



APPENDIX 12.5: GROUND INVESTIGATION (GI) REPORT

ASTI Substation – LT379 - New Deer 2




Ground Investigation Report



15 February 2024
BAM Ritchies Project Reference: RGN.330G

CONTROL SHEET

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Project No:	RGN.330G
Client:	SSEN
Engineer:	Tony Gee
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Comments:

The scope of the investigation was determined by the Engineer for the particular project requirements set out in the Specification for the Contract.

The investigation was carried out by BAM Ritchies and this report has been prepared for the sole use of the Client. This report shall not be relied upon or transferred to any other parties without the express written authorisation of BAM Ritchies.

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Table of Contents

1.0	INTRODUCTION	3
2.0	BRIEF DESCRIPTION OF THE SITE.....	3
3.0	PROPOSED DEVELOPMENT	4
4.0	RECORDED GEOLOGY.....	4
4.1	Drift Geology	4
4.2	Solid Geology.....	4
5.0	FIELDWORK	4
5.1	Ground Investigation	4
5.2	Fieldwork Period	4
5.3	Position Fixing and Levelling	5
5.4	Ecological Site Walkovers	5
5.5	Archaeological Watching Briefs	5
5.6	Hand Excavated Trial Pits	5
5.7	Dynamic Sampling / Rotary Cored Boring.....	6
5.8	Resonance (Sonic) Sampling / Rotary Cored Boring.....	6
5.9	Machine Excavated Trial Pits	7
5.10	Insitu and Field Testing	7
5.10.1	Standard Penetration Tests	7
5.10.2	Thermal Resistivity Tests.....	8
5.10.3	Dynamic Probe Penetration Tests.....	8
5.10.4	Soakaway Tests.....	8
5.11	Standpipe Installations	8
5.12	Groundwater Observations.....	9
5.13	Gas Monitoring.....	9
5.14	Backfilling	10
5.15	Photographs	10
5.16	Soil and Rock Logging	10
6.0	LABORATORY WORK	11
6.1	Soil	11
6.1.1	Soil Classification Tests.....	11
6.1.2	Soil Chemical Tests.....	11
6.1.3	Soil Compaction Related Tests.....	11
6.1.4	Soil Strength Tests.....	12
6.2	Geochemical Testing.....	12
6.2.1	Water Contaminant Tests.....	12
6.3	Rock and aggregate Testing.....	12
7.0	Notes.....	13

TABLE 1 SUMMARY OF FIELDWORK
TABLE 2 STANDPIPE INSTALLATIONS
APPENDIX 1.0 EXPLORATORY HOLE LOCATION PLAN
APPENDIX 2.0 ECoW REPORT
APPENDIX 3.0 EXPLORATORY HOLE LOGS
APPENDIX 3.1 BOREHOLE LOGS
APPENDIX 3.2 TRIAL PIT LOGS
APPENDIX 3.3 HAND PIT LOGS
APPENDIX 4.0 INSITU TEST RESULTS
APPENDIX 4.1 THERMAL RESISTIVITY TEST RESULTS
APPENDIX 4.2 DYNAMIC CONE PENETRATION TEST RESULTS
APPENDIX 4.3 SOAKAWAY TEST RESULTS
APPENDIX 5.0 GAS & GROUNDWATER MONITORING
APPENDIX 5.1 GROUNDWATER MONITORING DURING SITE WORKS
APPENDIX 5.2 WELL DEVELOPMENT
APPENDIX 5.3 GAS AND GROUND WATER MONITORING RESULTS
APPENDIX 6.0 PHOTOGRAPHS
APPENDIX 6.1 U86 SONIC AND CORE PHOTOGRAPHS
APPENDIX 6.2 TRIAL PIT PHOTOGRAPHS
APPENDIX 6.3 HAND PIT PHOTOGRAPHS
APPENDIX 7.0 LABORATORY TEST RESULTS
APPENDIX 7.1 GEOTECHNICAL TEST RESULTS
APPENDIX 7.2 GEOCHEMICAL TEST RESULTS

1.0 INTRODUCTION

BAM Ritchies was commissioned by SSEN-T to undertake ground investigation works for a site West of New Deer, to determine the general sequence of strata and groundwater conditions at the site. Stantec were appointed as Investigation supervisor.

Fieldworks comprised of trial pitting, dynamic sampling with rotary cored follow on, sonic drilling with rotary cored follow on, in-situ testing and gas and groundwater monitoring.

This report presents the factual records of the fieldworks, laboratory testing and gas and groundwater monitoring. The report has been prepared in accordance with the requirements of the Client.

2.0 BRIEF DESCRIPTION OF THE SITE

The site is located west of New deer, Aberdeenshire, approximately 6.0km from the village and 1.0km to the Northwest of Maryhill, Turriff spanning between National Grid References NJ 82215 47155 and NJ 81442 47574.

The site is a large irregularly shaped rectangle of land with an area of approximately 75ha (circa 1.50km by 0.5km). The ground surface profile is smoothly undulating, gently sloping from North to South. The site is situated in an agricultural area with some limited residential dwellings on the fringes Southeast of the development area. Agricultural use is a mix of both crops, forestry, and livestock with a greater tendency towards crops (based on the site walkover and aerial photography). The ground is firm however there are some notably wetter boggy areas – the aerial photography attests to this (with some muddy & bog-like areas visible).

The site does not appear to have changed much with respect to land-use. Historic maps show almost no significant change except from the upgraded roads. The wider area is very similar to the closely surrounding area where most of the land is used for agricultural purposes.

The site is accessed via a single-track local access road leading from B9170 connecting to the A948 to the East of the site with some small unclassified roads to the south leading to local farms. Access to the site would be from a combination of these roads and their associated access spurs branching off towards the site.

3.0 PROPOSED DEVELOPMENT

The client is proposing to develop the new 400kV substation hub at the site. This will consist of transformer bays with associated cabling and control and switch rooms.

4.0 RECORDED GEOLOGY

The following assessment of the geology underlying the site has been inferred from available information held by the British Geological Survey.¹

4.1 Drift Geology

Published geological records indicate that the natural superficial deposits comprise of Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.

4.2 Solid Geology

Published geological records indicate the superfcials to be underlain by the Macduff Formation - Micaceous psammite, semipelite and pelite. Metamorphic bedrock formed between 1000 and 541 million years ago between the Tonian and Ediacaran periods. Siltstones, arkosic sandstones and pebbly microconglomerates have locally also been recorded by BGS.

5.0 FIELDWORK

5.1 Ground Investigation

The scope of the ground investigation was determined by the requirements of the Client's specification.

5.2 Fieldwork Period

All fieldwork was carried out between 21st of August 2023 and 20th of October 2023. Six, regular gas and groundwater monitoring visits of the borehole installations commenced in November 2023 and were ongoing at the time of issue of this final report. Visits 6 and 7 have still to be completed; visit 7 is an additional visit to provide additional gas monitoring data, not recovered during Visit 3 due to a faulty gas monitor.

A summary of the fieldworks undertaken is given in Table 1 at the end of this Report.

¹ Online BGS viewer

5.3 Position Fixing and Levelling

The Investigation supervisor preferred exploratory hole and in-situ test locations were set out by the BAM Ritchies Geotechnical Engineer in conjunction with the Investigation supervisor SSEN-T representative and Ecological Clerk of Works (ECoW). All locations were scanned using Cable Avoidance Tools and signal generators for the presence of any Statutory Undertakers buried apparatus. A visual inspection was undertaken at each location for any other overhead apparatus. On completion of the fieldwork all exploratory holes were co-ordinated to the Ordnance Survey National Grid and levelled to Ordnance Datum. Due to an unforeseen error, the data was found to be corrupted. The as-built survey was completed by Caintech on the 31st of January and 1st February 2024.

The positions of all exploratory holes are displayed on the exploratory hole location plan contained within Appendix 1.0 of this report.

5.4 Ecological Site Walkovers

Regular walkover surveys were undertaken by an Ecological Clerk of Works (ECoW) provided by Envirocentre on behalf of BAM. During the fieldwork, the ECoW completed walkover surveys three days per week.

Copies of their weekly reports on the ecological site findings is contained within Appendix 2.0 of this report.

5.5 Archaeological Watching Briefs

Following consultation with the local authority it was agreed that an Archaeological watching brief was not required.

5.6 Hand Excavated Trial Pits

Prior to the commencement of each borehole, an inspection pit was hand excavated to a depth of 1.20m to locate any otherwise undetected service pipes, ducts, conduits, or cables. At several locations achieving a depth of 1.2m was not possible due to the ground conditions encountered. Regular disturbed soil samples were recovered from each stratum encountered to allow geochemical testing and soil classification testing to be undertaken. Inspection pit information forms part of the borehole logs contained in Appendix 3.1 of this report.

In addition, seven hand pits HP01 to HP07 were undertaken along the route of a proposed new access road. These logs are contained in Appendix 3.3 of this report.

5.7 Dynamic Sampling / Rotary Cored Boring

Thirty-one number boreholes, BH10 to BH12, BH15, BH20 to BH46, were sunk from base of pit, using dynamic sampling followed by rotary coring. A track mounted hydraulic top-drive rig was utilised for all rotary drilling.

Regular bulk disturbed soil samples were recovered from the hand dug inspection pits. Contamination sampling was undertaken in accordance with the specification. In fine soils, U86 open-drive soil samples were attempted at regular depth intervals. Standard Penetration Tests (SPTs) were carried out in predominantly coarse soils.

During coring operations, double-tube face discharge “T2-101” core barrels with core liner were used in conjunction with a compressed water flushing medium and diamond tipped core bits; the resultant rock cores were nominally 84mm in diameter. Where necessary, open-hole drilling methods using down-the-hole hammers of appropriate diameter were employed, typically to prove rock head.

During the fieldwork, sample recovery of the weathered bedrock proved difficult using the above methodologies. Therefore, the original schedule of the ground investigation was altered, and specific boreholes were converted from rotary boreholes to resonance boreholes to provide a targeted and profiled spread of samples for the site.

All borehole logs are contained within Appendix 4.1 of this report.

5.8 Resonance (Sonic) Sampling / Rotary Cored Boring

Fifteen number boreholes, BH01 to BH06, BH07 to BH09, BH13, BH14, BH16 to BH19 were sunk from ground level using resonance sampling followed by rotary coring. A track mounted dual purpose hydraulic top-drive rig was utilised for all resonance drilling.

Regular bulk disturbed soil samples were recovered from the hand dug inspection pits. Contamination sampling was undertaken in accordance with the specification. In fine soils, resonance (sonic) samples were attempted at regular depth intervals. Standard Penetration Tests (SPTs) were carried out at regular depth intervals. During the site works, additional instruction was received, and open tube samples were obtained using a U100 (steel liners)

incorporating cutting shoes of different angles as specified in EN ISO 22475 – 1:2006 6.4.2.3. to produce the highest sample quality class achievable.

