	0.22	0.04	1.174	0.05	Valid	
BH30	7.70		Α	Perp	80	49	3920	4991.10	70.65	-	0.17	0.03	1.168	0.04	Valid	
BH30	8.85		Α	Perp	80	47	3760	4787.38	69.19	-	0.17	0.04	1.157	0.04	Valid	
BH30	9.24		Α	Perp	80	37	2960	3768.79	61.39	-	4.99	1.32	1.097	1.45	Valid	
BH30	9.40		Α	Perp	80	42	3360	4278.08	65.41	-	7.01	1.64	1.128	1.85	Valid	
BH30	11.88		Α	Perp	80	40	3200	4074.37	63.83	-	0.17	0.04	1.116	0.05	Valid	
BH30	15.10		Α	Perp	80	32	2560	3259.49	57.09	-	0.15	0.05	1.062	0.05	Valid	
BH30	15.87		Α	Perp	80	24	1920	2444.62	49.44	-	0.61	0.25	0.995	0.25	Valid	
BH30	16.75		Α	Perp	80	30	2400	3055.77	55.28	-	0.28	0.09	1.046	0.10	Valid	
BH30	17.80		Α	Perp	80	40	3200	4074.37	63.83	-	1.30	0.32	1.116	0.36	Valid	
BH30	18.00		Α	Perp	80	32	2560	3259.49	57.09	-	1.02	0.31	1.062	0.33	Valid	
BH30	19.15		Α	Perp	80	27	2160	2750.20	52.44	-	0.18	0.07	1.022	0.07	Valid	
<u>*Note</u>	All testing c	arried out or	1 samples a	at as received wa	ater conte	ent		Par =	parallel, Per	p = perpendi	cular, U = R	andom		A = Axial, D	) = Diametral,	, I = Irregula


# **SUMMARY OF POINT LOAD TEST RESULTS**

**ISRM Suggested Methods : 2007** 

Borehole Number	Depth	Sample Ref	Test Type	Orientation	Dime (m	nsions m)	D _e ²	D _e	Failur	e Load	Is	Corr Fac	I _{\$50}	Failure	Remarks
Tumber	(11)	itti	Type	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	Type	
BH30	5.75		D	Par	-	80	6400	80.00	-	0.21	0.033	1.236	0.04	Valid	
BH30	7.30		D	Par	-	80	6400	80.00	-	0.31	0.048	1.236	0.06	Valid	
BH30	7.70		D	Par	-	80	6400	80.00	-	0.20	0.031	1.236	0.04	Valid	
BH30	8.85		D	Par	-	80	6400	80.00	-	0.22	0.034	1.236	0.04	Valid	
BH30	9.24		D	Par	-	80	6400	80.00	-	5.15	0.805	1.236	0.99	Valid	
BH30	9.40		D	Par	-	80	6400	80.00	-	6.94	1.084	1.236	1.34	Valid	
BH30	11.88		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
BH30	15.10		D	Par	-	80	6400	80.00	-	0.17	0.027	1.236	0.03	Valid	
BH30	15.87		D	Par	-	80	6400	80.00	-	0.69	0.108	1.236	0.13	Valid	
BH30	16.75		D	Par	-	80	6400	80.00	-	0.24	0.038	1.236	0.05	Valid	
BH30	17.80		D	Par	-	80	6400	80.00	-	1.19	0.186	1.236	0.23	Valid	
BH30	18.00		D	Par	-	80	6400	80.00	-	1.69	0.264	1.236	0.33	Valid	
BH30	19.15		D	Par	-	80	6400	80.00	-	0.14	0.022	1.236	0.03	Valid	
*Note	$\frac{*Note}{2}$ All testing carried out on samples at as received water content Par = parallel, Perp = perpendicular, U = Random														
- C															Contract No:
(≱≮)							Nownort Quinn Phase 2								PSL22/6080
UKAS	Dura	-					i i i i i i i i i i i i i i i i i i i							Client Ref:	
4043	Pro	ressio	nal S	ons Lab	orat	ory									PN224395

# **DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH**

ISRM Suggested Methods, pp 111 –116, 1981.

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Sample Diameter (mm)	Sample Length (mm)	Height Ratio	Initial Mass (g)	Bulk Density (Mg/m)	Moisture Content	Dry Density (Mg/m)	Load Failure (kN)	UCS	Failure Mode	Date Tested	Remarks
BH01		C	(III) 8 4 2	(iii) 8.61	(iiiii) 80	(mm) 160	2.0	1984	(Mg/m) 2 47	92	2 26	20.2	(III a) 40	Brittle	29/09/22	
BH01		C C	11 61	11.80	80	160	2.0	1904	2.47	11	2.20	33.2	6.6	Brittle	29/09/22	
BH01		C C	14 32	14 50	80	160	2.0	2145	2.57	54	2.14	65.2	13.0	Brittle	29/09/22	
			14.52	15.70	00 00	160	2.0	2143	2.07	9.4 9.0	2.35	49.2	0.6	Drittle	20/00/22	
BHOAL		C	15.55	15.70	00	100	2.0	2100	2.02	0.9	2.41	40.2	9.0	Drittle	29/09/22	
BH04A		C	7.93	8.10	80	160	2.0	1898	2.36	15	2.06	22.1	4.4	Brittle	29/09/22	
BH04A		С	12.70	12.90	80	160	2.0	1890	2.35	20	1.96	18.7	3.7	Brittle	29/09/22	
<b>BH07</b>		С	10.23	10.40	80	160	2.0	1924	2.39	13	2.12	22.4	4.5	Brittle	29/09/22	
<b>BH07</b>		С	14.72	15.00	80	160	2.0	2011	2.50	8.5	2.30	28.2	5.6	Brittle	29/09/22	
<b>BH07</b>		С	17.70	17.93	80	160	2.0	1994	2.48	13	2.19	22.6	4.5	Brittle	29/09/22	
BH10		С	9.90	10.10	80	160	2.0	1808	2.25	5.9	2.12	25.6	5.1	Brittle	29/09/22	
BH10		С	10.45	10.58	80	140	1.8	1608	2.28	12	2.04	10.2	2.0	Brittle	29/09/22	
BH10		С	11.53	11.70	80	150	1.9	2100	2.78	5.5	2.64	31.2	6.2	Brittle	29/09/22	
BH10		С	13.70	13.96	80	160	2.0	1998	2.48	7.8	2.30	38.8	7.7	Brittle	29/09/22	
BH10		С	14.70	15.05	80	160	2.0	2184	2.72	4.7	2.59	29.2	5.8	Brittle	29/09/22	
BH10		С	17.90	18.12	80	160	2.0	1881	2.34	7.1	2.18	26.7	5.3	Brittle	29/09/22	
BH14A		С	6.90	7.15	80	160	2.0	2002	2.49	14	2.18	<b>98.</b> 7	19.6	Brittle	29/09/22	
BH14A		С	11.15	11.35	80	160	2.0	1987	2.47	23	2.02	19.2	3.8	Brittle	29/09/22	
BH14A		С	13.15	13.40	80	160	2.0	1899	2.36	14	2.07	24.1	4.8	Brittle	29/09/22	
BH14A		С	17.45	17.65	80	160	2.0	2014	2.50	9.7	2.28	26.8	5.3	Brittle	29/09/22	



# **DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH**

ISRM Suggested Methods, pp 111 –116, 1981.

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth	Sample Diameter	Sample Length	Height Ratio	Initial Mass	Bulk Density	Moisture Content	Dry Density (Mg/m)	Load Failure	UCS	Failure Mode	Date Tested	Remarks
DII17A		C	(11)	(111)	(11111)	(1111)	2.0	(g) 2009	(Nig/iii)	(70)	(WIg/III)	(KIN)	(IVII a)	D	20/00/22	
BH1/A		C	/.10	/.4/	80	100	2.0	2008	2.50	8./	2.30	2/.1	5.4	Brittle	29/09/22	
BH17A		C	8.62	8.92	80	160	2.0	2014	2.50	15	2.17	10.2	2.0	Brittle	29/09/22	
BH17A		С	11.60	11.95	80	160	2.0	1994	2.48	10	2.25	14.2	2.8	Brittle	29/09/22	
BH17A		С	13.17	13.50	80	160	2.0	2101	2.61	5.1	2.49	38.2	7.6	Brittle	29/09/22	
BH17A		С	14.07	14.50	80	160	2.0	1802	2.24	5.3	2.13	8.2	1.6	Brittle	29/09/22	
BH17A		С	18.50	18.95	80	160	2.0	1788	2.22	6.5	2.09	4.2	0.8	Brittle	29/09/22	
BH23		С	16.10	16.37	80	160	2.0	2002	2.49	14	2.18	20.4	4.1	Brittle	29/09/22	
BH23		С	16.65	16.90	80	160	2.0	1986	2.47	14	2.17	23.7	4.7	Brittle	29/09/22	
BH23		С	17.60	17.90	80	160	2.0	1899	2.36	14	2.06	18.9	3.8	Brittle	29/09/22	
BH27		С	11.60	11.85	80	160	2.0	2000	2.49	9.3	2.27	20.2	4.0	Brittle	29/09/22	
BH27		С	16.70	17.00	80	160	2.0	2006	2.49	13	2.21	27.2	5.4	Brittle	29/09/22	
BH27		С	18.60	18.90	80	160	2.0	2011	2.50	14	2.20	24.8	4.9	Brittle	29/09/22	
BH28		С	8.30	8.55	80	160	2.0	1886	2.34	17	2.01	21.2	4.2	Brittle	29/09/22	
BH28		С	11.50	11.80	80	160	2.0	1883	2.34	15	2.04	18.8	3.7	Brittle	29/09/22	
BH28		С	17.55	17.95	80	160	2.0	1891	2.35	12	2.11	19.1	3.8	Brittle	29/09/22	
BH30		С	5.32	5.75	80	160	2.0	2104	2.62	6.5	2.46	30.2	6.0	Brittle	29/09/22	
BH30		С	11.40	11.60	80	160	2.0	2148	2.67	5.0	2.54	65.7	13.1	Brittle	29/09/22	
BH30		С	14.05	14.30	80	160	2.0	2104	2.62	3.8	2.52	28.2	5.6	Brittle	29/09/22	
BH30		С	15.65	15.85	80	160	2.0	2081	2.59	3.1	2.51	27.1	5.4	Brittle	29/09/22	



#### LABORATORY RESULTS - Test Remarks

Project NEWPORT QUINN PHASE 2

Project No: PN224395

Sample				
Hole	Depth (Specimen Depth) M	Туре	Sample Ref	Laboratory Remark
BH01	0.50 (0.50)	D	N84035	CBR Test - Combined with B 0.20-0.60m
BH01	1.20- 1.70 (1.20- 1.70)	В	N84036	CBR Test - Combined with B 2.00-2.50m
BH01	4.80 (4.80)	D	N84040	Atterberg Limit Test - Unsuitable for testing due to insufficient fine material.
BH02	6.80 (6.80)	D	N84046	Atterberg Limit Test - Unsuitable for testing due to insufficient fine material.
BH11	1.20- 1.40 (1.20- 1.40)	D	N84074	Water Content Test - WC & PI combined with D 1.80m
BH13	4.80 (4.80)	D	N84082	Atterberg Limit Test - Unsuitable for testing due to insufficient fine material.
BH14A	3.00- 3.45 (3.00- 3.45)	D	N84084	Compaction 2.5kg - Combined with B 4.00-4.50m
BH15	3.50 (3.50)	D	N84087	Atterberg Limit Test - 1-point cone Insufficient sample for 4 point test.
BH17A	2.30 (2.30)	D	N84094	Atterberg Limit Test - 1-point cone Insufficient sample for 4 point test.
BH26	4.00- 4.45 (4.00- 4.45)	D	N84126	Water Content Test - WC & PI combined with 5.80m B
Remarl				GEOTECHNICS peotechnical and peoenvironmental specialists

# **APPENDIX 9**

Laboratory Test Results - Contamination (Soil)



Certificate Number 22-15257

Client Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ

- Our Reference 22-15257
- Client Reference PN224395
  - Order No ON34492
  - Contract Title Newport Quinn Phase 2
  - Description 6 Soil samples.
  - Date Received 08-Aug-22
  - Date Started 08-Aug-22
- Date Completed 16-Aug-22