During coring operations, double-tube face discharge “T2-101” core barrels with core liner were used in conjunction with a compressed water flushing medium and diamond tipped core bits; the resultant rock cores were nominally 82mm in diameter. Where necessary, open-hole drilling methods using down-the-hole hammers of appropriate diameter were employed, typically to prove rock head.

All borehole logs are contained within Appendix 3.1 of this report.

5.9 Machine Excavated Trial Pits

Fifty-five trial pits, TP01 to TP44, TP44A, and TP45 to TP54 were excavated using a 14T tracked hydraulic excavator. The purpose of the pits was to allow inspection of the soil deposits at shallow depth and to recover samples for subsequent laboratory testing. The machine-dug pits were logged by BAM Ritchies Geotechnical Engineer. All trial pits were photographed using a digital camera. Groundwater inflows experienced during trial pitting operations were recorded by BAM Ritchies Geotechnical Engineer.

Trial pit logs are contained within Appendix 3.2 of this report.

5.10 Insitu and Field Testing

5.10.1 Standard Penetration Tests

Standard Penetration Tests (SPTs) were performed at regular depths in coarse soils or where undisturbed sampling proved ineffective. A split barrel sampler or cone was used as appropriate. The uncorrected N-value results of these tests (in compliance with the National Annex² to BS EN 1997-2:2007) have been used to describe the relative density of coarse soils as illustrated in section 41.3.2 of BS5930:2015³.

The uncorrected results of the standard penetration tests are displayed on the borehole logs contained within Appendix 4.1 of this report. Calibration certificates for the relevant SPT Hammers are presented after the borehole logs contained within Appendix 3.1.

² UK National Annex to Eurocode 7: Geotechnical Design – Part 2: Ground Investigation and testing

³ BS 5930:2015+A1:2020– Code of practise for site investigations.

5.10.2 Thermal Resistivity Tests

Eighteen in-situ Thermal Resistivity tests were undertaken (see table below) to determine the thermal properties of the soil, assisting in understanding the thermal resistivity characteristics of the materials that surround underground cable systems. The tests were carried out using a Thermtest transient line source instrument (TLS-100 portable meter) in accordance with IEEE Std 442-2017⁴ and ASTM D 5334, 2014⁵.

The results of the resistivity testing are contained within Appendix 4.1 of this report.

5.10.3 Dynamic Probe Penetration Tests

14 Dynamic Cone Penetrometer tests were carried out to assess the density of the underlying deposits and to establish a correlated CBR value for the soil. Each test was carried out from surface immediately adjacent to the corresponding trial pit using the hand operated CNS Farnell model A2465 Dynamic Cone Penetrometer.

The results of the dynamic probes are contained within Appendix 4.2 of this report.

5.10.4 Soakaway Tests.

4 Soakaway tests were undertaken to establish the soil infiltration characteristics of the ground.

The pits were excavated by hydraulic excavator immediately adjacent to the original trial pit location. The pits were filled with clean water and the depth to the water level below the edge of the pit was then monitored at regular intervals. Upon completion of the monitoring, any remaining water was removed prior to backfilling.

The test was undertaken in accordance with BRE Digest 365 “Soakaway Design. All logging and monitoring were carried out by BAM Ritchies Geotechnical Engineer.

The results of the soakaway tests are presented in Appendix 54.3 of this report.

5.11 Standpipe Installations

On the instruction of the Investigation supervisor perforated standpipes complete with valve taps and removable screw caps were installed in sixteen boreholes, BH01, BH02, BH05, BH07, BH08, BH10, BH16, BH18, BH20, BH24, BH28, BH31, BH36, BH39, BH42 and

⁴ IEEE Std 442-2017 - IEEE Guide for Thermal Resistivity Measurements of Soils and Backfill Materials

⁵ ASTM D 5334-2014 Standard Test Method for Determination of Soil and Soft Rock by Thermal Needle Probe Procedure

BH46 to allow monitoring of groundwater levels and gas concentrations.

Water sampling was carried out in compliance with BS 10175:2011⁶.

Details of the installations are provided on the appropriate borehole logs contained within Appendix 3.1 and Table 2 of this report.

5.12 Groundwater Observations

While drilling each borehole, the incidence of groundwater was noted by the driller. Groundwater inflows experienced during trial pitting operations were recorded by BAM Ritchies Geotechnical Engineer.

All groundwater observations made during the fieldworks are detailed in the exploratory hole logs contained within Appendix 3.0 of this report.

Subsequently, upon installation of the standpipes, BAM Ritchies Geotechnical Engineer has taken six electric dipmeter soundings on a regular basis in accordance with CIRIA C665-2007⁷. At the time of this report only visits 1 to 5 have been completed.

Groundwater purging was carried out on the first return monitoring visit using a bailer. Water sampling was carried out in compliance with BS 10175:2011⁸ on the second visit and sent for testing.

The soundings are presented on the gas and groundwater monitoring sheet contained within Appendix 5.0.

5.13 Gas Monitoring

Subsequently, upon installation of the standpipes, BAM Ritchies Geotechnical Engineer has monitored gas emissions, including, Methane, Carbon dioxide, Carbon Monoxide, Hydrogen sulphide, Oxygen, and flow rates, on a regular basis in accordance with CIRIA C665-2007.

These emissions are presented on the gas and groundwater monitoring sheets contained within Appendix 5.0 of this report.

⁶ BS 10175:2011+A2:2017 – Investigation of potentially contaminated sites.

⁷ CIRIA C665: 2007-assessing risks posed by hazardous ground gases to buildings.

⁸ BS 10175:2011+A2:2017 – Investigation of potentially contaminated sites.

5.14 Backfilling

Other than those used for installation of gas and groundwater monitoring standpipes. all boreholes were backfilled with cement bentonite pellets. While the trial pits were backfilled in order of excavation.

5.15 Photographs

All photographs were taken using a digital camera with each including a grey scale, colour chart and title sheet indicating the trial pit number or borehole number. The following photographs have been undertaken:

- Machine excavated trial pits.
- Sonic, U86 and core samples

These photographs are contained within Appendix 6.0 of this report.

Pre and post condition survey photographs were completed but do not form part of this report.

5.16 Soil and Rock Logging

Soil samples were described on site by BAM Ritchies Geotechnical Engineer using guidelines detailed in BS EN ISO 14688-1:2018⁹ and BS EN ISO 14688-2:2018. The relative density terms and corresponding uncorrected N values are illustrated in section 41 of BS 5930:2015+A1:2020. Consistency terms for fine soils are based on manual tests as detailed in BS EN ISO 14688-1:2018.

Rock cores were described on site by BAM Ritchies Geotechnical Engineer using guidelines detailed in BS EN ISO 14689-1:2018¹⁰. Measurements of Total and Solid Core Recovery together with Rock Quality Designation and estimated mass strength classifications were made and are detailed on the borehole logs in Appendix 4.1 of this report.

⁹ BS EN ISO 14688-1:2018 Geotechnical investigation and testing – Identification and classification of a soil – Part 1: Identification and description.

¹⁰ BS EN ISO 14689: 2018 Geotechnical investigation and testing – Identification and classification of rock – Part 1: Identification and description.

6.0 LABORATORY WORK

6.1 Soil

A programme of laboratory testing instructed by the Investigation supervisor was carried out on selected soil samples. All testing was undertaken in accordance with BS1377:1990¹¹ and other relevant, current standards as appropriate. References and methods for each test are detailed on Appendix 7.0 of this report.

6.1.1 Soil Classification Tests

The following soil classification tests were carried out:

- 213 No. Natural Moisture Content determinations.
- 28 No. Atterberg Limits tests.
- 174 No. Particle Size Distribution tests including 160 No. Sedimentation tests.

6.1.2 Soil Chemical Tests

The following soil chemical tests were carried out:

- 4 No. BRE Suite A
- 13 No. BRE Suite B
- 6 No. BRE Suite D
- 16 No. Total sulphates
- 15 No. p H
- 7 No. Organic Matter

6.1.3 Soil Compaction Related Tests

The following soil compaction-related tests were carried out:

- 10 No. 2.5 kg Compaction tests.
- 31 No. 4.5 kg Compaction tests.
- 9 No. Single point Moisture Condition Value (MCV) tests
- 4 No. Moisture Condition Value (MCV) calibration line tests.

Sample unsuitability prevented the following tests being completed:

- 2 No. 2.5kg Compaction tests

¹¹ BS1377:1990 Methods of test for soils for civil engineering purposes: Incorporating Amendment No.1.

- 4 No. 4.5Kg Compaction tests
- 6 No. Single point Moisture Condition Value (MCV) tests

6.1.4 Soil Strength Tests

The following soil strength tests were carried out:

- 31 No Standard Shearbox tests.

Sample unsuitability prevented the following tests being completed:

- 8 No. Immediate Undrained Triaxial Compression Strength tests performed using single stage testing techniques on 102mm diameter undisturbed samples.
- 1No. Standard shear box tests

The results of all geotechnical testing are presented in Appendix 7.1 of this report.

6.2 Geochemical Testing

6.2.1 Water Contaminant Tests

Analyses for the presence and quantity of the following contaminants were carried out:

- 10 ICE UK water Suite F tests

The results of all rock laboratory tests are contained in Appendix 7.2 of this report.

6.3 Rock and aggregate Testing

A programme of laboratory testing instructed by the Client was carried out on selected rock samples. All testing was undertaken in accordance with ISRM¹² and other relevant, current standards as appropriate. References and methods for each test are detailed on Appendix 7.1 of this report.

The following tests were carried out on selected sections of rock core:

- 14 No. Rock Moisture content
- 1 Uniaxial Compression test.

¹² BS1377:1990 Methods of test for soils for civil engineering purposes: Incorporating Amendment No.1.

- 17 No. Point Load Tests (2 x irregular or axial/diametral tests) nine tests as replacement for UCS test (2 x irregular or axial/diametral tests).
- 6 No. Magnesium Sulphates
- 3 No. Los Angeles Abrasion Tests

Sample unsuitability prevented the following tests being completed:

- 9 No Uniaxial Compression Test
- 2 No. Los Angeles Abrasion Value

All testing was undertaken in accordance with current standards as appropriate. References and methods for each test are detailed on the appropriate result sheets.

The final descriptions appearing on the exploratory hole logs are based on visual examination in conjunction with the available laboratory test data and insitu test data.

The results of all rock laboratory tests are contained in Appendix 7.1 of this report.

7.0 Notes

Whilst every effort has been made to ensure the accuracy of the data, the possibility exists of variations in ground conditions that were not detectable from the boreholes sunk and insitu testing at the site. It is also advisable that this report is read in its entirety.

**TABLE 1
SUMMARY OF FIELDWORK**

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379

Client: SSEN-T

Project No: RGN.330G

Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
BH01	IP	0.00	1.20	13/09/2023	13/09/2023	Insulated digging tools
BH01	SNC	1.20	8.70	14/09/2023	14/09/2023	Fraste Sonic CRS XL 140
BH01	RC	8.70	20.20	14/09/2023	14/09/2023	Fraste Sonic CRS XL 140
BH02	IP	0.00	1.20	19/09/2023	19/09/2023	Insulated digging tools
BH02	SNC	1.20	2.70	19/09/2023	19/09/2023	Fraste Sonic CRS XL 140
BH02	RC	2.70	20.00	20/09/2023	20/09/2023	Fraste Sonic CRS XL 140
BH03	IP	0.00	1.20	16/09/2023	16/09/2023	Insulated digging tools
BH03	SNC	1.20	2.70	16/09/2023	16/09/2023	Fraste Sonic CRS XL 140
BH03	RC	2.70	13.20	17/09/2023	17/09/2023	Fraste Sonic CRS XL 140
BH03	RC	13.20	20.60	19/09/2023	19/09/2023	Fraste Sonic CRS XL 140
BH04	IP	0.00	1.20	15/09/2023	15/09/2023	Insulated digging tools
BH04	SNC	1.20	8.70	15/09/2023	15/09/2023	Fraste Sonic CRS XL 140
BH04	RC	8.70	20.00	15/09/2023	16/09/2023	Fraste Sonic CRS XL 140
BH05	IP	0.00	0.30	28/08/2023	28/08/2023	Insulated digging tools
BH05	SNC	0.30	1.20	28/08/2023	28/08/2023	Fraste Sonic CRS XL 140
BH05	RC	1.20	2.70	28/08/2023	28/08/2023	Fraste Sonic CRS XL 140
BH05	SNC	2.70	8.70	29/08/2023	29/08/2023	Fraste Sonic CRS XL 140

INSTALLATION DETAILS				
Hole No	Type	Depth to Base m	Response Zone	
			From m	To m
BH01	SP	5.00	1.00	5.00
BH02	SP	3.50	0.50	3.50
BH05	SP	8.00	1.00	8.00
BH07	SP	2.50	0.50	2.50
BH08	SP	7.50	5.00	7.50
BH10	SP	7.30	4.30	7.30
BH16	SP	2.70	1.20	2.70
BH18	SP	2.50	1.00	2.50
BH20	SP	2.30	0.50	2.30
BH24	SP	8.00	4.00	8.00
BH28	SP	5.00	1.00	5.00
BH31	SP	4.00	1.00	4.00
BH36	SP	2.30	0.50	2.30
BH39	SP	3.50	0.50	3.50
BH42	SP	5.00	1.20	5.00
BH46	SP	2.00	0.50	2.00

BACKFILL DETAILS			
Hole No	From m	To m	Description
BH01	0.00	0.25	Upstanding cover
BH01	0.50	1.00	Bentonite
BH01	1.00	5.00	Gravel Backfill
BH01	5.00	20.20	Bentonite
BH02	0.00	0.25	Concrete
BH02	0.25	0.50	Bentonite
BH02	0.50	3.50	Gravel Backfill
BH02	3.50	20.00	Bentonite
BH03	0.00	0.25	Arisings
BH03	0.25	18.70	Bentonite
BH03	18.70	20.60	Arisings
BH04	0.00	0.25	Arisings
BH04	0.25	20.00	Bentonite
BH05	0.00	0.25	Flush cover
BH05	0.50	1.00	Bentonite
BH05	1.00	8.00	Gravel Backfill
BH05	8.00	20.00	Bentonite

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379

Client: SSEN-T

Project No: RGN.330G

Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
BH05	RC	8.70	20.00	29/08/2023	31/08/2023	FraSTE Sonic CRS XL 140
BH06	IP	0.00	0.60	04/09/2023	04/09/2023	Insulated digging tools
BH06	SNC	0.60	10.20	05/09/2023	05/09/2023	FraSTE Sonic CRS XL 140
BH06	RC	10.20	20.00	05/09/2023	06/09/2023	FraSTE Sonic CRS XL 140
BH07	IP	0.00	0.50	31/08/2023	31/08/2023	Insulated digging tools
BH07	SNC	0.50	20.00	31/08/2023	01/09/2023	FraSTE Sonic CRS XL 140
BH08	IP	0.00	0.50	28/09/2023	28/09/2023	Insulated digging tools
BH08	SNC	0.50	2.70	28/09/2023	28/09/2023	FraSTE Sonic CRS XL 140
BH08	RC	2.70	20.30	28/09/2023	29/09/2023	FraSTE Sonic CRS XL 140
BH09	IP	0.00	1.20	21/09/2023	21/09/2023	Insulated digging tools
BH09	SNC	1.20	2.70	26/09/2023	26/09/2023	FraSTE Sonic CRS XL 140
BH09	RC	2.70	8.70	26/09/2023	26/09/2023	FraSTE Sonic CRS XL 140
BH09	SNC	8.70	10.20	27/09/2023	27/09/2023	FraSTE Sonic CRS XL 140
BH09	RC	10.20	20.00	27/09/2023	27/09/2023	FraSTE Sonic CRS XL 140
BH10	IP	0.00	0.90	27/09/2023	27/09/2023	Insulated digging tools
BH10	DS	0.90	2.30	27/09/2023	27/09/2023	FraSTE ML
BH10	RC	2.30	15.00	27/09/2023	28/09/2023	FraSTE ML

INSTALLATION DETAILS					
Hole No	Type	Depth to Base m	Response Zone		
			From m	To m	

BACKFILL DETAILS			
Hole No	From m	To m	Description
BH06	0.00	20.00	Bentonite
BH07	0.00	0.10	Upstanding cover
BH07	0.10	0.30	Concrete
BH07	0.30	0.50	Bentonite
BH07	0.50	2.50	Gravel Backfill
BH07	2.50	19.20	Bentonite
BH07	19.20	20.00	Arisings
BH08	0.00	0.25	Upstanding cover
BH08	0.25	0.50	Concrete
BH08	0.50	5.00	Bentonite
BH08	5.00	7.50	Gravel Backfill
BH08	7.50	20.30	Bentonite
BH09	0.00	0.25	Arisings
BH09	0.25	14.90	Bentonite
BH09	14.90	20.00	Arisings
BH10	0.00	0.30	Upstanding cover
BH10	0.30	0.40	Concrete

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379 Client: SSEN-T

Project No: RGN.330G Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
BH11	IP	0.00	0.40	30/09/2023	30/09/2023	Insulated digging tools
BH11	DS	0.40	2.00	30/09/2023	30/09/2023	Fraste ML
BH11	RC	2.00	6.00	30/09/2023	30/09/2023	Fraste ML
BH11	RC	6.00	15.00	01/10/2023	01/10/2023	Fraste ML
BH12	IP	0.00	1.20	02/10/2023	02/10/2023	Insulated digging tools
BH12	DS	1.20	2.00	02/10/2023	02/10/2023	Fraste ML
BH12	RC	2.00	11.00	02/10/2023	03/10/2023	Fraste ML
BH13	IP	0.00	0.30	02/09/2023	02/09/2023	Insulated digging tools
BH13	SNC	0.30	4.20	02/09/2023	02/09/2023	Fraste Sonic CRS XL 140
BH13	RC	4.20	15.00	02/09/2023	02/09/2023	Fraste Sonic CRS XL 140
BH14	IP	0.00	0.50	07/09/2023	07/09/2023	Insulated digging tools
BH14	SNC	0.50	2.70	07/09/2023	07/09/2023	Fraste Sonic CRS XL 140
BH14	RC	2.70	15.20	07/09/2023	07/09/2023	Fraste Sonic CRS XL 140
BH15	IP	0.00	0.70	28/09/2023	28/09/2023	Insulated digging tools
BH15	DS	0.70	2.00	28/09/2023	28/09/2023	Fraste ML
BH15	RC	2.00	15.00	29/09/2023	30/09/2023	Fraste ML
BH16	IP	0.00	0.90	01/10/2023	01/10/2023	Insulated digging tools

INSTALLATION DETAILS				
Hole No	Type	Depth to Base m	Response Zone	
			From m	To m

BACKFILL DETAILS			
Hole No	From m	To m	Description
BH10	4.30	7.30	Gravel Backfill
BH10	7.30	15.00	Bentonite
BH11	0.00	0.25	Arisings
BH11	0.25	15.00	Bentonite
BH12	0.00	11.00	Bentonite
BH13	0.00	0.25	Arisings
BH13	0.25	15.00	Bentonite
BH14	0.00	0.25	Arisings
BH14	0.25	15.20	Bentonite
BH15	0.00	0.50	Arisings
BH15	0.50	15.00	Bentonite
BH16	0.00	0.20	Upstanding cover
BH16	0.50	1.20	Bentonite
BH16	1.20	2.70	Gravel Backfill
BH16	2.70	15.00	Bentonite
BH17	0.00	0.25	Arisings

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379

Client: SSEN-T

Project No: RGN.330G

Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
BH16	SNC	0.90	2.70	01/10/2023	01/10/2023	Fraste Sonic CRS XL 140
BH16	RC	2.70	15.00	01/10/2023	02/10/2023	Fraste Sonic CRS XL 140
BH17	IP	0.00	1.20	29/09/2023	29/09/2023	Insulated digging tools
BH17	SNC	1.20	2.70	29/09/2023	29/09/2023	Fraste Sonic CRS XL 140
BH17	RC	2.70	15.20	29/09/2023	30/09/2023	Fraste Sonic CRS XL 140
BH17	RC	15.20	15.20	01/10/2023	01/10/2023	Fraste Sonic CRS XL 140
BH18	IP	0.00	1.20	08/09/2023	08/09/2023	insulated digging tools
BH18	SNC	1.20	4.20	11/09/2023	11/09/2023	Fraste Sonic CRS XL 140
BH18	RC	4.20	15.60	11/09/2023	12/09/2023	Fraste Sonic CRS XL 140
BH19	IP	0.00	0.50	12/09/2023	12/09/2023	Insulated digging tools
BH19	SNC	0.50	7.20	12/09/2023	13/09/2023	Fraste Sonic CRS XL 140
BH19	RC	7.20	15.10	13/09/2023	13/09/2023	Fraste Sonic CRS XL 140
BH20	IP	0.00	1.20	31/08/2023	31/08/2023	insulated digging tools
BH20	DS	1.20	2.20	31/08/2023	31/08/2023	Commachio 205
BH20	RC	2.20	10.20	31/08/2023	01/09/2023	Commachio 205
BH21	IP	0.00	0.40	03/09/2023	03/09/2023	insulated digging tools
BH21	DS	0.40	1.80	03/09/2023	03/09/2023	Commachio 205

INSTALLATION DETAILS				
Hole No	Type	Depth to Base m	Response Zone	
			From m	To m