Test Procedures Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Genord

Kirk Bridgewood General Manager



Issued: 16-Aug-22



			Lab No	2042859	2042860	2042861	2042862	2042863	2042864
		.Sa	ample ID	BH13	BH14	BH22	BH25	BH27	BH29
			Depth	0.50	0.50	1.00	1.00	1.00	1.00
			Other ID						
		Sam	ple Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampl	ing Date	02/08/2022	02/08/2022	27/07/2022	29/07/2022	27/07/2022	27/07/2022
		Sampl	ing Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	5.4	5.1	6.4	4.1	5.4	3.4
Barium	DETSC 2301#	1.5	mg/kg	130	480	64	180	60	75
Beryllium	DETSC 2301#	0.2	mg/kg	0.4	0.3	0.6	0.5	0.4	0.8
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.7	3.4	< 0.2	1.8	0.3	1.0
Cadmium	DETSC 2301#	0.1	mg/kg	0.9	1.0	< 0.1	0.6	< 0.1	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	19	1000	13	20	30	7.0
Copper	DETSC 2301#	0.2	mg/kg	12	77	9.7	9.8	9.4	7.7
Lead	DETSC 2301#	0.3	mg/kg	27	27	7.2	16	6.1	3.5
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	17	14	23	12	22	11
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	4.6	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	15	170	16	16	17	7.9
Zinc	DETSC 2301#	1	mg/kg	73	110	47	53	38	32
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >EC10-EC12	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	1.86	< 1.50	< 1.50	1.57
Aliphatic >EC12-EC16	DETSC 3521#	1.2	mg/kg	1.42	< 1.20	3.26	2.48	< 1.20	1.99
Aliphatic >EC16-EC21	DETSC 3521#	1.5	mg/kg	1.70	< 1.50	3.05	2.52	< 1.50	2.38
Aliphatic >EC21-EC35	DETSC 3521#	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00	< 10.00	11.76	10.46	< 10.00	< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >EC10-EC12	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Aromatic >EC12-EC16	DETSC 3521#	0.5	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aromatic >EC16-EC21	DETSC 3521#	0.6	mg/kg	1.02	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60
Aromatic >EC21-EC35	DETSC 3521#	1.4	mg/kg	< 1.40	< 1.40	< 1.40	28.49	< 1.40	< 1.40
Aromatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00	< 10.00	< 10.00	30.74	< 10.00	< 10.00
TPH Ali/Aro Total C5-C35	DETSC 3521*	10	mg/kg	12.26	11.45	15.36	41.19	11.51	13.11



			Lab No	2042859	2042860	2042861	2042862	2042863	2042864
		.Sa	ample ID	BH13	BH14	BH22	BH25	BH27	BH29
			Depth	0.50	0.50	1.00	1.00	1.00	1.00
			Other ID						
		Sam	ple Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampl	ing Date	02/08/2022	02/08/2022	27/07/2022	29/07/2022	27/07/2022	27/07/2022
		Sampl	ing Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units						
VOCs									
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01



			Lab No	2042859	2042860	2042861	2042862	2042863	2042864
		.Sa	ample ID	BH13	BH14	BH22	BH25	BH27	BH29
			Depth	0.50	0.50	1.00	1.00	1.00	1.00
			Other ID						
		Sam	ple Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampl	ing Date	02/08/2022	02/08/2022	27/07/2022	29/07/2022	27/07/2022	27/07/2022
		Sampl	ing Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units						
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
МТВЕ	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs									
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Acenaphthylene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Acenaphthene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Fluorene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		



			Lab No	2042859	2042860	2042861	2042862	2042863	2042864
		.Sa	ample ID	BH13	BH14	BH22	BH25	BH27	BH29
			Depth	0.50	0.50	1.00	1.00	1.00	1.00
			Other ID						
		Sam	ple Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampl	ing Date	02/08/2022	02/08/2022	27/07/2022	29/07/2022	27/07/2022	27/07/2022
		Sampl	ing Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units						
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Phenanthrene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Anthracene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Pyrene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Chrysene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Di-n-octylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1		
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1		

# *i* DETS

## Summary of Asbestos Analysis Soil Samples

Our Ref 22-15257 Client Ref PN224395 Contract Title Newport Quinn Phase 2

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2042859	BH13 0.50	SOIL	NAD	none	Josh Best
2042860	BH14 0.50	SOIL	NAD	none	Josh Best
2042861	BH22 1.00	SOIL	NAD	none	Josh Best
2042862	BH25 1.00	SOIL	NAD	none	Josh Best
2042863	BH27 1.00	SOIL	NAD	none	Josh Best
2042864	BH29 1.00	SOIL	NAD	none	Josh Best

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * not included in laboratory scope of accreditation.



Inappropriate

#### Information in Support of the Analytical Results

Our Ref 22-15257 Client Ref PN224395 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

		Date			container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	Holding time exceeded for tests	tests
2042859	BH13 0.50 SOIL	02/08/22	GJ 250ml x2, GJ 60ml, PT 1L		
2042860	BH14 0.50 SOIL	02/08/22	GJ 250ml x2, GJ 60ml, PT 1L		
2042861	BH22 1.00 SOIL	27/07/22	GJ 250ml x2, GJ 60ml, PT 1L	VOC (7 days)	
2042862	BH25 1.00 SOIL	29/07/22	GJ 250ml x2, GJ 60ml, PT 1L	VOC (7 days)	
2042863	BH27 1.00 SOIL	27/07/22	GJ 250ml x2, GJ 60ml, PT 1L	VOC (7 days)	
2042864	BH29 1.00 SOIL	27/07/22	GJ 250ml x2, GJ 60ml, PT 1L	VOC (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

#### **Soil Analysis Notes**

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis. The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Certificate Number 22-15280

Client Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ

- *Our Reference* 22-15280
- Client Reference PN224395
  - Order No ON34492
  - Contract Title Newport Quinn Phase 2
  - Description One Soil sample.
  - Date Received 08-Aug-22
  - Date Started 08-Aug-22
- Date Completed 16-Aug-22

Test Procedures Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Genord

Kirk Bridgewood General Manager



Issued: 16-Aug-22



			Lab No	2043009
		.Sa	mple ID	BH18
			Depth	1.00
		(	Other ID	
		Sam	ple Type	ES
		Sampl	ing Date	03/08/2022
		Sampli	ing Time	n/s
Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	4.5
Barium	DETSC 2301#	1.5	mg/kg	290
Beryllium	DETSC 2301#	0.2	mg/kg	0.3
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	5.9
Cadmium	DETSC 2301#	0.1	mg/kg	1.1
Chromium	DETSC 2301#	0.15	mg/kg	430
Copper	DETSC 2301#	0.2	mg/kg	61
Lead	DETSC 2301#	0.3	mg/kg	62
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Nickel	DETSC 2301#	1	mg/kg	40
Selenium	DETSC 2301#	0.5	mg/kg	1.9
Vanadium	DETSC 2301#	0.8	mg/kg	91
Zinc	DETSC 2301#	1	mg/kg	190
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic >EC10-EC12	DETSC 3521#	1.5	mg/kg	1.91
Aliphatic >EC12-EC16	DETSC 3521#	1.2	mg/kg	< 1.20
Aliphatic >EC16-EC21	DETSC 3521#	1.5	mg/kg	< 1.50
Aliphatic >EC21-EC35	DETSC 3521#	3.4	mg/kg	< 3.40
Aliphatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic >EC10-EC12	DETSC 3521#	0.9	mg/kg	< 0.90
Aromatic >EC12-EC16	DETSC 3521#	0.5	mg/kg	< 0.50
Aromatic >EC16-EC21	DETSC 3521#	0.6	mg/kg	< 0.60
Aromatic >EC21-EC35	DETSC 3521#	1.4	mg/kg	< 1.40
Aromatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00
TPH Ali/Aro Total C5-C35	DETSC 3521*	10	mg/kg	12.36



			Lab No	2043009
		.Sa	ample ID	BH18
			Depth	1.00
			Other ID	
		Sam	ple Type	ES
		Sampl	ing Date	03/08/2022
		Sampl	ing Time	n/s
Test	Method	LOD	Units	1-
VOCs		_		
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1.1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1 2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1 1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1 2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2 2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1 1 1-trichloroethane	DFTSC 3431	0.01	<u>8^י /8יי</u> mg/kg	< 0.01
1 1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1 2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1 2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1 3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans 1.2 dichloropropopo	DETSC 3431	0.01	mg/kg	< 0.01
1 1 2 trichloroothano	DETSC 3431	0.01	mg/kg	< 0.01
Totrachloroothylopo	DETSC 3431	0.01	mg/kg	< 0.01
1 2 dichloropropapa	DETSC 3431	0.01	mg/kg	< 0.01
Libromochloromothana	DETSC 3431	0.01	mg/kg	< 0.01
1.2 dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobonzono	DETSC 3431	0.01	mg/kg	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01
I,I,I,I,Z-tetrachioroethane	DETSC 3431	0.01	mg/kg	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01
Styropo	DETSC 3431	0.01	mg/kg	< 0.01
Bramafarm	DETSC 3431*	0.01	mg/kg	< 0.01
Biomoroni	DETSC 3431	0.01	mg/kg	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
2 chlorotoluono	DETSC 3431	0.01	mg/kg	< 0.01
2-chiorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimetnyibenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-cniorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
lert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01



## **Summary of Chemical Analysis Soil Samples**

· · · · · · · · · · · · · · · · · · ·				
			Lab No	2043009
		.Sa	ample ID	BH18
			Depth	1.00
		(	Other ID	
		Sam	ple Type	ES
		Sampl	ing Date	03/08/2022
		Sampli	ing Time	n/s
Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
МТВЕ	DETSC 3431*	0.01	mg/kg	< 0.01



## Summary of Asbestos Analysis Soil Samples

Lab No	Sample ID	Material Type	Result	Comment*	Analyst		
2043009	BH18 1.00	SOIL	Chrysotile	Chrysotile present as fibre bu	undles D Wilkinson		
Crocidolite = Blu	ue Asbestos, Amosite = E	Brown Asbestos, Chrysotile = Whi	ite Asbestos. Anthopl	hyllite, Actinolite and Tremolite are otl	her forms of Asbestos. Samples		
are analysed by	are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where						
a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in							
laboratory scop	e of accreditation.						



#### Information in Support of the Analytical Results

Our Ref 22-15280 Client Ref PN224395 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

Date		Date	Holding exceede		Inappropriate container for
Lab No	Sample ID	Sampled	Containers Received	tests	tests
2043009	BH18 1.00 SOIL	03/08/22	GJ 250ml x2, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

#### **Soil Analysis Notes**

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Issued: 19-Aug-22

Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	22-15764
Client Reference	PN224395
Order No	ON34492
Contract Title	Newport Quinn Phase 2
Description	One Soil sample.
Date Received	12-Aug-22
Date Started	12-Aug-22
Date Completed	19-Aug-22
Test Procedures	Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Certificate Number 22-15764

Emorel

Kirk Bridgewood General Manager





	Lab No			2045230
.Sample ID				
			Depth	2.00
		(	Other ID	
		Sam	ple Type	ES
		Sampl	ing Date	n/s
		Sampli	ing Time	n/s
Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	5.2
Barium	DETSC 2301#	1.5	mg/kg	240
Beryllium	DETSC 2301#	0.2	mg/kg	0.4
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.7
Cadmium	DETSC 2301#	0.1	mg/kg	0.6
Chromium	DETSC 2301#	0.15	mg/kg	14
Copper	DETSC 2301#	0.2	mg/kg	34
Lead	DETSC 2301#	0.3	mg/kg	29
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Nickel	DETSC 2301#	1	mg/kg	24
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	19
Zinc	DETSC 2301#	1	mg/kg	110
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic >EC10-EC12	DETSC 3521#	1.5	mg/kg	< 1.50
Aliphatic >EC12-EC16	DETSC 3521#	1.2	mg/kg	< 1.20
Aliphatic >EC16-EC21	DETSC 3521#	1.5	mg/kg	< 1.50
Aliphatic >EC21-EC35	DETSC 3521#	3.4	mg/kg	< 3.40
Aliphatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic >EC10-EC12	DETSC 3521#	0.9	mg/kg	< 0.90
Aromatic >EC12-EC16	DETSC 3521#	0.5	mg/kg	< 0.50
Aromatic >EC16-EC21	DETSC 3521#	0.6	mg/kg	< 0.60
Aromatic >EC21-EC35	DETSC 3521#	1.4	mg/kg	< 1.40
Aromatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00
TPH Ali/Aro Total C5-C35	DETSC 3521*	10	mg/kg	12.02



			Lab No	2045230
		.Sample ID		
			Depth	2.00
		(	Other ID	
		Sam	ple Type	ES
		Sampl	ing Date	n/s
		Sampli	ing Time	n/s
Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1.3.5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DFTSC 3431	0.01	mg/kø	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
		5.5±	סיי יסייי	10.01



			Lab No	2045230
		.Sa	ample ID	BH14A
			Depth	2.00
		(	Other ID	
		Sam	ple Type	ES
		Sampl	ing Date	n/s
		Sampl	ing Time	n/s
Test	Method	LOD	Units	
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01

# *i* DETS

## Summary of Asbestos Analysis Soil Samples

Our Ref 22-15764 Client Ref PN224395 Contract Title Newport Quinn Phase 2

Lab No	Sample ID	Material Type	Result	Comment*	Analyst	
2045230	BH14A 2.00	SOIL	NAD	none	Darryl Fletcher	
Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos.						

Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * not included in laboratory scope of accreditation.



#### Information in Support of the Analytical Results

*Our Ref* 22-15764 *Client Ref* PN224395 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

		Date			inappropriate container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	Holding time exceeded for tests	tests
2045230	BH14A 2.00 SOIL		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied, Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), ICP WS Boron (182 days), Metals ICP (182	

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

#### **Soil Analysis Notes**

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377. Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis. The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Issued: 30-Aug-22

Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	22-15981
Client Reference	PN224395
Order No	ON34492
Contract Title	Newport Quinn Phase 2
Description	2 Soil samples.
Date Received	16-Aug-22
Date Started	16-Aug-22
Date Completed	30-Aug-22
Test Procedures	Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Certificate Number 22-15981

Emorel

Kirk Bridgewood General Manager





	Lab N		Lab No	2046349	2046350
		.Sa	mple ID	BH04A	BH10
			Depth	0.60	0.50
		(	Other ID		
		Samj	ple Type	ES	ES
		Sampli	ing Date	10/08/2022	10/08/2022
		Sampli	ing Time	n/s	n/s
Test	Method	LOD	Units		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	6.2	4.1
Barium	DETSC 2301#	1.5	mg/kg	390	330
Beryllium	DETSC 2301#	0.2	mg/kg	0.5	0.4
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.5	0.5
Chromium	DETSC 2301#	0.15	mg/kg	11	18
Copper	DETSC 2301#	0.2	mg/kg	9.5	14
Lead	DETSC 2301#	0.3	mg/kg	14	24
Mercury	DETSC 2325#	0.05	mg/kg	0.07	< 0.05
Nickel	DETSC 2301#	1	mg/kg	20	20
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	16	30
Zinc	DETSC 2301#	1	mg/kg	78	90
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	0.08	0.12
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic >EC10-EC12	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50
Aliphatic >EC12-EC16	DETSC 3521#	1.2	mg/kg	< 1.20	2.68
Aliphatic >EC16-EC21	DETSC 3521#	1.5	mg/kg	< 1.50	2.21
Aliphatic >EC21-EC35	DETSC 3521#	3.4	mg/kg	< 3.40	< 3.40
Aliphatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00	10.42
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic >EC10-EC12	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90
Aromatic >EC12-EC16	DETSC 3521#	0.5	mg/kg	< 0.50	< 0.50
Aromatic >EC16-EC21	DETSC 3521#	0.6	mg/kg	3.55	1.32
Aromatic >EC21-EC35	DETSC 3521#	1.4	mg/kg	< 1.40	< 1.40
Aromatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00	< 10.00
TPH Ali/Aro Total C5-C35	DETSC 3521*	10	mg/kg	< 10.00	14.86



			Lab No	2046349	2046350
		.Sample ID			BH10
			Depth	0.60	0.50
			Other ID		
		Sam	ple Type	ES	ES
		Sampl	ing Date	10/08/2022	10/08/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
VOCS			4	0.04	0.01
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1 2 3-trichloropropane	DFTSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DFTSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DFTSC 3431	0.01	mg/kg	< 0.01	< 0.01
1.3.5-trimethylbenzene	DFTSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DFTSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DFTSC 3431	0.01	mg/kg	< 0.01	< 0.01
	22.000.01	2.01		0.01	0.01



			Lab No	2046349	2046350
		.Sa	ample ID	BH04A	BH10
			Depth	0.60	0.50
			Other ID		
		Sam	ple Type	ES	ES
		Sampl	ing Date	10/08/2022	10/08/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
МТВЕ	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg		< 0.1
Aniline	DETSC 3433*	0.1	mg/kg		< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg		< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg		< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg		< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg		< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg		< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg		< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg		< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg		< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg		< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg		< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg		< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg		< 0.1
2.4.6-Trichlorophenol	DETSC 3433	0.1	mg/kg		< 0.1
2.4.5-Trichlorophenol	DETSC 3433*	0.1	mg/kg		< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg		< 0.1
2-Nitroaniline	DFTSC 3433*	0.1	mg/kg		< 0.1
2.4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg		< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg		< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg		< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg		< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg		< 0.1
Dibenzofuran	DFTSC 3433	0.1	mg/kg		< 0.1
2.6-Dinitrotoluene	DFTSC 3433	0.1	mø/kø		< 0.1
2 3 4 6-Tetrachloronhenol	DFTSC 3/133*	0.1	mø/ka		< 0.1
Diethylphthalate	DFTSC 3433	0.1	mg/kg		< 0.1
	52100 5400	0.1	···ъ/ ייδ		× 0.1



Lab No					2046350
	.Sample ID				BH10
			Depth	0.60	0.50
			Other ID		
		Sam	ple Type	ES	ES
		Sampl	ing Date	10/08/2022	10/08/2022
		Sampl	ing Time	n/s	n/s
lest	Method	LOD	Units		0.4
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg		< 0.1
Fluorene	DETSC 3433	0.1	mg/kg		< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg		< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg		< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg		< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg		< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg		< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg		< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg		< 0.1
Anthracene	DETSC 3433	0.1	mg/kg		< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg		< 0.1
Fluoranthene	DETSC 3433	0.1	mg/kg		< 0.1
Pyrene	DETSC 3433	0.1	mg/kg		< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg		< 0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg		< 0.1
Chrysene	DETSC 3433	0.1	mg/kg		< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg		< 0.1
Di-n-octylphthalate	DETSC 3433*	0.1	mg/kg		< 0.1
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg		< 0.1
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg		< 0.1
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg		< 0.1
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg		< 0.1
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg		< 0.1
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg		< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg		< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg		< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg		< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg		< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg		< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg		< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg		< 0.1



## Summary of Asbestos Analysis Soil Samples

Our Ref 22-15981 Client Ref PN224395 Contract Title Newport Quinn Phase 2

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2046349	BH04A 0.60	SOIL	NAD	none	Ben Rose
2046350	BH10 0.50	SOIL	NAD	none	Ben Rose

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * not included in laboratory scope of accreditation.



#### Information in Support of the Analytical Results

Our Ref 22-15981 Client Ref PN224395 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

		0	•	Holaing time	inappropriate
		Date		exceeded for	container for
Lab No	Sample ID	Sampled	Containers Received	tests	tests
2046349	BH04A 0.60 SOIL	10/08/22	GJ 250ml x2, GJ 60ml, PT 1L		
2046350	BH10 0.50 SOIL	10/08/22	GJ 250ml x2, GJ 60ml, PT 1L		
Kaun C Class	D. Diastia I. Jaz T. Tub				

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

#### **Soil Analysis Notes**

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Certificate Number 22-16491

Client Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ

- *Our Reference* 22-16491
- Client Reference PN224395
  - Order No ON34492
  - Contract Title Newport Quinn Phase 2
  - Description One Soil sample.
  - Date Received 22-Aug-22
  - Date Started 23-Aug-22
- Date Completed 26-Aug-22

Test Procedures Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Jemord

Kirk Bridgewood General Manager



Issued: 26-Aug-22



			2049007	
		.Sa	BH11	
			Depth	2.00
			Other ID	4
		Sam	ple Type	ES
		Sampl	ing Date	16/08/2022
		Sampl	ing Time	n/s
Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	8.0
Barium	DETSC 2301#	1.5	mg/kg	57
Beryllium	DETSC 2301#	0.2	mg/kg	0.7
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	24
Copper	DETSC 2301#	0.2	mg/kg	17
Lead	DETSC 2301#	0.3	mg/kg	7.1
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Nickel	DETSC 2301#	1	mg/kg	26
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	55
Zinc	DETSC 2301#	1	mg/kg	64
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic >EC10-EC12	DETSC 3521#	1.5	mg/kg	1.70
Aliphatic >EC12-EC16	DETSC 3521#	1.2	mg/kg	2.42
Aliphatic >EC16-EC21	DETSC 3521#	1.5	mg/kg	< 1.50
Aliphatic >EC21-EC35	DETSC 3521#	3.4	mg/kg	< 3.40
Aliphatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic >EC10-EC12	DETSC 3521#	0.9	mg/kg	< 0.90
Aromatic >EC12-EC16	DETSC 3521#	0.5	mg/kg	< 0.50
Aromatic >EC16-EC21	DETSC 3521#	0.6	mg/kg	1.46
Aromatic >EC21-EC35	DETSC 3521#	1.4	mg/kg	< 1.40
Aromatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00
TPH Ali/Aro Total C5-C35	DETSC 3521*	10	mg/kg	14.21



			Lab No	2049007
		.Sa	BH11	
			Depth	2.00
			Other ID	4
		Sam	ple Type	ES
		Sampl	ing Date	16/08/2022
		Sampl	ing Time	
Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1.1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1.2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1.1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1.2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2.2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1.1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1.2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1.2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1.3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1.3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1.1.2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1.3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01



······································				
			Lab No	2049007
		.Sa	mple ID	BH11
			Depth	2.00
		(	Other ID	4
		Sam	ple Type	ES
		Sampl	ing Date	16/08/2022
		Sampli	ing Time	n/s
Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01

# *i* DETS

## Summary of Asbestos Analysis Soil Samples

Our Ref 22-16491 Client Ref PN224395 Contract Title Newport Quinn Phase 2

Lab No	Sample ID	Material Type	Result	Comment*	Analyst		
2049007	BH11 4 2.00	SOIL	NAD	none	Vicky Convery		
Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos.							
samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -							

not included in laboratory scope of accreditation.


### Information in Support of the Analytical Results

Our Ref 22-16491 Client Ref PN224395 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

		Data		Holding time	Inappropriate
		Date		exceeded for	container for
Lab No	Sample ID	Sampled	Containers Received	tests	tests
2049007	BH11 2.00 SOIL	16/08/22	GJ 250ml, GJ 60ml, PT 500ml		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

#### **Soil Analysis Notes**

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Issued: 09-Sep-22

Certificate Number	22-17090
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	22-17090
Client Reference	PN224395
Order No	ON34492
Contract Title	Newport Quinn Phase 2
Description	2 Soil samples.
Date Received	31-Aug-22
Date Started	31-Aug-22
Date Completed	09-Sep-22
Test Procedures	Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood General Manager





### Summary of Chemical Analysis Soil Samples

	Lab No			2052062	2052063
		.Sa	imple ID	BH09	BH20
			Depth	0.30	1.00
		(	Other ID		
		Sam	ple Type	ES	ES
		Sampl	ing Date	10/08/2022	10/08/2022
		Sampli	ing Time	n/s	n/s
Test	Method	LOD	Units		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	3.4	21
Barium	DETSC 2301#	1.5	mg/kg	560	560
Beryllium	DETSC 2301#	0.2	mg/kg	0.3	0.5
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	3.9	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	1.3	0.4
Chromium	DETSC 2301#	0.15	mg/kg	210	15
Copper	DETSC 2301#	0.2	mg/kg	46	9.5
Lead	DETSC 2301#	0.3	mg/kg	55	16
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	22	21
Selenium	DETSC 2301#	0.5	mg/kg	1.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	77	24
Zinc	DETSC 2301#	1	mg/kg	200	66
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic >EC10-EC12	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50
Aliphatic >EC12-EC16	DETSC 3521#	1.2	mg/kg	< 1.20	< 1.20
Aliphatic >EC16-EC21	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50
Aliphatic >EC21-EC35	DETSC 3521#	3.4	mg/kg	< 3.40	< 3.40
Aliphatic C5-C35	DETSC 3521*	10	mg/kg	< 10.00	< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic >EC10-EC12	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90
Aromatic >EC12-EC16	DETSC 3521#	0.5	mg/kg	< 0.50	< 0.50
Aromatic >EC16-EC21	DETSC 3521#	0.6	mg/kg	< 0.60	< 0.60
Aromatic >EC21-EC35	DETSC 3521#	1.4	mg/kg	12.49	< 1.40
Aromatic C5-C35	DETSC 3521*	10	mg/kg	14.76	< 10.00
TPH Ali/Aro Total C5-C35	DETSC 3521*	10	mg/kg	23.28	11.48



### Summary of Chemical Analysis Soil Samples

		Lab No		2052062	2052063
		.Sa	ample ID	BH09	BH20
			Depth	0.30	1.00
			Other ID		
		Sam	ple Type	ES	ES
		Sampl	ing Date	10/08/2022	10/08/2022
Tost	Mathad	Sampi		n/s	n/s
	wiethou	LOD	Units		
Vipyl Chloride	DETSC 3/131	0.01	ma/ka	< 0.01	< 0.01
1 1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1 2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1 1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1 2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2 2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1 1 1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1 1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 2421	0.01	mg/kg	< 0.01	< 0.01
1 3 dichloroothano	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroothylono	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1 2 dichloropropano	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomothano	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromothana	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans 1.2 disbloropropopo	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1 1 2 trichloroothana	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Totrachloroothylopo	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Lis-uciliolopropalle	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1.2 dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoetnane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-letrachioroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
C-Xylefie	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bramafarm	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Biomoroni	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromohonzono	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2 chlorotoluces	DETSC 3431	0.01	mg/Kg	< 0.01	< 0.01
2-ciliorololuene	DETSC 3431	0.01	mg/Kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/Kg	< 0.01	< 0.01
	DETSC 3431	0.01	mg/Kg	< 0.01	< 0.01
i ert-butyibenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01



### Summary of Chemical Analysis Soil Samples

	Lab No			2052062	2052063
		.Sa	ample ID	BH09	BH20
			Depth	0.30	1.00
			Other ID		
		Sam	ple Type	ES	ES
		Sampl	ing Date	10/08/2022	10/08/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
МТВЕ	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01



### Summary of Asbestos Analysis Soil Samples

Our Ref 22-17090 Client Ref PN224395 Contract Title Newport Quinn Phase 2

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2052062	BH09 0.30	SOIL	NAD	none	Ben Rose
2052063	BH20 1.00	SOIL	NAD	none	Ben Rose

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * not included in laboratory scope of accreditation.



inannronriate

### Information in Support of the Analytical Results

Our Ref 22-17090 Client Ref PN224395 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

		Date			container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	Holding time exceeded for tests	tests
2052062	BH09 0.30 SOIL	10/08/22	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days),	
				EPH/Aliphatic/Aromatic (14 days), VOC (7 days)	
2052063	BH20 1.00 SOIL	10/08/22	GJ 250ml x2, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days),	
				EPH/Aliphatic/Aromatic (14 days). VOC (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

#### **Soil Analysis Notes**

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

# **APPENDIX 10**

Laboratory Test Results - Contamination (Groundwater)



Issued: 26-Sep-22

Certificate Number 22-18372

Client Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ

- Our Reference 22-18372
- Client Reference PN214233
  - Order No ON34492
  - Contract Title Newport Quinn Phase 2
  - Description 2 Water samples.
  - Date Received 16-Sep-22
  - Date Started 16-Sep-22
- Date Completed 26-Sep-22

Test Procedures Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Jemord

Kirk Bridgewood General Manager





	Lab No			2058943	2058944
		.Sa	ample ID	BH01	BH06
			Depth	0.30	0.50
			Other ID		
		Sam	ple Type	EW	EW
		Sampl	ing Date	13/09/2022	13/09/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.1	0.52
Barium, Dissolved	DETSC 2306	0.26	ug/l	640	220
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1
Boron, Dissolved	DETSC 2306*	12	ug/l	31	180
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03
Calcium, Dissolved	DETSC 2306	0.09	mg/l	65	72
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4	1.0
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	0.8	2.4
Selenium. Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25
Vanadium. Dissolved	DETSC 2306	0.6	ug/l	2.2	< 0.6
Zinc. Dissolved	DETSC 2306	1.3	ug/l	6.7	4.0
Inorganics	21.00 2000		<u></u>	•	
pH	DFTSC 2008		nH	72	73
Dissolved Organic Carbon	DETSC 2005	2	mø/l	< 2.0	23
Petroleum Hydrocarbons	021002000	-		1210	2.5
Aliphatic C5-C6	DETSC 3322	01	ιισ/I	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	رون ارونا	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	رون ارونا	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	رون ارونا	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ισ/I	< 1.0	3.4
Aliphatic C16-C21	DETSC 3072*	1	ug/1 μσ/Ι	< 1.0	16
Aliphatic C21-C35	DETSC 3072*	1	ug/1 μσ/Ι	< 1.0	10
Aliphatic C5-C35	DETSC 3072*	10	ug/1	< 10	110
Aromatic C5-C7	DETSC 3322	0.1	ug/1	< 0.1	< 0.1
Aromatic C7-C8	DETSC 2222	0.1	ug/i	< 0.1	< 0.1
Aromatic C8-C10	DETSC 2222	0.1	ug/i	< 0.1	< 0.1
Aromatic C10-C12	DETSC 2072*	0.1	ug/1	< 1.0	< 1.0
Aromatic C12-C16	DETSC 2072*	1	ug/i	< 1.0	< 1.0
Aromatic C12-C10	DETSC 3072*	1	ug/i	< 1.0	< 1.0
Aromatic C21 C25	DETSC 3072*	1	ug/i	< 1.0	< 1.0
Aromatic CE C2E	DETSC 3072*	10	ug/i	< 1.0	< 1.0
	DETSC 3072*	10	ug/i	< 10	< 10
	DETSC 3072*	10	ug/I	< 10	110
PARS	DETCODODA	0.05		10.05	10.05
Accompthylene	DETSC 3304	0.05	ug/l	< 0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01



Our Ref 22-18372 Client Ref PN214233 Contract Title Newport Quinn Phase 2

			Lab No	2058943	2058944
		.Sa	ample ID	BH01	BH06
			Depth	0.30	0.50
			Other ID		
		Sam	ple Type	EW	EW
		Sampl	ing Date	13/09/2022	13/09/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
Anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(a)anthracene	DETSC 3304*	0.01	ug/l	< 0.01	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	< 0.20	< 0.20

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	Lab No			2058943	2058944
		.S	ample ID	BH01	BH06
			Depth	0.30	0.50
			Other ID		
		Sam	ple Type	EW	EW
		Samp	ling Date	13/09/2022	13/09/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
VOCs					
Dichlorodifluoromethane	DETSC 3432	1	ug/l	< 1	< 1
Chloromethane	DETSC 3432	1	ug/l	< 1	< 1
Vinyl Chloride	DETSC 3432	1	ug/l	< 1	< 1
Bromomethane	DETSC 3432	1	ug/l	< 1	< 1
Chloroethane	DETSC 3432	1	ug/l	< 1	< 1
Trichlorofluoromethane	DETSC 3432*	1	ug/l	< 1	< 1
1,1-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
Methylene Chloride	DETSC 3432*	27	ug/l	< 27	< 27
Trans-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
1,1-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Cis-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
2,2-dichloropropane	DETSC 3432*	2	ug/l	< 2	< 2
Bromochloromethane	DETSC 3432	4	ug/l	< 4	< 4
Chloroform	DETSC 3432	1	ug/l	< 1	< 1
1,1,1-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1
1,1-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
Carbon tetrachloride	DETSC 3432	1	ug/l	< 1	< 1
Benzene	DETSC 3432	1	ug/l	< 1	< 1
1,2-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Trichloroethylene	DETSC 3432*	1	ug/l	< 1	< 1
1,2-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1
Dibromomethane	DETSC 3432	1	ug/l	< 1	< 1
Bromodichloromethane	DETSC 3432	4	ug/l	< 4	< 4
cis-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
Toluene	DETSC 3432	1	ug/l	< 1	< 1
trans-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
1,1,2-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Tetrachloroethylene	DETSC 3432	1	ug/l	< 1	< 1
1,3-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1
Dibromochloromethane	DETSC 3432	1	ug/l	< 1	< 1
1,2-dibromoethane	DETSC 3432	1	ug/l	< 1	< 1
Chlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
1,1,1,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1	< 1
Ethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
m+p-Xylene	DETSC 3432	2	ug/l	< 2	< 2
o-Xylene	DETSC 3432	1	ug/l	< 1	< 1
Styrene	DETSC 3432	1	ug/l	< 1	< 1
Bromoform	DETSC 3432	1	ug/l	< 1	< 1
Isopropylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1,1,2,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1	< 1
Bromobenzene	DETSC 3432	1	ug/l	< 1	< 1



	Lab No				2058944
		.S	ample ID	BH01	BH06
			Depth	0.30	0.50
			Other ID		
		Sam	ple Type	EW	EW
		Samp	ling Date	13/09/2022	13/09/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
1,2,3-trichloropropane	DETSC 3432	1	ug/l	< 1	< 1
n-propylbenzene	DETSC 3432	1	ug/l	< 1	< 1
2-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1
1,3,5-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
4-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1
Tert-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1,2,4-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
sec-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
p-isopropyltoluene	DETSC 3432	1	ug/l	< 1	< 1
1,3-dichlorobenzene	DETSC 3432	2	ug/l	< 2	< 2
1,4-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
n-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1,2-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
1.2-dibromo-3-chloropropane	DETSC 3432	1	ug/l	< 1	< 1
1.2.4-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
Hexachlorobutadiene	DETSC 3432	1	ug/l	< 1	< 1
1.2.3-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
МТВЕ	DETSC 3432*	1	ug/l	< 1	< 1
SVOCs	21.000.01		v.8/ ·		
Phenol	DETSC 3434*	1	ug/l	< 1.0	
Aniline	DETSC 3434*	1	ug/l	< 1.0	
2-Chlorophenol	DETSC 3434*	1	ug/l	< 1.0	
Benzyl Alcohol	DETSC 3434*	1	ug/l	< 1.0	
2-Methylphenol	DETSC 3434*	1	ug/l	< 1.0	
Bis(2-chloroisopropyl)ether	DETSC 3434*	1	ແຮ/I	< 1.0	
3&4-Methylphenol	DETSC 3434*	1	ισ/I	< 1.0	
Bis(2-chloroethoxy)methane	DETSC 3434*	1	ισ/I	< 1.0	
2 4-Dimethylphenol	DETSC 3434*	1	ισ/I	< 1.0	
2 4-Dichlorophenol	DETSC 3434*	1	ισ/I	< 1.0	
1 2 4-Trichlorobenzene	DETSC 3434*	1	ισ/I	< 1.0	
4-Chloro-3-methylphenol	DETSC 3434*	1	ισ/I	< 1.0	
2-Methylnanhthalene	DETSC 3434*	1	ισ/I	< 1.0	
Hexachlorocyclopentadiene	DETSC 3434*	1	ug/1	< 1.0	
2 4 6-Trichloronhenol	DETSC 3434*	1	ug/1	< 1.0	
2 4 5-Trichlorophenol	DETSC 3434	1	ug/i	< 1.0	
2-Chloronanhthalene	DETSC 2424*	1	ug/i	< 1.0	
2-Nitroaniline	DETSC 3434	1	ug/i	< 1.0	
	DETSC 3434*	1	ug/i	< 1.0	
2 Nitroapilino	DETSC 3434*	1	ug/i	< 1.0	
4 Nitrophonol	DETSC 3434*	1	ug/i	< 1.0	
Dibonzofuran	DETSC 3434*	1	ug/i	< 1.0	
2 6 Dinitrotoluono	DETSC 3434*	1	ug/i	< 1.0	
z,o-Dinitrotoluene	DEISC 3434*	1	ug/l	< 1.0	



	Lab No			2058943	2058944
		.Sa	ample ID	BH01	BH06
			Depth	0.30	0.50
			Other ID		
		Sam	ple Type	EW	EW
		Samp	ling Date	13/09/2022	13/09/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
2,3,4,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 1.0	
Diethylphthalate	DETSC 3434*	1	ug/l	< 1.0	
4-Chlorophenylphenylether	DETSC 3434*	1	ug/l	< 1.0	
4-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	
Diphenylamine	DETSC 3434*	1	ug/l	< 1.0	
4-Bromophenylphenylether	DETSC 3434*	1	ug/l	< 1.0	
Hexachlorobenzene	DETSC 3434*	1	ug/l	< 1.0	
Bis(2-ethylhexyl)ester	DETSC 3434*	1	ug/l	< 1.0	
Pentachlorophenol	DETSC 3434*	1	ug/l	< 1.0	
Di-n-butylphthalate	DETSC 3434*	1	ug/l	< 1.0	
Butylbenzylphthalate	DETSC 3434*	1	ug/l	< 1.0	
Bis(2-ethylhexyl)phthalate	DETSC 3434*	1	ug/l	< 1.0	
Di-n-octylphthalate	DETSC 3434*	1	ug/l	< 1.0	
1,4-Dinitrobenzene	DETSC 3434*	1	ug/l	< 1.0	
Dimethylphthalate	DETSC 3434*	1	ug/l	< 1.0	
1,3-Dinitrobenzene	DETSC 3434*	1	ug/l	< 1.0	
2,3,5,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 1.0	
Azobenzene	DETSC 3434*	1	ug/l	< 1.0	
Carbazole	DETSC 3434*	1	ug/l	< 1.0	
1-Methylnaphthalene	DETSC 3434*	1	ug/l	< 1.0	



### Information in Support of the Analytical Results

Our Ref 22-18372 Client Ref PN214233 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