BACKFILL DETAILS			
Hole No	From m	To m	Description
BH17	0.25	15.20	Bentonite
BH18	0.00	0.20	Upstanding cover
BH18	0.30	1.00	Bentonite
BH18	1.00	2.50	Gravel Backfill
BH18	2.50	15.60	Bentonite
BH19	0.00	0.25	Arisings
BH19	0.25	13.30	Bentonite
BH19	13.30	15.10	Arisings
BH20	0.00	0.20	Upstanding cover
BH20	0.20	0.30	Concrete
BH20	0.30	0.50	Bentonite
BH20	0.50	2.30	Gravel Backfill
BH20	2.30	10.20	Bentonite
BH21	0.00	0.50	Arisings
BH21	0.50	10.00	Bentonite
BH22	0.00	0.50	Arisings
BH22	0.50	10.00	Bentonite

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379

Client: SSEN-T

Project No: RGN.330G

Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
BH21	RC	1.80	10.00	03/09/2023	03/09/2023	Commachio 205
BH22	IP	0.00	1.20	12/09/2023	12/09/2023	Insulated digging tools
BH22	DS	1.20	2.60	12/09/2023	12/09/2023	Commachio 205
BH22	RC	2.60	10.00	13/09/2023	13/09/2023	Commachio 205
BH23	IP	0.00	0.90	11/09/2023	11/09/2023	Insulated digging tools
BH23	DS	0.90	3.20	11/09/2023	11/09/2023	Commachio 205
BH23	RC	3.20	10.00	11/09/2023	12/09/2023	Commachio 205
BH24	IP	0.00	0.40	20/09/2023	20/09/2023	Insulated digging tools
BH24	DS	0.40	5.60	20/09/2023	22/09/2023	Fraste ML
BH24	RC	5.60	6.60	22/09/2023	22/09/2023	Fraste ML
BH24	DS	6.60	8.20	26/09/2023	26/09/2023	Fraste ML
BH24	RC	8.20	10.00	26/09/2023	26/09/2023	Fraste ML
BH25	IP	0.00	0.90	07/09/2023	07/09/2023	insulated digging tools
BH25	DS	0.90	7.40	07/09/2023	07/09/2023	Commachio 205
BH25	RC	7.40	10.00	07/09/2023	08/09/2023	Commachio 205
BH26	IP	0.00	0.90	05/09/2023	05/09/2023	Insulated digging tools
BH26	DS	0.90	2.00	05/09/2023	05/09/2023	Commachio 205

INSTALLATION DETAILS					
Hole No	Type	Depth to Base m	Response Zone		
			From m	To m	

BACKFILL DETAILS			
Hole No	From m	To m	Description
BH23	0.00	0.50	Arisings
BH23	0.50	10.00	Bentonite
BH24	0.00	0.20	Upstanding cover
BH24	0.20	0.30	Concrete
BH24	0.30	4.00	Bentonite
BH24	4.00	8.00	Gravel Backfill
BH24	8.00	10.00	Bentonite
BH25	0.00	0.50	Arisings
BH25	0.50	10.00	Bentonite
BH26	0.00	0.50	Arisings
BH26	0.50	10.00	Bentonite
BH27	0.00	0.50	Arisings
BH27	0.50	10.00	Bentonite
BH28	0.00	0.20	Upstanding cover
BH28	0.20	0.50	Concrete
BH28	0.50	1.00	Bentonite
BH28	1.00	5.00	Gravel Backfill

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379

Client: SSEN-T

Project No: RGN.330G

Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
BH26	RC	2.00	10.00	05/09/2023	06/09/2023	Commachio 205
BH27	IP	0.00	1.20	01/09/2023	01/09/2023	Insulated digging tools
BH27	DS	1.20	2.20	01/09/2023	01/09/2023	Commachio 205
BH27	RC	2.20	10.00	01/09/2023	02/09/2023	Commachio 205
BH28	IP	0.00	1.20	28/08/2023	28/08/2023	Commachio 205
BH28	DS	1.20	4.60	28/08/2023	29/08/2023	Commachio 205
BH28	RC	4.60	10.00	29/08/2023	29/08/2023	Commachio 205
BH29	IP	0.00	1.20	29/08/2023	29/08/2023	Insulated digging tools
BH29	DS	1.20	2.30	29/08/2023	30/08/2023	Commachio 205
BH29	RC	2.30	10.00	30/08/2023	31/08/2023	Commachio 205
BH30	IP	0.00	0.40	02/09/2023	02/09/2023	Insulated digging tools
BH30	DS	0.40	2.30	02/09/2023	02/09/2023	Commachio 205
BH30	RC	2.30	10.00	02/09/2023	02/09/2023	Commachio 205
BH31	IP	0.00	1.20	04/09/2023	04/09/2023	Insulated digging tools
BH31	DS	1.20	2.10	04/09/2023	04/09/2023	Commachio 205
BH31	RC	2.10	2.60	04/09/2023	04/09/2023	Commachio 205
BH31	DS	2.60	3.00	04/09/2023	04/09/2023	Commachio 205

INSTALLATION DETAILS					
Hole No	Type	Depth to Base m	Response Zone		
			From m	To m	

BACKFILL DETAILS			
Hole No	From m	To m	Description
BH28	5.00	10.00	Bentonite
BH29	0.00	0.50	Arisings
BH29	0.50	10.00	Bentonite
BH30	0.00	0.50	Arisings
BH30	0.50	10.00	Bentonite
BH31	0.00	0.30	Upstanding cover
BH31	0.30	0.40	Concrete
BH31	0.40	1.00	Bentonite
BH31	1.00	4.00	Gravel Backfill
BH31	4.00	10.00	Bentonite
BH32	0.00	0.50	Arisings
BH32	0.50	10.00	Bentonite
BH33	0.00	0.50	Arisings
BH33	0.50	10.00	Bentonite
BH34	0.00	0.50	Arisings
BH34	0.50	10.00	Bentonite
BH35	0.00	0.50	Arisings

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379

Client: SSEN-T

Project No: RGN.330G

Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
BH31	RC	3.00	4.00	04/09/2023	04/09/2023	Commachio 205
BH31	DS	4.00	4.30	04/09/2023	04/09/2023	Commachio 205
BH31	RC	4.30	4.90	04/09/2023	04/09/2023	Commachio 205
BH31	DS	4.90	7.00	04/09/2023	04/09/2023	Commachio 205
BH31	RC	7.00	10.00	04/09/2020	05/09/2023	Commachio 205
BH32	IP	0.00	0.90	06/09/2023	06/09/2023	insulated digging tools
BH32	DS	0.90	2.80	06/09/2023	06/09/2023	Commachio 205
BH32	RC	2.80	10.00	06/09/2023	07/09/2023	Commachio 205
BH33	IP	0.00	0.50	19/09/2023	19/09/2023	insulated digging tools
BH33	DS	0.50	2.00	19/09/2023	19/09/2023	Fraste ML
BH33	RC	2.00	10.00	19/09/2023	19/09/2023	Fraste ML
BH34	IP	0.00	0.40	17/09/2023	17/09/2023	insulated digging tools
BH34	DS	0.40	1.50	17/09/2023	17/09/2023	Fraste ML
BH34	RC	2.00	10.00	17/09/2023	17/09/2023	Fraste ML
BH35	IP	0.00	0.40	14/09/2023	14/09/2023	insulated digging tools
BH35	DS	0.40	1.00	14/09/2023	14/09/2023	Fraste ML
BH35	RC	1.00	10.00	14/09/2023	14/09/2023	Fraste ML

INSTALLATION DETAILS					
Hole No	Type	Depth to Base m	Response Zone		
			From m	To m	

BACKFILL DETAILS			
Hole No	From m	To m	Description
BH35	0.50	10.00	Bentonite
BH36	0.00	0.20	Upstanding cover
BH36	0.20	0.50	Bentonite
BH36	0.50	2.30	Gravel Backfill
BH36	2.30	10.00	Bentonite
BH37	0.00	0.50	Arisings
BH37	0.50	10.00	Bentonite
BH38	0.00	0.50	Arisings
BH38	0.50	10.00	Bentonite
BH39	0.00	0.10	Upstanding cover
BH39	0.10	0.20	Concrete
BH39	0.20	0.50	Bentonite
BH39	0.50	3.50	Gravel Backfill
BH39	3.50	10.00	Bentonite
BH40	0.00	15.20	Bentonite
BH41	0.00	14.00	Bentonite
BH42	0.00	0.20	Upstanding cover

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379 Client: SSEN-T
 Project No: RGN.330G Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
BH36	IP	0.00	0.40	15/09/2023	15/09/2023	Insulated digging tools
BH36	DS	0.40	2.30	15/09/2023	15/09/2023	Fraste ML
BH36	RC	2.30	10.00	15/09/2023	15/09/2023	Fraste ML
BH37	IP	0.00	0.50	16/09/2023	16/09/2023	Insulated digging tools
BH37	DS	0.50	2.00	16/09/2023	16/09/2023	Fraste ML
BH37	RC	2.00	10.00	16/09/2023	17/09/2023	Fraste ML
BH38	IP	0.00	1.20	19/09/2023	19/09/2023	insulated digging tools
BH38	DS	1.20	2.20	19/09/2023	19/09/2023	Fraste ML
BH38	RC	2.20	10.00	20/09/2023	20/09/2023	Fraste ML
BH39	IP	0.00	0.40	19/09/2023	19/09/2023	Insulated digging tools
BH39	DS	0.40	2.00	19/09/2023	19/09/2023	Fraste ML
BH39	RC	2.00	10.00	19/09/2023	19/09/2023	Fraste ML
BH40	IP	0.00	1.20	16/10/2023	16/10/2023	insulated Hand Tools
BH40	DS	1.20	3.20	16/10/2023	16/10/2023	Fraste ML
BH40	RC	3.20	15.20	16/10/2023	16/10/2023	Fraste ML
BH41	IP	0.00	1.20	18/10/2023	18/10/2023	Insulated Hand Tools
BH41	DS	1.20	3.20	18/10/2023	18/10/2023	Fraste ML

INSTALLATION DETAILS					
Hole No	Type	Depth to Base m	Response Zone		
			From m	To m	

BACKFILL DETAILS			
Hole No	From m	To m	Description
BH42	0.20	0.30	Concrete
BH42	0.30	1.20	Bentonite
BH42	1.20	5.00	Gravel Backfill
BH42	5.00	16.00	Bentonite
BH43	0.00	8.00	Bentonite
BH44	0.00	0.50	Arisings
BH44	0.50	10.00	Bentonite
BH45	0.00	0.50	Arisings
BH45	0.50	10.30	Bentonite
BH46	0.00	0.20	Upstanding cover
BH46	0.30	0.50	Bentonite
BH46	0.50	2.00	Gravel Backfill
BH46	2.00	7.20	Bentonite
HP01	0.00	0.60	Arisings
HP02	0.00	1.00	Arisings
HP03	0.00	0.55	Arisings
HP04	0.00	0.45	Arisings