		-	-		Inappropriate
		Date			container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	Holding time exceeded for tests	tests
2058943	BH01 0.30 WATER	13/09/22	GB 1L x2, GV x2, PB 1L x2	pH/Cond/TDS (1 days)	
2058944	BH06 0.50 WATER	13/09/22	GB 1L x2, GV x2, PB 1L x2	pH/Cond/TDS (1 days)	
Key: G-Glas	s P-Plastic B-Bottle V-Vial				
DETS canno	ot be held responsible for the i	integrity of sar	nples received whereby the labo	ratory did not undertake the sampling. In this instan	ce samples received may
be deviatin	g. Deviating Sample criteria ar	e based on Bri	itish and International standards	and laboratory trials in conjunction with the UKAS ne	ote 'Guidance on
Deviating S	amples'. All samples received	are listed abov	ve. However, those samples that	have additional comments in relation to hold time, i	nappropriate containers
etc are devi	iating due to the reasons state	ed. This means	that the analysis is accredited w	here applicable, but results may be compromised du	e to sample deviations. If
no sampled	l date (soils) or date+time (wa	ters) has been	supplied then samples are devia	ating. However, if you are able to supply a sampled d	ate (and time for waters)
this will pre	event samples being reported	as deviating w	here specific hold times are not	exceeded and where the container supplied is suitab	le.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Certificate Number 22-19512

Client Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ

- *Our Reference* 22-19512
- Client Reference PC224395
  - Order No ON34492
  - Contract Title Newport Quinn Phase 2
  - Description 4 Water samples.
  - Date Received 30-Sep-22
  - Date Started 30-Sep-22
- Date Completed 07-Oct-22

Test Procedures Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Jemord

Kirk Bridgewood General Manager



07-Oct-22

Issued:



	Lab No			2065525	2065526	2065527	2065528
		.Sa	ample ID	BH09	BH10	BH17	BH19
			Depth				
			Other ID				
		Sam	ple Type	EW	EW	EW	EW
		Sampl	ing Date	26/09/2022	26/09/2022	26/09/2022	26/09/2022
		Sampl	ing Time	n/s	n/s	n/s	n/s
Test	Method	LOD	Units				
Metals							
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.9	1.1	1.2	3.7
Barium, Dissolved	DETSC 2306	0.26	ug/l	990	390	290	190
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Boron, Dissolved	DETSC 2306*	12	ug/l	520	43	76	610
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	0.14	< 0.03	< 0.03
Calcium, Dissolved	DETSC 2306	0.09	mg/l	110	53	42	90
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.7	2.5	2.1	3.1
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	0.70	1.6	0.14
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	0.03	0.04	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	11	4.2	3.0	7.4
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.1	13	1.9	0.71
Vanadium. Dissolved	DETSC 2306	0.6	ug/l	< 0.6	1.6	2.3	< 0.6
Zinc. Dissolved	DETSC 2306	1.3	ug/l	36	17	27	17
Inorganics			- 8/ -				
н	DETSC 2008		рH	6.3	6.7	7.1	6.8
Dissolved Organic Carbon	DETSC 2085	2	mg/l	40	7.2	3.1	12
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	13	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	17	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ر <u>هم</u> ارهم	20	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	20	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	رهم ارهما	71	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	48	16	10	9.8
Aromatic C12-C16	DETSC 3072*	1	ug/l	110	32	22	18
Aromatic C16-C21	DETSC 3072*	1	ug/l	120	34	23	18
Aromatic C21-C35	DETSC 3072*	1	ug/l	58	10	74	6.0
Aromatic C5-C35	DETSC 3072*	10	ر <u>هم</u> ارهم	340	91	63	52
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	ug/l	410	91	64	52
PAHs	DE136 3072	10	48/1	410	51	04	52
Nanhthalene	DETSC 3304	0.05	ιισ/I	0 34	0.06	< 0.05	0.05
Acenaphthylene	DETSC 3304	0.01	-√6/ 11σ/l	0.04	0.00	0.05	0.03
Acenaphthene	DETSC 3304	0.01	י∖ <u>ھ∾</u> ا∖ترا	0.20	0.00	0.05	0.03
Fluorene	DETSC 3304	0.01	110/I	0.15	0.00	0.00	0.04
Phenanthrene	DETSC 3304	0.01	110/I	0.13	0.05	0.00	0.05
i nenunun ene	01130 3304	0.01	ug/I	0.52	0.10	0.13	0.14



			Lab No	2065525	2065526	2065527	2065528
		.Sa	mple ID	BH09	BH10	BH17	BH19
			Depth				
		(	Other ID				
		Sam	ple Type	EW	EW	EW	EW
		Sampl	ing Date	26/09/2022	26/09/2022	26/09/2022	26/09/2022
		Sampl	ing Time	n/s	n/s	n/s	n/s
Test	Method	LOD	Units				
Anthracene	DETSC 3304	0.01	ug/l	0.06	0.04	0.03	0.02
Fluoranthene	DETSC 3304	0.01	ug/l	0.18	0.11	0.10	0.07
Pyrene	DETSC 3304	0.01	ug/l	0.13	0.10	0.14	0.05
Benzo(a)anthracene	DETSC 3304*	0.01	ug/l	0.07	0.04	0.03	0.01
Chrysene	DETSC 3304	0.01	ug/l	0.04	0.03	0.02	0.02
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.05	0.03	0.02	0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.02	0.01	0.01	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.04	0.02	0.02	0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	0.03	0.02	0.02	0.02
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.02	0.02	0.02	0.01
PAH Total	DETSC 3304	0.2	ug/l	1.9	0.91	0.71	0.54



			Lab No	2065525	2065526
		.Sa	ample ID	BH09	BH10
			Depth		
			Other ID		
		Sam	ple Type	EW	EW
		Samp	ing Date	26/09/2022	26/09/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
VOCs					
Dichlorodifluoromethane	DETSC 3432	1	ug/l	< 1	< 1
Chloromethane	DETSC 3432	1	ug/l	< 1	< 1
Vinyl Chloride	DETSC 3432	1	ug/l	< 1	< 1
Bromomethane	DETSC 3432	1	ug/l	< 1	< 1
Chloroethane	DETSC 3432	1	ug/l	< 1	< 1
Trichlorofluoromethane	DETSC 3432*	1	ug/l	< 1	< 1
1,1-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
Methylene Chloride	DETSC 3432*	27	ug/l	< 27	< 27
Trans-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
1,1-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Cis-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
2,2-dichloropropane	DETSC 3432*	2	ug/l	< 2	< 2
Bromochloromethane	DETSC 3432	4	ug/l	< 4	< 4
Chloroform	DETSC 3432	1	ug/l	< 1	< 1
1.1.1-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1
1,1-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
Carbon tetrachloride	DETSC 3432	1	ug/l	< 1	< 1
Benzene	DETSC 3432	1	ug/l	< 1	< 1
1,2-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Trichloroethylene	DETSC 3432*	1	ug/l	< 1	< 1
1,2-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1
Dibromomethane	DETSC 3432	1	ug/l	< 1	< 1
Bromodichloromethane	DETSC 3432	4	ug/l	< 4	< 4
cis-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
Toluene	DETSC 3432	1	ug/l	< 1	< 1
trans-1.3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
1.1.2-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Tetrachloroethylene	DETSC 3432	1	ug/l	< 1	< 1
1.3-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1
Dibromochloromethane	DETSC 3432	1	ug/l	< 1	< 1
1.2-dibromoethane	DETSC 3432	1	ug/l	< 1	< 1
Chlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
1.1.1.2-tetrachloroethane	DETSC 3432	1	ug/l	< 1	< 1
Ethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
m+p-Xvlene	DETSC 3432	2	ug/l	< 2	< 2
o-Xvlene	DETSC 3432	1	ug/l	< 1	< 1
Styrene	DETSC 3432	1	ug/l	< 1	< 1
Bromoform	DETSC 3432	1	ug/l	< 1	< 1
Isopropylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1.1.2.2-tetrachloroethane	DETSC 3432	1	י⊿∾ ا\ت¢ا	< 1	< 1
Bromobenzene	DETSC 3432	1	ug/l	< 1	< 1



			Lab No	2065525	2065526
		.Sa	ample ID	BH09	BH10
			Depth		
			Other ID		
		Sam	ple Type	EW	EW
		Samp	ing Date	26/09/2022	26/09/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
1,2,3-trichloropropane	DETSC 3432	1	ug/l	< 1	< 1
n-propylbenzene	DETSC 3432	1	ug/l	< 1	< 1
2-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1
1.3.5-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
4-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1
Tert-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1.2.4-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
sec-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
p-isopropyltoluene	DETSC 3432	1	ug/l	< 1	< 1
1.3-dichlorobenzene	DETSC 3432	2	ug/l	< 2	< 2
1.4-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
n-butvlbenzene	DETSC 3432	1	ug/l	< 1	< 1
1.2-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
1.2-dibromo-3-chloropropane	DETSC 3432	1	ug/l	< 1	< 1
1.2.4-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
Hexachlorobutadiene	DETSC 3432	1	ug/l	< 1	< 1
1.2.3-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
MTBE	DETSC 3432*	1	ug/l	< 1	< 1
SVOCs			- 6/ -		
Phenol	DFTSC 3434*	1	ug/l	< 1.0	< 1.0
Aniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Chlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Benzyl Alcohol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Methylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-chloroisopropyl)ether	DETSC 3434*	1	ug/l	< 1.0	< 1.0
3&4-Methylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-chloroethoxy)methane	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2.4-Dimethylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2.4-Dichlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1.2.4-Trichlorobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Chloro-3-methylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Methylnaphthalene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Hexachlorocyclopentadiene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2.4.6-Trichlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2.4.5-Trichlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Chloronaphthalene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4-Dinitrotoluene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
3-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Nitrophenol	DETSC 3434*	- 1	ug/l	< 1.0	< 1.0
Dibenzofuran	DETSC 3434*	- 1	ug/l	< 1.0	< 1.0
2,6-Dinitrotoluene	DETSC 3434*	1	ug/l	< 1.0	< 1.0



			Lab No	2065525	2065526
		.Sa	ample ID	BH09	BH10
			Depth		
			Other ID		
		Sam	ple Type	EW	EW
		Samp	ing Date	26/09/2022	26/09/2022
		Sampl	ing Time	n/s	n/s
Test	Method	LOD	Units		
2,3,4,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Diethylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Chlorophenylphenylether	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Diphenylamine	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Bromophenylphenylether	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Hexachlorobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-ethylhexyl)ester	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Pentachlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Di-n-butylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Butylbenzylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-ethylhexyl)phthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Di-n-octylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1,4-Dinitrobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Dimethylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1,3-Dinitrobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,3,5,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Azobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Carbazole	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1-Methylnaphthalene	DETSC 3434*	1	ug/l	< 1.0	< 1.0



Inappropriate

### Information in Support of the Analytical Results

Our Ref 22-19512 Client Ref PC224395 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

		Date			container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	Holding time exceeded for tests	tests
2065525	BH09 WATER	26/09/22	GB 1L x2, GV x2, PB 1L x2	pH/Cond/TDS (1 days)	
2065526	BH10 WATER	26/09/22	GB 1L x2, GV x2, PB 1L x2	pH/Cond/TDS (1 days)	
2065527	BH17 WATER	26/09/22	GB 1L x2, GV x2, PB 1L x2	pH/Cond/TDS (1 days)	
2065528	BH19 WATER	26/09/22	GB 1L x2, GV x2, PB 1L x2	pH/Cond/TDS (1 days)	

Key: G-Glass P-Plastic B-Bottle V-Vial

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Certificate Number 22-20262

Client Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ

- Our Reference 22-20262
- Client Reference PN224395
  - Order No ON34492
  - Contract Title Newport Quinn Phase 2
  - Description 4 Water samples.
  - Date Received 10-Oct-22
  - Date Started 10-Oct-22
- Date Completed 17-Oct-22

Test Procedures Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

removed

Kirk Bridgewood General Manager



Issued: 17-Oct-22



	Lab No				2069358	2069359	2069360
		.Sa	ample ID	BH23	BH25	BH28	BH30
			Depth	5.00-6.00	2.00-3.00	3.00-4.00	2.00-3.00
			Other ID				
		Sam	ple Type	EW	EW	EW	EW
		Sampl	ing Date	05/10/2022	05/10/2022	05/10/2022	05/10/2022
		Sampl	ing Time	n/s	n/s	n/s	n/s
Test	Method	LOD	Units				
Metals							
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.70	1.3	0.27	0.79
Barium, Dissolved	DETSC 2306	0.26	ug/l	160	680	110	250
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Boron, Dissolved	DETSC 2306*	12	ug/l	38	2100	56	220
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	0.09
Calcium, Dissolved	DETSC 2306	0.09	mg/l	40	85	38	50
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.64	< 0.25	1.4	2.1
Copper, Dissolved	DETSC 2306	0.4	ug/l	3.4	1.6	1.6	3.1
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	< 0.09	< 0.09
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	0.02	< 0.01	0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	1.6	5.3	0.7	1.4
Selenium, Dissolved	DETSC 2306	0.25	ug/l	7.4	0.67	0.34	0.83
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	1.4	< 0.6	0.7	2.8
Zinc, Dissolved	DETSC 2306	1.3	ug/l	5.7	11	5.4	21
Inorganics			0,				
pH	DETSC 2008		pН	7.6	6.9	7.5	7.5
Dissolved Organic Carbon	DETSC 2085	2	mg/l	4.4	13	6.9	3.7
Petroleum Hydrocarbons			0,				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10
PAHs							
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	0.01	< 0.01	< 0.01	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01