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379

Client: SSEN-T

Project No: RGN.330G

Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
				TP12	TP	
TP13	TP	0.00	3.20	04/09/2023	04/09/2023	14T tracked excavator
TP14	TP	0.00	3.80	29/08/2023	29/08/2023	14T tracked excavator
TP15	TP	0.00	3.50	29/08/2023	29/08/2023	14T tracked excavator
TP16	TP	0.00	3.50	02/09/2023	02/09/2023	14T tracked excavator
TP17	TP	0.00	3.30	02/09/2023	02/09/2023	14T tracked excavator
TP18	TP	0.00	3.40	04/09/2023	04/09/2023	14T tracked excavator
TP19	TP	0.00	3.30	06/09/2023	06/09/2023	14T tracked excavator
TP20	TP	0.00	3.60	04/09/2023	04/09/2023	14T tracked excavator
TP21	TP	0.00	3.20	01/09/2023	01/09/2023	14T tracked excavator
TP22	TP	0.00	2.90	01/09/2023	01/09/2023	14T tracked excavator
TP23	TP	0.00	2.30	29/08/2023	29/08/2023	14T tracked excavator
TP24	TP	0.00	3.30	29/08/2023	29/08/2023	14T tracked excavator
TP25	TP	0.00	3.50	29/08/2023	29/08/2023	14T tracked excavator
TP26	TP	0.00	3.60	29/08/2023	29/08/2023	14T tracked excavator
TP27	TP	0.00	3.60	01/09/2023	01/09/2023	14T tracked excavator
TP28	TP	0.00	3.40	31/08/2023	31/08/2023	14T tracked excavator

INSTALLATION DETAILS					
Hole No	Type	Depth to Base m	Response Zone		
			From m	To m	

BACKFILL DETAILS			
Hole No	From m	To m	Description
TP35	0.00	3.30	Arisings
TP36	0.00	2.00	Arisings
TP37	0.00	3.90	Arisings
TP38	0.00	3.90	Arisings
TP39	0.00	3.10	Arisings
TP40	0.00	3.60	Arisings
TP41	0.00	3.40	Arisings
TP42	0.00	2.60	Arisings
TP44	0.00	1.00	Arisings
TP44A	0.00	3.90	Arisings
TP45	0.00	3.70	Arisings
TP46	0.00	3.30	Arisings
TP47	0.00	3.30	Arisings
TP48	0.00	3.00	Arisings
TP49	0.00	3.70	Arisings
TP50	0.00	3.20	Arisings

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379

Client: SSEN-T

Project No: RGN.330G

Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
TP29	TP	0.00	3.60	04/09/2023	04/09/2023	14T tracked excavator
TP30	TP	0.00	3.90	06/09/2023	06/09/2023	14T tracked excavator
TP31	TP	0.00	3.60	05/09/2023	05/09/2023	14T tracked excavator
TP32	TP	0.00	3.60	06/09/2023	06/09/2023	14T tracked excavator
TP33	TP	0.00	3.30	05/09/2023	05/09/2023	14T tracked excavator
TP34	TP	0.00	3.40	31/08/2023	31/08/2023	14T tracked excavator
TP35	TP	0.00	3.30	31/08/2023	31/08/2023	14T tracked excavator
TP36	TP	0.00	2.00	31/08/2023	31/08/2023	14T tracked excavator
TP37	TP	0.00	3.90	02/09/2023	02/09/2023	14T tracked excavator
TP38	TP	0.00	3.90	07/09/2023	07/09/2023	14T tracked excavator
TP39	TP	0.00	3.10	02/09/2023	02/09/2023	14T tracked excavator
TP40	TP	0.00	3.60	03/09/2023	03/09/2023	14T tracked excavator
TP41	TP	0.00	3.40	03/09/2023	03/09/2023	14T tracked excavator
TP42	TP	0.00	2.60	06/09/2023	06/09/2023	14T tracked excavator
TP43	TP	0.00	3.60	08/09/2023	08/09/2023	14T tracked excavator
TP44	TP	0.00	1.00	11/09/2023	11/09/2023	14T tracked excavator
TP44A	TP	0.00	3.90	11/09/2023	11/09/2023	14T tracked excavator

INSTALLATION DETAILS					
Hole No	Type	Depth to Base m	Response Zone		
			From m	To m	

BACKFILL DETAILS			
Hole No	From m	To m	Description
TP51	0.00	3.90	Arisings
TP52	0.00	3.90	Arisings
TP53	0.00	3.30	Arisings
TP54	0.00	2.20	Arisings

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379

Client: SSEN-T

Project No: RGN.330G

Engineer: Tony Gee

DEPTH RELATED EXPLORATORY HOLE INFORMATION						
Hole No	Type	From m	To m	Date		Plant
				Start	End	
TP45	TP	0.00	3.70	11/09/2023	11/09/2023	14T tracked excavator
TP46	TP	0.00	3.30	13/09/2023	13/09/2023	14T tracked excavator
TP47	TP	0.00	3.30	13/09/2023	13/09/2023	14T tracked excavator
TP48	TP	0.00	3.00	13/09/2023	13/09/2023	14T tracked excavator
TP49	TP	0.00	3.70	13/09/2023	13/09/2023	14T tracked excavator
TP50	TP	0.00	3.20	01/09/2023	01/09/2023	14T tracked excavator
TP51	TP	0.00	3.90	06/09/2023	06/09/2023	14T tracked excavator
TP52	TP	0.00	3.90	06/09/2023	06/09/2023	14T tracked excavator
TP53	TP	0.00	3.30	29/08/2023	29/08/2023	14T tracked excavator
TP54	TP	0.00	2.20	29/08/2023	29/08/2023	14T tracked excavator

INSTALLATION DETAILS					
Hole No	Type	Depth to Base m	Response Zone		
			From m	To m	

BACKFILL DETAILS				
Hole No	From m	To m	Description	

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379 Client: SSEN-T
 Project No: RGN.330G Engineer: Tony Gee

Hole No	Hole Type	Final Depth m	Date		SAMPLES													IN SITU TESTS											
					Count of Types													SPT		Soakaway Tests	Thermal Res	CBR Tests							
			Start	End	D	B	LB	W	L	Liner	Liner NR	U	U-NR	BLK	C	ES	EW	S	C			DCP	CBR	MEX					
Totals					114	50				16						1				33			111	1	4	19	10		
BH01	SNC+RC	20.20	13/09/2023	15/09/2023	6	3									1				3			4							
BH02	SNC+RC	20.00	19/09/2023	21/09/2023	5	3																2							
BH03	SNC+RC	20.60	16/09/2023	19/09/2023	5	6													3			3							
BH04	SNC+RC	20.00	15/09/2023	16/09/2023	8	2													3			7							
BH05	SNC+RC	20.00	28/08/2023	31/08/2023	5	2																3							
BH06	SNC+RC	20.00	04/09/2023	06/09/2023	9	3													6			5	1						
BH07	SNC	20.00	31/08/2023	01/09/2023	15	2																13							
BH08	SNC+RC	20.30	28/09/2023	29/09/2023	4	3													1			1							
BH09	SNC+RC	20.00	21/09/2023	28/09/2023	4	2																2							
BH10	DS+RC	15.00	27/09/2023	27/09/2023	3	1			1										5			1							
BH11	DS+RC	15.00	30/09/2023	01/10/2023	1				1													1							
BH12	DS+RC	11.00	02/10/2023	03/10/2023	4	2			1										1			2							
BH13	SNC+RC	15.00	03/09/2023	03/09/2023	5	2													1			3							
BH14	SNC+RC	15.20	07/09/2023	08/09/2023	5	3																2							
BH15	DS+RC	15.00	28/09/2023	30/09/2023	2	1			1													1							
BH16	SNC+RC	15.00	01/10/2023	02/10/2023	4	2																2							
BH17	SNC+RC	15.20	29/09/2023	01/10/2023	4	2																2							

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379 Client: SSEN-T
 Project No: RGN.330G Engineer: Tony Gee

Hole No	Hole Type	Final Depth m	Date		SAMPLES														IN SITU TESTS								
					Count of Types																						
			Start	End	D	B	LB	W	L	Liner	Liner NR	U	U-NR	BLK	C	ES	EW	SPT S	SPT C	Soakaway Tests	Thermal Res	CBR Tests					
Totals					114	50				16				1			33										
BH18	SNC+RC	15.60	08/09/2023	12/09/2023	5	4										4											
BH19	SNC+RC	15.10	12/09/2023	13/09/2023	5	2																					
BH20	DS+RC	10.20	31/08/2023	01/09/2023	3	2			1								3										
BH21	DS+RC	10.00	03/09/2023	03/09/2023	1				1																		
BH22	DS+RC	10.00	12/09/2023	13/09/2023	3	2			2								2										
BH23	DS+RC	10.00	11/09/2023	12/09/2023	3	1			1								1										
BH24	DS+RC	10.00	26/09/2023	26/09/2023	5				7																		
BH25	DS+RC	10.00	07/09/2023	08/09/2023																							
BH26	DS+RC	10.00	05/09/2023	06/09/2023																							
BH27	DS+RC	10.00	01/09/2023	02/09/2023																							
BH28	DS+RC	10.00	28/08/2023	29/08/2023																							
BH29	DS+RC	10.00	29/08/2023	31/08/2023																							
BH30	DS+RC	10.00	02/09/2023	02/09/2023																							
BH31	DS+RC	10.00	04/09/2023	05/09/2023																							
BH32	DS+RC	10.00	06/09/2023	07/09/2023																							
BH33	DS+RC	10.00	18/09/2023	18/09/2023																							
BH34	DS+RC	10.00	17/09/2023	18/09/2023																							

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379 Client: SSEN-T
 Project No: RGN.330G Engineer: Tony Gee

Hole No	Hole Type	Final Depth m	Date		SAMPLES													IN SITU TESTS									
					Count of Types																						
			Start	End	D	B	LB	W	L	Liner	Liner NR	U	U-NR	BLK	C	ES	EW	SPT S	SPT C	Soakaway Tests	Thermal Res	CBR Tests					
Totals					114	50			16				1			33			111	1	4	19	10				
BH35	DS+RC	10.00	14/09/2023	14/09/2023															1								
BH36	DS+RC	10.00	15/09/2023	15/09/2023																1							
BH37	DS+RC	10.00	16/09/2023	17/09/2023																1							
BH38	DS+RC	10.00	19/09/2023	20/09/2023																1							
BH39	DS+RC	10.00	19/09/2023	19/09/2023																1							
BH40	DS+RC	15.20	16/10/2023	16/10/2023																2							
BH41	DS+RC	14.00	18/10/2023	19/10/2023																1							
BH42	DS+RC	16.00	13/10/2023	15/10/2023																7							
BH43	DS+RC	8.00	17/10/2023	17/10/2023																1							
BH44	DS+RC	10.00	12/10/2023	13/10/2023																2							
BH45	DS+RC	10.30	11/10/2023	12/10/2023																3							
BH46	DS+RC	7.20	23/10/2023	24/10/2023																1							
HP01	IP	0.60	18/10/2023	18/10/2023																							
HP01 DCP	DCP	1.74	18/10/2023	18/10/2023																					1		
HP02	IP	1.00	18/10/2023	18/10/2023																							
HP02 DCP	DCP	0.67	18/08/2023	18/08/2023																					1		
HP03	IP	0.55	18/10/2023	18/10/2023																							

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379 Client: SSEN-T
 Project No: RGN.330G Engineer: Tony Gee

Hole No	Hole Type	Final Depth m	Date		SAMPLES													IN SITU TESTS											
					Count of Types													SPT			Soakaway Tests	Thermal Res	CBR Tests						
			Start	End	D	B	LB	W	L	Liner	Liner NR	U	U-NR	BLK	C	ES	EW	S	C	DCP			CBR	MEX					
Totals				114	50				16									111	1	4	19	10							
HP03 DCP	DCP	1.96	18/10/2023	18/10/2023																							1		
HP04	IP	0.50	18/10/2023	18/10/2023																									
HP04 DCP	DCP	0.87	18/10/2023	18/10/2023																								1	
HP05	IP	0.70	18/10/2023	18/10/2023																									
HP05 DCP	DCP	0.58	18/10/2023	18/10/2023																								1	
HP06	IP	1.20	18/10/2023	18/10/2023																									
HP06 DCP	DCP	0.80	18/10/2023	18/10/2023																								1	
HP07	IP	1.20	18/10/2023	18/10/2023																									
HP07 DCP	DCP	0.39	18/10/2023	18/10/2023																								1	
TP01	TP	2.00	14/09/2023	14/09/2023																									
TP02	TP	3.00	14/09/2023	14/09/2023																									
TP03	TP	3.30	14/09/2023	14/09/2023																									
TP04	TP	4.00	14/09/2023	14/09/2023																								1	
TP05	TP	1.20	14/09/2023	14/09/2023																									
TP06	TP	3.00	15/09/2023	15/09/2023																									
TP07	TP	3.60	15/09/2023	15/09/2023																								1	
TP08	TP	3.00	15/09/2023	15/09/2023																									

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379 Client: SSEN-T
 Project No: RGN.330G Engineer: Tony Gee

Hole No	Hole Type	Final Depth m	Date		SAMPLES														IN SITU TESTS										
					Count of Types														SPT S	SPT C	Soakaway Tests	Thermal Res	CBR Tests						
			Start	End	D	B	LB	W	L	Liner	Liner NR	U	U-NR	BLK	C	ES	EW	DCP					CBR	MEX					
			Totals				114	50					16				1					33			111	1	4	19	10
TP09	TP	2.00	15/09/2023	15/09/2023																						1			
TP10	TP	1.10	15/09/2023	15/09/2023																									
TP11	TP	3.40	04/09/2023	04/09/2023																						1			
TP12	TP	2.90	02/09/2023	02/09/2023																									
TP13	TP	3.20	04/09/2023	04/09/2023																									
TP14	TP	3.80	28/08/2023	28/08/2023																						1			
TP15	TP	3.50	28/08/2023	28/08/2023																									
TP16	TP	3.50	02/09/2023	02/09/2023																						1			
TP17	TP	3.30	02/09/2023	02/09/2023																									
TP18	TP	3.40	04/09/2023	04/09/2023																									
TP19	TP	3.30	06/09/2023	06/09/2023																						1			
TP20	TP	3.60	04/09/2023	04/09/2023																						1			
TP21	TP	3.20	01/09/2023	01/09/2023																						1			
TP22	TP	2.90	01/09/2023	01/09/2023																									
TP23	TP	2.30	28/08/2023	28/08/2023																									
TP24	TP	3.30	29/08/2023	29/08/2023																									
TP25	TP	3.50	28/08/2023	28/08/2023																									

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379 Client: SSEN-T

Project No: RGN.330G Engineer: Tony Gee

Hole No	Hole Type	Final Depth m	Date		SAMPLES													IN SITU TESTS										
					Count of Types																							
			Start	End	D	B	LB	W	L	Liner	Liner NR	U	U-NR	BLK	C	ES	EW	SPT S	SPT C	Soakaway Tests	Thermal Res	CBR Tests						
																						DCP	CBR	MEX				
Totals					114	50				16					1			33				111	1	4	19	10		
TP26	TP	3.60	28/08/2023	28/08/2023																								
TP27	TP	3.60	01/09/2023	01/09/2023																								
TP28	TP	3.40	31/08/2023	31/08/2023																								
TP29	TP	3.60	04/09/2023	04/09/2023																								
TP30	TP	3.90	06/09/2023	06/09/2023																								
TP31	TP	3.60	05/09/2023	05/09/2023																								
TP32	TP	3.60	06/09/2023	06/09/2023																								
TP33	TP	3.60	05/09/2023	05/09/2023																								
TP34	TP	3.40	31/08/2023	31/08/2023																								
TP35	TP	3.30	31/08/2023	31/08/2023																								
TP36	TP	2.00	31/08/2023	31/08/2023																								
TP37	TP	3.90	02/09/2023	02/09/2023																								
TP38	TP	3.90	07/09/2023	07/09/2023																								
TP39	TP	3.10	02/09/2023	02/09/2023																								
TP40	TP	3.60	03/09/2023	03/09/2023																								
TP41	TP	3.40	03/09/2023	03/09/2023																								
TP42	TP	2.60	06/09/2023	06/09/2023																								

For Abbreviations see Key to Exploratory Hole Records

TABLE 1 - FIELDWORK SUMMARY

Project Name: ASTI Substation Site - LT379 Client: SSEN-T
 Project No: RGN.330G Engineer: Tony Gee

Hole No	Hole Type	Final Depth m	Date		SAMPLES														IN SITU TESTS											
					Count of Types														SPT			Soakaway Tests	Thermal Res	CBR Tests						
			Start	End	D	B	LB	W	L	Liner	Liner NR	U	U-NR	BLK	C	ES	EW	S	C	DCP	CBR			MEX						
Totals					114	50				16						1			33					111	1	4	19	10		
TP43	TP	3.60	08/09/2023	08/09/2023																										
TP44	TP	1.00	11/09/2023	11/09/2023																							1			
TP44 DCP	DCP	2.06	13/10/2023	13/10/2023																								1		
TP44A	TP	3.90	11/09/2023	11/09/2023																										
TP45	TP	3.70	11/09/2023	11/09/2023																										
TP46	TP	3.30	13/09/2023	13/09/2023																							1			
TP46 DCP	DCP	1.31	13/10/2023	13/10/2023																								1		
TP47	TP	3.30	13/09/2023	13/09/2023																										
TP48	TP	3.00	13/09/2023	13/09/2023																							1			
TP48 DCP	DCP	1.58	13/10/2023	13/10/2023																								1		
TP49	TP	3.70	13/09/2023	13/09/2023																										
TP50	TP	3.20	01/09/2023	01/09/2023																							1			
TP51	TP	3.90	06/09/2023	06/09/2023																						1				
TP52	TP	3.90	06/09/2023	06/09/2023																						1				
TP53	TP	3.30	28/08/2023	28/08/2023																							1			
TP54	TP	2.20	28/08/2023	28/08/2023																							1			

For Abbreviations see Key to Exploratory Hole Records

**TABLE 2
STANDPIPE INSTALLATIONS**

Contract No. RGN.330G

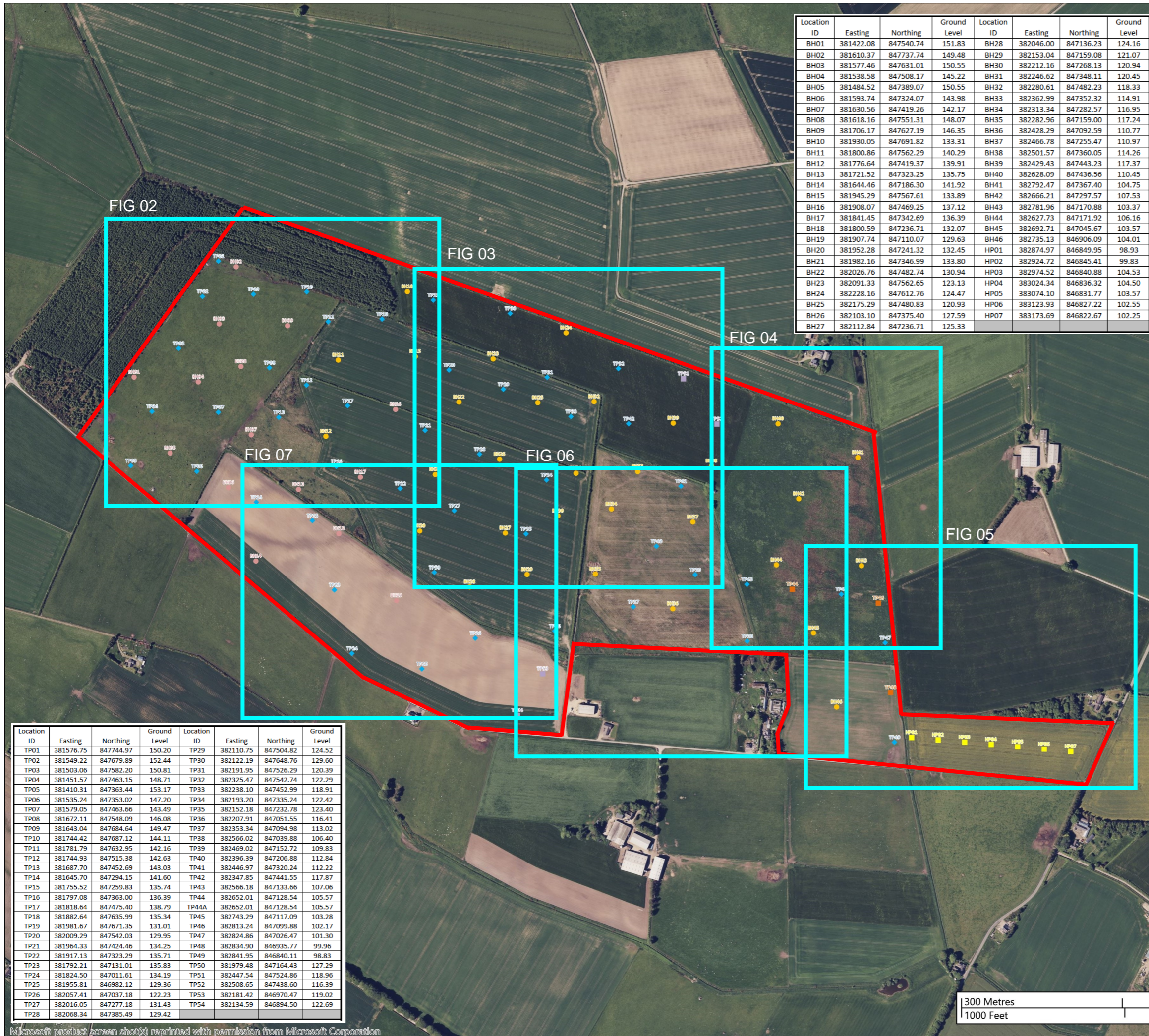
Contract. New Deer 2



TABLE 2: STANDPIPE INSTALLATION

Location ID	Depth m(BGL)	Pipe Reference	Date Installation	Instrument Type	Pipe Diameter (mm)	Depth Response Zone Top	Depth Response Zone Base
BH01	5	1	15/09/2023	SP	50	1	5
BH02	3.5	1	21/09/2023	SP	50	0.5	3.5
BH05	8	1	31/08/2023	SP	50	1	8
BH07	2.5	1	02/09/2023	SP	50	0.5	2.5
BH08	7.5	1	29/09/2023	SP	50	5	7.5
BH10	7.3	1	28/09/2023	SP	50	4.3	7.3
BH16	2.7	1	02/10/2023	SP	50	1.2	2.7
BH18	2.5	1	12/09/2023	SP	50	1	2.5
BH20	2.3	1	01/09/2023	SP	50	0.5	2.3
BH24	8	1	27/09/2023	SP	50	4	8
BH28	5	1	29/08/2023	SP	50	1	5
BH31	4	1	05/09/2023	SP	50	1	4
BH36	2.3	1	15/09/2023	SP	50	0.5	2.3
BH39	3.5	1	19/09/2023	SP	50	0.5	3.5
BH42	5	1	15/10/2023	SP	50	1.2	5
BH46	2	1	24/10/2023	SP	50	0.5	2