			Lab No	2069357	2069358	2069359	2069360
		.Sa	mple ID	BH23	BH25	BH28	BH30
			Depth	5.00-6.00	2.00-3.00	3.00-4.00	2.00-3.00
		C	Other ID				
		Samp	ole Type	EW	EW	EW	EW
		Sampli	ng Date	05/10/2022	05/10/2022	05/10/2022	05/10/2022
		Sampli	ng Time	n/s	n/s	n/s	n/s
Test	Method	LOD	Units				
Anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	0.01	< 0.01	< 0.01
Pyrene	DETSC 3304	0.01	ug/l	< 0.01	0.03	< 0.01	< 0.01
Benzo(a)anthracene	DETSC 3304*	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	< 0.20	< 0.20	< 0.20	< 0.20



			Lab No	2069358	2069359	2069360
		.Sa	ample ID	BH25	BH28	BH30
			Depth	2.00-3.00	3.00-4.00	2.00-3.00
			Other ID			
		Sam	ple Type	EW	EW	EW
		Samp	ing Date	05/10/2022	05/10/2022	05/10/2022
		Sampl	ing Time	n/s	n/s	n/s
Test	Method	LOD	Units			
VOCs						
Dichlorodifluoromethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Chloromethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Vinyl Chloride	DETSC 3432	1	ug/l	< 1	< 1	< 1
Bromomethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Chloroethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Trichlorofluoromethane	DETSC 3432*	1	ug/l	< 1	< 1	< 1
1,1-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1	< 1
Methylene Chloride	DETSC 3432*	27	ug/l	< 27	< 27	< 27
Trans-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1,1-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Cis-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1	< 1
2,2-dichloropropane	DETSC 3432*	2	ug/l	< 2	< 2	< 2
Bromochloromethane	DETSC 3432	4	ug/l	< 4	< 4	< 4
Chloroform	DETSC 3432	1	ug/l	< 1	< 1	< 1
1.1.1-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
1.1-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1	< 1
Carbon tetrachloride	DETSC 3432	1	ug/l	< 1	< 1	< 1
Benzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1,2-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Trichloroethylene	DETSC 3432*	1	ug/l	< 1	< 1	< 1
1.2-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Dibromomethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Bromodichloromethane	DETSC 3432	4	ug/l	< 4	< 4	< 4
cis-1.3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1	< 1
Toluene	DETSC 3432	1	ug/l	< 1	< 1	< 1
trans-1.3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1.1.2-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Tetrachloroethylene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1.3-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Dibromochloromethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
1.2-dibromoethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Chlorobenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1.1.1.2-tetrachloroethane	DETSC 3432	1	ug/l	< 1	< 1	< 1
Ethylbenzene	DETSC 3432	1	 .ug/l	< 1	< 1	< 1
m+p-Xylene	DETSC 3432	2	 .ug/l	< 2	< 2	< 2
o-Xylene	DETSC 3432	1	 .ug/l	< 1	< 1	< 1
Styrene	DETSC 3432	1	ر <u>می</u> ارونا	< 1	< 1	< 1
Bromoform	DETSC 3432	1	ισ/I	< 1	< 1	< 1
Isopropylbenzene	DETSC 3432	1	ы <u>а</u> ут 110/1	< 1	< 1	< 1
1 1 2 2-tetrachloroethane	DETSC 3432	1	ы <u>а</u> ут 110/1	< 1	< 1	< 1
Bromobenzene	DETSC 3432	1	روب اروبا	< 1	< 1	< 1
	02100 0402	1	<u>~ь/</u>	· _	· -	·



		2069358	2069359	2069360		
		.Sa	ample ID	BH25	BH28	BH30
			Depth	2.00-3.00	3.00-4.00	2.00-3.00
			Other ID			
		Sam	ple Type	EW	EW	EW
		Samp	ing Date	05/10/2022	05/10/2022	05/10/2022
		Sampl	ing Time	n/s	n/s	n/s
Test	Method	LOD	Units			
1,2,3-trichloropropane	DETSC 3432	1	ug/l	< 1	< 1	< 1
n-propylbenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
2-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1,3,5-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
4-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1	< 1
Tert-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1,2,4-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
sec-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
p-isopropyltoluene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1,3-dichlorobenzene	DETSC 3432	2	ug/l	< 2	< 2	< 2
1,4-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
n-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1,2-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1,2-dibromo-3-chloropropane	DETSC 3432	1	ug/l	< 1	< 1	< 1
1,2,4-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
Hexachlorobutadiene	DETSC 3432	1	ug/l	< 1	< 1	< 1
1,2,3-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1	< 1
MTBE	DETSC 3432*	1	ug/l	< 1	< 1	< 1



Inappropriate

### Information in Support of the Analytical Results

Our Ref 22-20262 Client Ref PN224395 Contract Newport Quinn Phase 2

#### **Containers Received & Deviating Samples**

		Date			container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	Holding time exceeded for tests	tests
2069357	BH23 5.00-6.00 WATER	05/10/22	GB 1L x2, GV x2, PB 1L x2	Aliphatics/Aromatics (4 days), pH/Cond/TDS (1	
				days), PAH MS (4 days)	
2069358	BH25 2.00-3.00 WATER	05/10/22	GB 1L x2, GV x2, PB 1L x2	Aliphatics/Aromatics (4 days), pH/Cond/TDS (1	
				days), PAH MS (4 days)	
2069359	BH28 3.00-4.00 WATER	05/10/22	GB 1L x2, GV x2	Aliphatics/Aromatics (4 days), pH/Cond/TDS (1	
				days), PAH MS (4 days)	
2069360	BH30 2.00-3.00 WATER	05/10/22	GB 1L x2, GV x2, PB 1L x2	Aliphatics/Aromatics (4 days), pH/Cond/TDS (1	
				days), PAH MS (4 days)	

Key: G-Glass P-Plastic B-Bottle V-Vial

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

# APPENDIX II

**Material Property Plots** 




















**Project:** 

Newport Quinn

Project No.: PN224395

## Table I: Summary of Measured and Derived Material Parameters

	Made Ground					
Parameter	Number of Tests	Range	Average	Figure Number	Remarks	
Water Content (%)	1	9.5	9.5	I		
Atterberg Limits					No tests. Material mostly granular.	
Particle Size Distribution	I			3.1		
% Gravel		44	-			
% Sand		34	-			
% Silt		15	-			
% Clay		7	-			
SPT N Value	13	15 - 43	26	4	Five additional tests did not achieve full penetration.	
Chemical Conditions	7					
рН		7.2 - 11.1	8.6			
Ammonia Aqueous Extract as N		<10				
Chloride Aqueous Extract		3.50 - 29.0	13.5			
Nitrate Aqueous Extract as NO ₃		<1.0 - 1.7	1.7			
Water soluble sulphate content SO ₄ (mg/l)		12 - 99	36.7			
Total Sulphur S (%)		<0.01 - 0.21	0.13		Average excluding <0.01 values.	
Total sulphate SO₄ (%)		0.01 - 0.29	0.06			
CBR						
Тор (%)		37			From laboratory tests. Recompacted at as-received	
Bottom (%)		58			moisture content using 2.5 kg rammer.	



**Project:** 

Newport Quinn

Project No.: PN224395

## Table 2: Summary of Measured and Derived Material Parameters

		Alluviuli			
Parameter	Number of Tests	Range	Average	Figure Number	Remarks
Water Content (%)	4	10.4 - 141	43	I	The water content of 141% was from material descibed as peat.
Atterberg Limits	6			2	One sample was described as peat
Liquid Limit (%)		31 - 160	62		with a liquid limit of 160% and was non-plastic.
Plastic Limit (%)		16 - 29	23		
Plasticity Index (%)		15 - 23	19		
Modified Plasticity Index (%)	5	7 - 23	15		After NHBC Standards, Chapter 4.2
SPT N Value	7	0 - 26	11	4	
Undrained Shear Strength (kN/m²)				5	No direct laboratory tests.
Estimated from SPT N Values		0 - 130	59		After Stroud & Butler (1978)
Organic Content (%)	2	0.7 - 21	11		
Compaction	I				2.5 kg rammer
Optimum moisture content (%)		6.0			
Maximum dry density (Mg/m ³ )		2.19			
CBR	2				
Тор (%)		0.73 - 18	9.4		From laboratory tests. Recompacted at as-received
Bottom (%)		0.59 - 23	11.8		moisture content using 2.5 kg rammer.
Thermal Conductivity	2				
Thermal Conductivity (W/(m.k))		2.54 - 2.57	2.56		
Thermal Resistivty ((m.k)/W)		0.39	0.39		
Temperature (°C)		19.4 - 20.3	20		



**Project:** 

Newport Quinn

Project No.: PN224395

## Table 3: Summary of Measured and Derived Material Parameters

	River 1	Terrace Deposi	its - Cohesi	ve	
Parameter	Number of Tests	Range	Average	Figure Number	Remarks
Water Content (%)	15	8 - 41	16	I	
Atterberg Limits	14			2	
Liquid Limit (%)		24 - 54	35		
Plastic Limit (%)		15 - 34	20		
Plasticity Index (%)		9 - 23	15		
Modified Plasticity Index (%)	16	4 - 20	9		After NHBC Standards, Chapter 4.2
Particle Size Distribution	3			3.2	
% Cobbles		0	-		
% Gravel		17 - 44	-		
% Sand		24 - 49	-		
% Silt		15 - 38	-		
% Clay		8 - 21	-		
SPT N Value	28	- 46	23	4	Twelve tests did not achieve full penetration.
Undrained Shear Strength (kN/m²)				5	
Undrained Shear Strength (kN/m²)	I	64			Unconsolidated undrained triaxial test.
Estimated from SPT N Values	16	24 - 276	123		After Stroud & Butler (1978)
Chemical Conditions	8				
рН		7.0 - 8.3	7.63		
Ammonia Aqueous Extract as N		<10			
Chloride Aqueous Extract		3.70 - 7.00	5.55		
Nitrate Aqueous Extract as NO ₃		<1.0 - 1.0			
Water soluble sulphate content SO4 (mg/l)		12 - 29	17.8		
Total Sulphur S (%)		<0.01 - 0.01			
Total sulphate SO₄ (%)		<0.01 - 0.03	0.02		Average excluding <0.01 values.
Compaction	5				2.5 kg rammer
Optimum moisture content (%)		7.5 - 9	8		
Maximum dry density (Mg/m ³ )		2.03 - 2.20	2.13		



CBR	5			
Тор (%)		0.73 - 47	10	From laboratory tests. Recompacted at as-received
Bottom (%)		0.59 - 25	6	moisture content using 2.5 kg rammer.
Thermal Conductivity	7			
Thermal Conductivity (W/(m.k))		l.24 - 3.37	2.29	
Thermal Resistivty ((m.k)/W)		0.30 - 0.81	0.48	
Temperature (°C)		19.3 - 20.3	19.9	



Project: Newport Quinn

Project No.: PN224395

# Table 4: Summary of Measured and Derived Material Parameters

# River Terrace Deposits - Granular

Parameter	Number of Tests	Range	Average	Figure Number	Remarks
Particle Size Distribution	4			3.2	
% Cobbles		0 - 9	-		
% Gravel		36 - 81	-		
% Sand		7 - 43	-		
% Silt		~10 - 15	-		
% Clay		3 - 14	-		
SPT N Value	47	- 5	29	4	Eighteen tests did not achieve full penetration.
Chemical Conditions	5				
рН		7.7 - 10.7	8.58		
Ammonia Aqueous Extract as N		<10			
Chloride Aqueous Extract		2.10 - 6.20	4.50		
Nitrate Aqueous Extract as NO ₃		<1.0			
Water soluble sulphate content SO ₄ (mg/l)		12 - 32	18.4		
Total Sulphur S (%)		<0.01 - 0.01			
Total sulphate SO ₄ (%)		<0.01 - 0.03	0.02		Average excluding <0.01 values.
Compaction	7				2.5 kg rammer
Optimum moisture content (%)		6 - 9	7.5		
Maximum dry density (Mg/m ³ )		2.10 - 2.21	2.16		
CBR	7				
Тор (%)		1.30 - 55	23		From laboratory tests. Recompacted at as-received
Bottom (%)		1.2 - 51	21		moisture content using 2.5 kg rammer.
Thermal Conductivity	10				
Thermal Conductivity (W/(m.k))		1.80 - 2.78	2.37		
Thermal Resistivty ((m.k)/W)		0.36 - 0.55	0.43		
remperature (°C)		17.8 - 20.6	19.8		