**APPENDIX 1.0
EXPLORATORY HOLE LOCATION PLANS**



Location ID	Easting	Northing	Ground Level	Location ID	Easting	Northing	Ground Level
BH01	381422.08	847540.74	151.83	BH28	382046.00	847136.23	124.16
BH02	381610.37	847737.74	149.48	BH29	382153.04	847159.08	121.07
BH03	381577.46	847631.01	150.55	BH30	382212.16	847268.13	120.94
BH04	381538.58	847508.17	145.22	BH31	382246.62	847348.11	120.45
BH05	381484.52	847389.07	150.55	BH32	382280.61	847482.23	118.33
BH06	381593.74	847324.07	143.98	BH33	382362.99	847352.32	114.91
BH07	381630.56	847419.26	142.17	BH34	382313.34	847282.57	116.95
BH08	381618.16	847551.31	148.07	BH35	382282.96	847159.00	117.24
BH09	381706.17	847627.19	146.35	BH36	382428.29	847092.59	110.77
BH10	381930.05	847691.82	133.31	BH37	382466.78	847255.47	110.97
BH11	381800.86	847562.29	140.29	BH38	382501.57	847360.05	114.26
BH12	381776.64	847419.37	139.91	BH39	382429.43	847443.23	117.37
BH13	381721.52	847323.25	135.75	BH40	382628.09	847436.56	110.45
BH14	381644.46	847186.30	141.92	BH41	382792.47	847367.40	104.75
BH15	381945.29	847567.61	133.89	BH42	382666.21	847297.57	107.53
BH16	381908.07	847469.25	137.12	BH43	382781.96	847170.88	103.37
BH17	381841.45	847342.69	136.39	BH44	382627.73	847171.92	106.16
BH18	381800.59	847236.71	132.07	BH45	382692.71	847045.67	103.57
BH19	381907.74	847110.07	129.63	BH46	382735.13	846906.09	104.01
BH20	381952.28	847241.32	132.45	HP01	382874.97	846849.95	98.93
BH21	381982.16	847346.99	133.80	HP02	382924.72	846845.41	99.83
BH22	382026.76	847482.74	130.94	HP03	382974.52	846840.88	104.53
BH23	382091.33	847562.65	123.13	HP04	383024.34	846836.32	104.50
BH24	382228.16	847612.76	124.47	HP05	383074.10	846831.77	103.57
BH25	382175.29	847480.83	120.93	HP06	383123.93	846827.22	102.55
BH26	382103.10	847375.40	127.59	HP07	383173.69	846822.67	102.25
BH27	382112.84	847236.71	125.33				

Legend Key

- Hand Pits with DCPs - Hand Pits with DCPs
- ◆ Trial Pits - Trial Pits
- Trial Pits with DCPs - Trial Pits with DCPs
- Trial Pits with Soakaways - Trial Pits with Soakaways
- Sonic Boreholes - Sonic Boreholes
- DS and Rotary Boreholes - DS and Rotary Boreholes

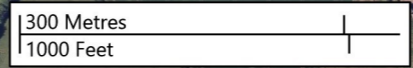
Location ID	Easting	Northing	Ground Level	Location ID	Easting	Northing	Ground Level
TP01	381576.75	847744.97	150.20	TP29	382110.75	847504.82	124.52
TP02	381549.22	847679.89	152.44	TP30	382122.19	847648.76	129.60
TP03	381503.06	847582.20	150.81	TP31	382191.95	847526.29	120.39
TP04	381451.57	847463.15	148.71	TP32	382325.47	847542.74	122.29
TP05	381410.31	847363.44	153.17	TP33	382238.10	847452.99	118.91
TP06	381535.24	847353.02	147.20	TP34	382193.20	847335.24	122.42
TP07	381579.05	847463.66	143.49	TP35	382152.18	847232.78	123.40
TP08	381672.11	847548.09	146.08	TP36	382207.91	847051.55	116.41
TP09	381643.04	847684.64	149.47	TP37	382353.34	847094.98	113.02
TP10	381744.42	847687.12	144.11	TP38	382566.02	847039.88	106.40
TP11	381781.79	847632.95	142.16	TP39	382469.02	847152.72	109.83
TP12	381744.93	847515.38	142.63	TP40	382396.39	847206.88	112.84
TP13	381687.70	847452.69	143.03	TP41	382446.97	847320.24	112.22
TP14	381645.70	847294.15	141.60	TP42	382347.85	847441.55	117.87
TP15	381755.52	847259.83	135.74	TP43	382566.18	847133.66	107.06
TP16	381797.08	847363.00	136.39	TP44	382652.01	847128.54	105.57
TP17	381818.64	847475.40	138.79	TP44A	382652.01	847128.54	105.57
TP18	381882.64	847635.99	135.34	TP45	382743.29	847117.09	103.28
TP19	381981.67	847671.35	131.01	TP46	382813.24	847099.88	102.17
TP20	382009.29	847542.03	129.95	TP47	382824.86	847026.47	101.30
TP21	381964.33	847424.46	134.25	TP48	382834.90	846935.77	99.96
TP22	381917.13	847323.29	135.71	TP49	382841.95	846840.11	98.83
TP23	381792.21	847131.01	135.83	TP50	381979.48	847164.43	127.29
TP24	381824.50	847011.61	134.19	TP51	382447.54	847524.86	118.96
TP25	381955.81	846982.12	129.36	TP52	382508.65	847438.60	116.39
TP26	382057.41	847037.18	122.23	TP53	382181.42	846970.47	119.02
TP27	382016.05	847277.18	131.43	TP54	382134.59	846894.50	122.69
TP28	382068.34	847385.49	129.42				

Figure No RGN.330G₁



Exploratory Hole Locations

Project Name: ASTI Substation Site - LT379
 Project No: RGN.330G
 Client: SSEN-T
 Engineer: Tony Gee
 Contractor: BAM Ritchies
 Date: 17/01/2024
 Scale: 1:7000




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- Legend Key**
- Hand Pits with DCPs - Hand Pits with DCPs
 - ◆ Trial Pits - Trial Pits
 - Trial Pits with DCPs - Trial Pits with DCPs
 - Trial Pits with Soakaways - Trial Pits with Soakaways
 - Sonic Boreholes - Sonic Boreholes
 - DS and Rotary Boreholes - DS and Rotary Boreholes

Figure No: RGN.330G₂




Exploratory Hole Locations

Project Name:	ASTI Substation Site - LT379
Project No:	RGN.330G
Client:	SSEN-T
Engineer:	Tony Gee
Contractor:	BAM Ritchies
Date:	17/01/2024
Scale:	1:2000

BAM R Hole Location Plan A3 Landscape Fig 09/09/2016



- Legend Key
- Hand Pits with DCPs - Hand Pits with DCPs
 - ◆ Trial Pits - Trial Pits
 - Trial Pits with DCPs - Trial Pits with DCPs
 - Trial Pits with Soakaways - Trial Pits with Soakaways
 - Sonic Boreholes - Sonic Boreholes
 - DS and Rotary Boreholes - DS and Rotary Boreholes

Figure No RGN.330G₃ 

Exploratory Hole Locations

Project Name: ASTI Substation Site - LT379

Project No: RGN.330G

Client: SSEN-T

Engineer: Tony Gee

Contractor: BAM Ritchies

Date: 17/01/2024

Scale: 1:2000

BAM R Hole Location Plan A3 Landscape Fig 09/09/2016



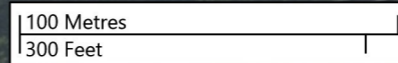
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 - Trial Pits with DCPs - Trial Pits with DCPs
 - Trial Pits with Soakaways - Trial Pits with Soakaways
 - Sonic Boreholes - Sonic Boreholes
 - DS and Rotary Boreholes - DS and Rotary Boreholes

Figure No RGN.330G₄



Exploratory Hole Locations

Project Name: ASTI Substation Site - LT379
 Project No: RGN.330G
 Client: SSEN-T
 Engineer: Tony Gee
 Contractor: BAM Ritchies
 Date: 17/01/2024
 Scale: 1:2000





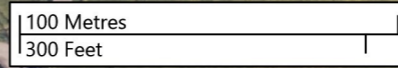
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 - ◆ Trial Pits - Trial Pits
 - Trial Pits with DCPs - Trial Pits with DCPs
 - Trial Pits with Soakaways - Trial Pits with Soakaways
 - Sonic Boreholes - Sonic Boreholes
 - DS and Rotary Boreholes - DS and Rotary Boreholes

Figure No RGN.330G₅



Exploratory Hole Locations

Project Name: ASTI Substation Site - LT379
 Project No: RGN.330G
 Client: SSEN-T
 Engineer: Tony Gee
 Contractor: BAM Ritchies
 Date: 17/01/2024
 Scale: 1:2000





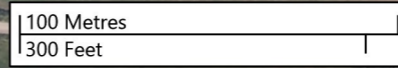
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 - Trial Pits with DCPs - Trial Pits with DCPs
 - Trial Pits with Soakaways - Trial Pits with Soakaways
 - Sonic Boreholes - Sonic Boreholes
 - DS and Rotary Boreholes - DS and Rotary Boreholes