**Project:** 

Newport Quinn

Project No.: PN224395

# Table 5: Summary of Measured and Derived Material Parameters

	St. M	aughan's Form	ation - Clay	Y	
Parameter	Number of Tests	Range	Average	Figure Number	Remarks
Water Content (%)	9	9.5 - 40	24	I	
Atterberg Limits	7			2	
Liquid Limit (%)		29 - 77	47		
Plastic Limit (%)		15 - 43	26		
Plasticity Index (%)		14 - 34	22		
Modified Plasticity Index (%)	7	- 3	17		After NHBC Standards, Chapter 4.2
SPT N Value	55	7 - 50	30	4	Seventeen tests did not achieve full penetration.
Undrained Shear Strength (kN/m²)				5	
Unconsolidated Undrained Triaxial (kN/m²)	1	76	76		Unconsolidated undrained triaxial test.
Estimated from SPT N Values	38	35 - 250	149		After Stroud & Butler (1978)
Chemical Conditions	3				
рН		7.3 - 8.8	8.3		
Ammonia Aqueous Extract as N		<10			
Chloride Aqueous Extract		6.3 - 18	12		
Nitrate Aqueous Extract as NO ₃		<1.0			
Water soluble sulphate content SO ₄ (mg/l)		17 - 34	27		
Total Sulphur S (%)		<0.01 - 0.02			
Total sulphate SO ₄ (%)		<0.01 - 0.40	0.01		Average excluding <0.01 values.
Compaction	I				2.5 kg rammer
Optimum moisture content (%)		18			
Maximum dry density (Mg/m ³ )		1.75			
Thermal Conductivity	2				
Thermal Conductivity (W/(m.k))		2.60 - 2.71	2.66		
Thermal Resistivty ((m.k)/W)		0.37 - 0.38	0.38		
Temperature (°C)		17.8 - 20.6	19.1		



Project: Newport Quinn

Project No.: PN224395

### Table 6: Summary of Measured and Derived Parameters

Bedrock - St. Maughan's Formation

Parameter	Number of Tests	Range	Average	Figure Number	Remarks
SPT N Value	29	26 - 61	36	4	Seventeen tests did not achieve full penetration.
Point Load - Sandstone					
Is ₅₀ (MN/m ² ) Axial	9	0.06 - 1.56	0.57		
Is ₅₀ (MN/m ² ) Diametral	25	0.02 - 4.27	0.58		
Point Load - Siltstone					
Is ₅₀ (MN/m ² ) Axial	9	0.07 - 0.51	0.28		
Is ₅₀ (MN/m ² ) Diametral	8	0.02 - 0.33	0.12		
Point Load - Mudstone					
Is ₅₀ (MN/m ² ) Axial	100	0.03 - 5.41	0.21		
Is ₅₀ (MN/m ² ) Diametral	98	0.01 - 0.51	0.06		
Unconfined Compressive Strength					
Sandstone (MN/m ² )	6	5.31 - 13.00	7.75		
Siltstone (MN/m ² )	3	2.03 - 7.72	4.95		
Mudstone (MN/m ² )	29	0.84 - 19.60	5.15		
Moisture Content					
Sandstone (%)	6	4.7 - 10.7	7.1		
Siltstone (%)	3	5.8 - 11.8	8.5		
Mudstone (%)	30	3.1 - 32	12		
Atterberg Limits - Mudstone (Clay)	I			2	
Liquid Limit (%)		53			
Plastic Limit (%)		30			
Plasticity Index (%)		15			
Chemical Conditions	4				
рН		6.6 - 11	8		
Ammonia Aqueous Extract as N		<10			
Chloride Aqueous Extract		5.3 - 30	14		
Nitrate Aqueous Extract as NO ₃		<1.0			



Water soluble sulphate content SO ₄ (mg/l)		15 - 92	42		
Total Sulphur S (%)		<0.01 - 0.07			
Total sulphate SO ₄ (%)		<0.01 - 0.25	0.09	A	Average excluding <0.01 values.
Thermal Conductivity	I				
Thermal Conductivity (W/(m.k))		1.18			
Thermal Resistivty ((m.k)/W)		0.85			
Temperature (°C)		19.1			



**Geological Sections** 

# DATA SHEET - Symbols and Abbreviations used on Records

DATA	A SHEET - Symbols a	nd Abbreviations u	sed on Re	cords	G
Sample	e Types	Groundwater		Strata, Continued	
В	Bulk disturbed sample	Water Strike	$\nabla$	Mudstone	
BLK	Block sample	Depth Water Rose To	Y		
С	Core sample			Siltstone	* * * * * *
D	Small disturbed sample (tub/jar)	Instrumentation		Sitistone	× × × × × × × × × × × × × × × × × × ×
E	Environmental test sample		22	Metamorphic Rock	* * * * *
ES	Environmental soil sample	Seal		Fine Grained	~~~~~
EW	Environmental water		\ -		******
G	Gas sample		-	Medium Grained	~~~~
L	Liner sample	Eilean	-		$\sim$
LB	Large bulk disturbed sample	Filter	1	Coarse Grained	$\sim \sim$
Р	Piston sample (PF - failed P		- -	Igneous Rock	$\sim\sim$
тw	Thin walled push in sample			Fine Grained	~~~~~
U	Open Tube - 102mm	Seal			+ + + +
	diameter with blows to take sample. (UF - failed U sample)			Medium Grained	+ + + + + + + + + + + + + + + + + + + +
UT	Thin wall open drive tube	Strata	Legend	Coarse Grained	
	with blows to take sample.	Made Ground			
V	(UTF - failed UT sample)	Granular			
Ŵ	Water sample	Made Ground		Backfill Materials	174
#	Sample Not Recovered	Cohesive		A	Č.
Insitu T	Lesting / Properties	Topsoil		Arisings	
		10000			Ň
CBRP	CBR using TRL probe	Cobbles and Boulders	.0.8	Bentonite	
СНР	Permeability Test		0.0		A .
COND	Electrical conductivity	Gravel		Concrete	0 + P
тс	Thermal Conductivity				
TR	Thermal Resistivity				
HV	Strength from Hand Vane	Sand		Sand	[.
	CBR Test				2
IRES	Resistivity Test	Silt	× * * *	Grout	
MEX	CBR using Mexecone		* * *		
	Probe Test	Clav	× × ,	Gravel	00000
	Packer Permeability Test	Clay		Graver	00
	Plate Load Test Strongth from Pocket				
FF	Penetrometer	Peat	Ma.	Asphalt/Tarmacadam	
Temp	Temperature		N/C		-
VHP	Variable Head Permeability Test		NZ.	Rotary Core	
VN	Strength from Insitu Vane	Note: Composite soil typ	es shown	RQD Rock Quality D	esignation
w%	Water content	by combined symbols		(% of intact con FRACTURE INDEX	e >100mm)
(All othe	er strengths from	Chalk		Fractures/metre	2
S	Standard Penetration Test			NR No core re	covery
~	(SPT)	Limestone		AZCL Assumed zo loss	one of core
	SPT Popula				
IN _/_	SFI Result Blows/penetration (mm)	Sandatara			
-/-	after seating drive	Sandstone			
-*/- (mm)	Total blows/penetration				
( )	Extrapolated value	Coal			







Lege	nd
	Sections - Section line A-A'
	Sections - Section line B-B'
	Sections - Section line C-C'
۲	Locations By Type - CP
٢	Locations By Type - CP+RC
0	Locations By Type - DS
٠	Locations By Type - DS+RC
0	Locations By Type - PLT



Unit 1B Borders Industrial Park River Lane Saltney Chester CH4 8RJ

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### Engineer:

## Pinnacle Consulting Engineers Limited

Client:

### **Pinnacle Consulting Engineers Limited**

Project:

### **Newport Quinn Phase 2**

Drawing Titl	Drawing Title:						
Cross Section Layout with Exploratory Holes							
Scale:		Date:					
1:2500	at A3	07/02/2023					
Project No.:		Exploratory Hole					
PN224395		Location Plan					







**Proposed Layout** 



16

Hain



# GENERAL NOTES

- DO NOT SCALE THIS DRAWING. WORK ONLY TO FIGURED DIMENSIONS.
- FOR ALL RELEVANT NOTES, REFER TO STRUCTURAL AND CIVIL ENGINEERING PERFORMANCE SPECIFICATION.
- ANY DISCREPANCIES ARE TO BE REPORTED TO PINNACLE CONSULTING ENGINEERS IMMEDIATELY.
- 4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SUB-CONTRACTORS DRAWINGS AND DETAILS.

# LEGEND

×II.500
×EXT II.000
1:68
—11.30—
—11 00—
11.00

SITE BOUNDARY PROPOSED LEVELS EXISTING LEVELS PROPOSED GRADIENT MINOR CONTOUR (0.100M INTERVALS) MAJOR CONTOUR (0.500m INTERVALS) RETAINING WALL



INFORMATION

C2I0420-PIN-XX-XX-DR-C-SK0II P0I

DATE DRAWN BY CHECKED JUN '21 SC JJ

REVISION

0 50mm ON A0 DWG. 50

 SC
 JJ
 03.06.21

 BY
 CHK
 DATE

DRAWING TITLE LEVELS STRATEGY

PROJECT NEWPORT SDD MSFT

POI FOR INFORMATION REV DESCRIPTION CLIENT

DRAWING STATUS

OPYRIGHT PINNACLE

DRG NO.

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9.776		×9.621	×10.267	×10.310	×10.353	×10.397	×9.290	×+0.310	×9.817	*10.758	×10.084
1.000		II.000	11.000	11.000	10.423	10.718	10 <del>.760</del>	11.318	12.982	12.673	13.468
.224		I.379	0.733	0.690	0.069	0.321	1.470	1.009	3.164	1.915	3.383
0.383	×10.426	×10.470	×10.890	×10.890	*10.890	*10.890	×10.890	×10.421	×9.909	*10.702	×10.228
1.000	H.000	Ⅱ.000	11 <del>.000</del>	11.000	10.391	10.666	10.804	10.763	12.938	12.390	12.945
9.617	0.574	0.530	0.110	0.110	0.499	0.224	0.086	0.341	3.029	1.688	2.717
0.890	×10.890	×10.890	×10.890	*10.890	- 10.890	*10.890	×10.890	×10.890	*10,00	×10.668	×10.359
1.000	11)000	11.000	11,000	11.000	10.512	10.612	10.859	10.519	12.772	12.841	12.602
0.110	0.110	0.110	0,110	0.110	0,378	0.278	0.031	0.371	2.771	2.173	2.244
0.890	×10.890	×10.890	×10.890	×10.890	×10.890	×10-890	10.890	×10,487	×10.077	+9.593	×10.457
1.000	11.000	11.000	11.000	11.000	10.965	10.737	10.798	10.570	12.639	13.069	12.356
0.110	0.110	0.110	0.110	0.110	0.075	0.153	0.092	0.083	2.562	3.476	1.899
0.890	×10.890	×10.890	*10.457	*10.413	×10_370	×10.326	×10.283	×10.040	×9_865	×10.924	*10\567
1.000	10.999	11.005	11.020	10.820	10.923	10.934	10.779	10.918	II.818	12.837	12.078
0.110	0.109	0.115	0.564	0.407	0.553	0.608	0.496	0.878	I.952	1.912	1.511
0.340	×10.296	×10.253	*10.013	*10.013	*10.947	×10.878	×10.808	*10.739	×10_673	×11.162	×11.661
I.0II	11.004	11.016	10.842	10.234	10.710	10.877	10.904	10.790	II.36I	11.613	12.115
0.67I	0.708		0.829	0.221	0.237	0.000	0.096	0.051	0.688	0.451	0.454
0.928	*10.830	×10.760	×10.691	*10.179	×9.350	×9.350	×9.350	*9.350	×9.350	×11.0]4	×11.654
0.718	10.786	10.854	10.709	10.492	10.568	10.756	10.813	10.776	II.092	11.343	11.821
0.210	0.044	0.094	0.018	0.313	1.218	1.406	1.463	1.426	I.742	0.329	0.167
9.350 0.531 .181	*9.350 10.517 1.167	*9.350 10.428 1.078	*9.350 10.389 1.039 PO	*9.350 10.380 1.030	*9.350 10.318 0.968	×9.350 10.677 1.327	*9.350 10.640 1.290	*9.350 10.749 1.399	×9.350 II.029 I.679	*10.903 11.265 0.363	×H. 640 H.260 0.381
9.350	*9.350	×9.350	×9.350	*9.350	×9.350	×9.448	* <del>10.602</del>	*10.396	*10.630	×11.103	
0.088	10.033	10.194	10.238	10.259	10.103	10:472	10.783	10.799	11.037	11.35/	
0.738	0.683	0.844	0.888	0.909	0.753	1.024	<del>0.18</del> 1	0.403	0.407	0.251	

0.105



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REVISION

# Exploratory Hole Location Plan





Lege	nd
	Sections - Section line A-A'
	Sections - Section line B-B'
	Sections - Section line C-C'
۲	Locations By Type - CP
٢	Locations By Type - CP+RC
0	Locations By Type - DS
٠	Locations By Type - DS+RC
0	Locations By Type - PLT

PN224395	Location Plan			
Project No.:	Exploratory Hole			
1:2500 at A3	07/02/2023			
Scale:	Date:			
Exploratory Hole Location Plan				
Drawing Title:				

# Investigation Techniques and General Notes

### INTRODUCTION

The following brief review of Ground Investigation techniques, generally used as part of most Site Investigations in the UK, summarises their methodology, advantages and limitations. Detailed descriptions of the techniques are available and can be provided on request. This review should be read in conjunction with the accompanying General Notes.

#### <u>TRIAL PITS</u>

The trial pit is amongst the simplest yet most effective means of identifying shallow ground conditions on a site. Its advantages include simplicity, speed, potential accuracy and cost-effectiveness. The trial pit is most commonly formed using a back-acting excavator which can typically determine ground conditions to some 4 metres below ground level. Hand excavation is often used to locate, expose and detail existing foundations, features or services. In general, it is difficult to extend pits significantly below the water table in predominantly granular soils, where flows can cause instability. Unless otherwise stated, the trial pits will not have been provided with temporary side support during their construction. Under such active significant been made from the ground surface and samples taken from the excavator bucket.

Where access for personnel is required to allow close observation of the exposed strata, the taking of samples and the carrying out of in situ tests, the sides of the trial pits (Observation Pits in BS 5930:2015) will be made safe using temporary supports or the sides battered back to a stable angle. Some limited access to such Trial Pits (Observation Pits) at depths less than I m may be allowed in stable conditions or where the sides are benched or battered back to a safe angle.

Trends in strata type, level and thickness can be determined, shear surfaces identified and the behaviour of plant, excavation sides and excavated materials can be related to the construction process. They are particularly valuable in land slip investigations. Some types of in situ test can be undertaken in such pits and large disturbed or block samples obtained.

### CABLE PERCUSSION BORING

The light Cable Percussion technique of soft ground boring, typically at a diameter of 150mm, is a well-established simple and flexible method of boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A tubular cutter (for cohesive soils) or shell with a flap valve (for granular soils) is repeatedly lifted and dropped using a winch and rope operating from an "A" frame. Soil which enters these tools is regularly removed and either sampled for subsequent examination or test, or laid to one side for later removal off site and licensed disposal or, if permitted by the Client, use as backfill. Steel casing will have been used to prevent collapse of the borehole sides where necessary. A degree of disturbance of soil and mixing of layers is inevitable and the presence of very thin layers of different soils within a particular stratum may not be identified. Changes in strata type can only be detected on recognition of a change in soil samples at the surface, after the interface has been passed. For the foregoing reasons, depth measurements should not be considered to be more accurate than 0.10 metre. The technique can determine ground conditions to depths in excess of 30 metres under suitable circumstances and usually causes less surface disturbance than trial pitting.

In cohesive soils cylindrical samples are retrieved by driving or pushing in 100mm nominal diameter tubes. In soft soils, piston sampling or vane testing may be undertaken. In granular soils and often in cohesive materials, in situ Standard Penetration Tests (SPT's) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in denser strata. Small disturbed samples are obtained throughout.

#### **ROTARY DRILLING**

Rotary Drilling to produce cores by rotating an annular diamond-impregnated tube or barrel into the ground is the technique most appropriate to the forming of site investigation boreholes through rock or other hard strata. It has the advantage of being able to be used vertically or at an angle. Core diameters of less than 100mm are most common for site investigation purposes. Core is normally retrieved in plastic lining tubes. A flushing fluid such as air, water or foam is used to cool the bit and carry cuttings to the surface. Depths in excess of 60 metres can be achieved under suitable circumstances using rotary techniques, with minimal surface disturbance.

Examination of cores allows detailed rock description and generally enables angled discontinuity surfaces to be observed. However, vertical holes do not necessarily reveal the presence of vertical or near-vertical fissures or joint discontinuities. The core type and/or techniques used will depend on the ground conditions. Where open hole rotary drilling is employed, descriptions of strata result from examination at the surface of small particles ejected from the borehole in the flushing medium. In consequence, no indication of fissuring, bedding, consistency or degree of weathering can be obtained.

#### DYNAMIC SAMPLING

This technique involves the driving of an open-ended tube into the ground and retrieval of the soil which enters the tube. It was previously called window or windowless sampling. The term "window sample" arose from the original device which had a "window" or slot cut into the side of the tube through which samples were taken. This was superseded by the use of a thin-walled plastic liner to retrieve the soil sample from within a sampler (windowless sampling) which has a solid wall. Line diameters range from 36 to 86mm. Such samples can be used for qualitative logging, selection of samples for classification and chemical analysis and for obtaining a rudimentary assessment of strength.

Driving devices can be hand-held or machine mounted and the drive tubes are typically in 1m lengths. Depending on the type of rig used, the hole formed can be cased to prevent collapse of the borehole sides. Where the type of rig does not allow the insertion of casing, the success of this technique can be limited when soils and groundwater conditions are such that the sides of the hole collapse on withdrawal of the sampler. Obstructions within the ground, the density of the material or its strength can also limit the depth and rate of penetration of this light-weight investigation technique. Nevertheless, it is a valuable tool where access is constrained such as within buildings or on embankments. Depths of up to 10m can be achieved in suitable circumstances depending on the rig type but depths of 5m to 6m are more common.

### EXPLORATORY HOLE RECORDS

The data obtained by these techniques are generally presented on Trial Pit, Borehole, Drillhole or Dynamic Sample Records. The descriptions of strata result from information gathered from a number of sources which may include published geological data, preliminary field observations and descriptions, in situ test results, laboratory test results and specimen descriptions. A key to the symbols and abbreviations used accompanies the records. The descriptions on the exploratory hole records accommodate but may not necessarily be identical to those on any preliminary records or the laboratory summaries.

The records show ground conditions at the exploratory hole locations. The degree to which they can be used to represent conditions between or beyond such holes, however, is a matter for geological interpretation rather than factual reporting and the associated uncertainties must be recognised.

### DYNAMIC PROBING

This technique typically measures the number of blows of a standard weight falling over a standard height to advance a cone-ended rod over sequential standard distances (typically 100mm). Some devices measure the penetration of the probe per standard blow. It is essentially a profiling tool and is best used in conjunction with other investigation techniques where site-specific correlation can be used to delineate the distribution of soft or loose soils or the upper horizon of a dense or strong layer such as rock.

Both machine-driven and hand-driven equipment is available, the selection depending upon access restrictions and the depth of penetration required. It is particularly useful where access for larger equipment is not available, disturbance is to be minimised or where there are cost constraints. No samples are recovered and some techniques leave a sacrificial cone head in the ground. As with other lightweight techniques, progress is limited in strong or dense soils. The results are presented both numerically and graphically. Depths of up to 10m are commonly achieved in suitable circumstances.

The hand-driven DCP probing device has been calibrated by the Highways Agency to provide a profile of CBR values over a range of depths.

### **INSTRUMENTATION**

The most common form of instrument used in site investigation is either the standpipe or else the standpipe piezometer which can be installed in investigation holes. They are used to facilitate monitoring of groundwater levels and water sampling over a period of time following site work. Normally a standpipe would be formed using rigid plastic tubing which has been perforated or slotted over much of its length whilst a standpipe piezometer would have a filter tip which would be placed at a selected level and the hole sealed above and sometimes below to isolate the zone of interest. Groundwater levels are determined using an electronic "dip meter" to measure the depth to the water surface from ground level. Piezometers can also be used to measure permeability. They are simple and inexpensive instruments for long term monitoring but response times can limit their use in dial areas and access to the ground surface at each instrument is necessary. Remote reading requires more sophisticated hydraulic, electronic or pneumatic equipment.

Settlement can be monitored using surface or buried target plates whilst lateral movement over a range of depths is monitored using slip indicator or inclinometer equipment.



# **GENERAL NOTES**

- I. The report is prepared for the exclusive use of the Client named in the document and copyright subsists with Geotechnics Limited. Prior written permission must be obtained to reproduce all or part of the report. It is prepared on the understanding that its contents are only disclosed to parties directly involved in the current investigation, preparation and development of the site.
- Further copies may be obtained with the Client's written permission, from Geotechnics Limited with whom the master copy of the document will be retained.
- 3. The report and/or opinion is prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to Geotechnics Limited at that time. Re-consideration will be necessary should those details change. The recommendations should not be used for other schemes on or adjacent to the site without further reference to Geotechnics Limited.
- 4. The assessment of the significance of the factual data, where called for, is provided to assist the Client and their Engineer and/or Advisers in the preparation of their designs.
- 5. The report is based on the ground conditions encountered in the exploratory holes together with the results of field and laboratory testing in the context of the proposed development. The data from any commissioned desk study and site reconnaissance are also drawn upon. There may be special conditions appertaining to the site, however, which are not revealed by the investigation and which may not be taken into account in the report.
- 6. Methods of construction and/or design other than those proposed by the designers or referred to in the report may require consideration during the evolution of the proposals and further assessment of the geotechnical and any geoenvironmental data would be required to provide discussion and evaluations appropriate to these methods.
- 7. The accuracy of results reported depends upon the technique of measurement, investigation and test used and these values should not be regarded necessarily as characteristics of the strata as a whole (see accompanying notes on Investigation Techniques). Where such measurements are critical, the technique of investigation will need to be reviewed and supplementary investigation undertaken in accordance with the advice of the Company where necessary.
- 8. The samples selected for laboratory test are prepared and tested in accordance with the relevant Clauses and Parts of BS EN ISO 17892 and BS 1377 Parts 1 to 8, where appropriate, in Geotechnics Limited's UKAS accredited Laboratory, where possible. A list of tests is given.
- 9. Tests requiring the use of another laboratory having UKAS accreditation where possible are identified.
- Any unavoidable variations from specified procedures are identified in the report.
- 11. Specimens are cut vertically, where this is relevant and can be identified, unless otherwise stated
- 12. All the data required by the test procedures are recorded on individual test sheets but the results in the report are presented in summary form to aid understanding and assimilation for design purposes. Where all details are required, these can be made available.
- 13. Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes, or on the possible presence of features based on either visual, verbal, written, cartographical, photographic or published evidence, this is for guidance only and no liability can be accepted for its accuracy.

14. The Code of Practice for Ground Investigations – BS 5930:2015 calls for man-made soils to be described as Anthropogenic Ground with soils placed in an un-controlled manner classified as Made Ground and soils placed in a controlled manner as Fill. In view of the difficulty in always accurately determining the origin of man-made soils in exploratory holes, Geotechnics Limited classify such materials as Made Ground. Where soils can be clearly identified as being placed in a controlled manner then further classification of the soils as Fill has been added to the Exploratory Hole Records.

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- 15. Classification of man-made soils is based on the inspection of retrieved samples or exposed excavations. Where it is obvious that foreign matter such as paper, plastic or metal is present, classification is clear. Frequently, however, for man-made soils that arise from the adjacent ground or from the backfilling of excavations, their visual characteristics can closely resemble those of undisturbed ground. Other evidence such as site history, exploratory hole location or other tests may need to be drawn upon to provide clarification. For these reasons, classification of soils on the exploratory hole records as either Made Ground or naturally occurring strata, the boundary between them and any interpretation that this gives rise to should be regarded as provisional and subject to re-evaluation in the light of further data.
- 16. The classification of materials as Topsoil is generally based on visual description and should not be interpreted to mean that the material so described complies with the criteria for Topsoil used in BS 3882:2015. Specific testing would be necessary where such a definition is a requirement.
- 17. Ground conditions should be monitored during the construction of the works and the report should be re-evaluated in the light of these data by the supervising geotechnical engineers.
- 18. Any comments on groundwater conditions are based on observations made at the time of the investigation, unless specifically stated otherwise. It should be noted, however, that the observations are subject to the method and speed of boring, drilling or excavation and that groundwater levels will vary due to seasonal or other effects.
- 19. Any bearing capacities for conventional spread foundations which are given in the report and interpreted from the investigation are for bases at a minimum depth of 1m below finished ground level in naturally occurring strata and at broadly similar levels throughout individual structures, unless otherwise stated. Typically they are based on serviceability criteria taking account of an assessment of the shear strength and/or density data obtained by the investigation. The foundations should be designed in accordance with the good practice embodied in BS 8004:2015 -Foundations, supplemented for housing by NHBC Standards. Foundation design is an iterative process and bearing pressures may need adjustment or other measures may need to be taken in the context of final layouts and levels prior to finalisation of proposals.
- 20. Unless specifically stated, the investigation does not take account of the possible effects of mineral extraction or of gases from fill or natural sources within, below or outside the site.
- 21. The costs or economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical or geoenvironmental considerations and hence their evaluation is outside the scope of the report.