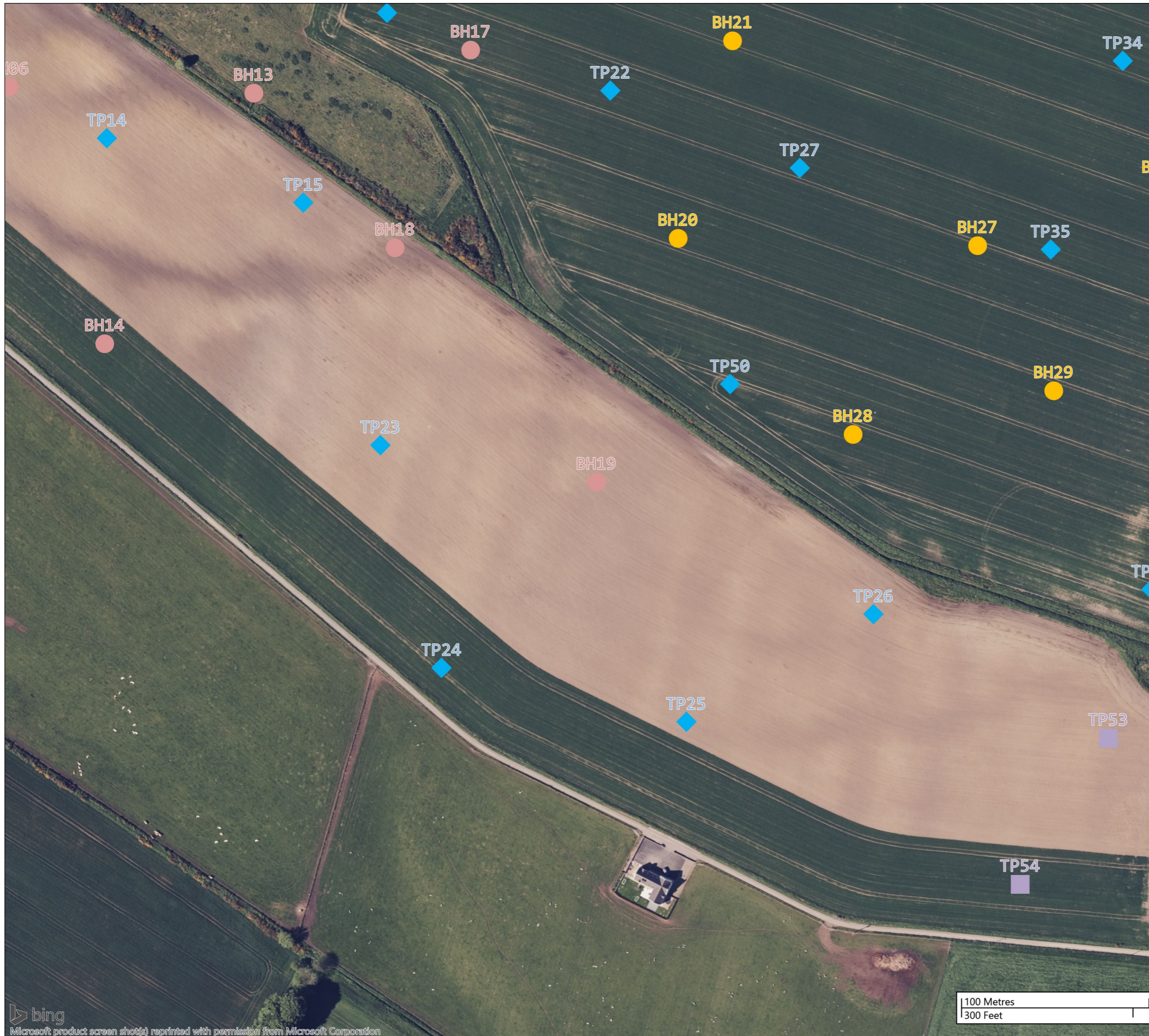
Figure No RGN.330G₆



Exploratory Hole Locations

Project Name: ASTI Substation Site - LT379
 Project No: RGN.330G
 Client: SSEN-T
 Engineer: Tony Gee
 Contractor: BAM Ritchies
 Date: 17/01/2024
 Scale: 1:2000





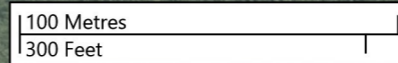
- Legend Key
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 - ◆ Trial Pits - Trial Pits
 - Trial Pits with DCPs - Trial Pits with DCPs
 - Trial Pits with Soakaways - Trial Pits with Soakaways
 - Sonic Boreholes - Sonic Boreholes
 - DS and Rotary Boreholes - DS and Rotary Boreholes

Figure No RGN.330G₇



Exploratory Hole Locations

Project Name: ASTI Substation Site - LT379
 Project No: RGN.330G
 Client: SSEN-T
 Engineer: Tony Gee
 Contractor: BAM Ritchies
 Date: 17/01/2024
 Scale: 1:2000



**APPENDIX 2.0
ECoW REPORTS**

New Deer Substation Ground Investigation Works

ECOLOGICAL CLERK OF WORKS SUMMARY REPORT

1.1 Introduction

EnviroCentre has been instructed by BAM Ritchies to provide Ecological Clerk of Works (ECoW) support during ground investigation works at New Deer Substation (site entrance NGR: NJ 82208 46868). Works commenced on Monday 21 August 2023 with the first week consisting of site establishment and intrusive works commencing week beginning 28 August 2023.

This report provides a brief summary of the work undertaken by the ECoW and findings arising.

Based on the findings of the first three days of full time ECoW supervision, with few ecological and environmental constraints identified, it is recommended that ECoW supervision is reduced to 3 days per week from week beginning 28 August 2023. This report will be updated to include 24 and 25 August 2023.

1.2 Week Beginning 21 August 2023

1.2.1 Monday 21 August

- Arrival on site approximately 1030 hrs, risk assessment completed prior to site visit.
- EnviroCentre ECoW: Paul Flynn
- Site induction and safety briefing by Gordon Murray (BAM Ritchies).

Areas Surveyed & Findings

Southern boundary of area 6 (grazing field), along ditch line towards area 2 (crop field). The ditch is heavily vegetated in places and contained Monkey Flower (MF), which is classed as an invasive non-native species (INNS). The MF started approximately halfway along the ditch in area 6, continuing through the farm access track culvert into the ditch on the northern boundary of area 2 and is apparent for half of the total length of the ditch.

Eastern boundary of area 2 from the proposed site entrance to the sunken area next to the ditch had no environmental or ecological constraints. The southern boundary of the site, encompassing the southern boundaries of areas 1 & 2, was surveyed. Small mammal burrows were found on the southeast boundary of area 1 in the banking running along the roadside. No findings were made while checking the eastern boundary of area 1.

Two buzzards were spotted hunting above area 6 before flying away from site in a southerly direction.

1.2.2 Tuesday 22 August

- Arrival on site approximately 08:00am.
- EnviroCentre ECoW: Paul Flynn

Areas Surveyed & Findings

Area 2 survey was completed, surveying the remainder of the northern area running along the ditch and the western boundary with area 1. MF was again noted in the boundary ditch, approximately 100 m from the northwest corner of the area.

A deer resting in the tall plants in the northwest corner was disturbed and ran across the ditch into area 3 in the direction of the woods on the western boundary of area 1. A large hare was spotted in area 2, moving in the direction of the woods at the southern boundary of areas 1 & 2.

Mole hills were present at the northwest corner of area 2 and further hills were found approximately 50m from the field entrance from area 1.

Area 1 was completed by surveying the westerly and northern boundaries and no environmental or ecological constraints were noted.

Area 4 full boundary survey was undertaken and no environmental or ecological constraints were identified on the eastern & northern boundaries. Possible Japanese Knotweed (JKW) was noted at the gate access on the western boundary with area 1, Lat 57.458101 Long -2.228377. Numerous JKW plants were present along the southern boundary of area 4. Burrows were noted at Lat 57.518660 Long -2.304495, it is assumed that these are rabbit burrows, although no droppings or tracks were seen at this location. Evidence (excrement) of the presence of a fox in the area was observed.

No environmental or ecological constraints were noted at the eastern and western boundaries of area 3. Possible JKW was observed the entire length of the northern boundary. Mole hills were noted at the northwestern area.

Surveys of areas 1,2,3 and 4 were completed.

1.2.3 Wednesday 23 August

- Arrival on site approximately 08:00am.
- EnviroCentre ECoW: Paul Flynn

Areas Surveyed & Findings

Delivery and set up of welfare units was occurring throughout the day at the compound area. At the rear of the compound (northeast), several large mammal track paths were observed to centre on a large building rubble pile. No animal tracks or droppings were observed to enable identification of the animals accessing the area. Further investigation was not possible due to the unstable nature of the rubble pile.

Several oil stains in the compound area were noted, although these are from the storage of farm equipment prior to the handover to BAM Ritchies.

In Area 7, and in the area designated for the site access road, the adjacent Burn of Greens contained MF for the full length of the access road. The ditch running north to south, leading to Stirling JG also contained Monkey Flower. No other environmental or ecological constraints were noted.

The southern boundary of area 6 was surveyed and molehills were observed within the field at 57.523968, -2.284880. An area of long grass and marsh plants in the south west corner was checked with no environmental or ecological constraints observed.

New Deer Substation GI Works: ECoW report w/c 28/08/23

Dates of visits:	Monday 28 th , Thursday 31 st August and Friday 1 st September 2023
EnvCoW(s):	Antonia Stewart (AS) and Ben Smith (BS)
Author:	Ben Smith
Reviewer:	Neil Gordon
CAR Licence:	n/a
Areas Visited:	All areas (1 to 6) except Area 7 (cattle present)
Weather during site visit:	28/08/23 (AS) – Overcast, sporadic showers (1.0 mm ¹) 31/08/23 (BS) – Dry, sunny spells with patchy cloud (TBC mm ¹) 01/09/23 (BS) – Dry, sunny spells (TBC mm ¹)
Preceding rainfall:	Sunday 27 th – 1.4 mm ¹ , Tuesday 29 th – 6.8 mm ¹ Wednesday 30 th – 0.0 mm ¹

EnviroCentre has been instructed by BAM Ritchies to provide Ecological Clerk of Works (ECoW) support during ground investigation works at New Deer Substation (site entrance NGR: NJ 82208 46868). The Works are being undertaken on behalf of Scottish and Southern Energy (SSE) and commenced on w/b 21 August 2023 with the first week consisting of site establishment and intrusive works commencing w/b 28 August 2023.

This report provides a brief summary of the work undertaken by the ECoW and findings arising. Recommendations are offered with the intention of assisting the developer and contractors to comply with the requirements of the project's planning conditions (where applicable), e.g., Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) licence for the site (issued by the Scottish Environment Protection Agency (SEPA)), current environmental regulations, the Development's Construction Environmental Management Plan (CEMP), Site Specific Pollution Prevention Plans (SSPPP), Guidance for Pollution Prevention (GPP) and environmental good practice.

Based on the initial ECoW survey work/site walkovers (5 days full time w/b 21 August 2023), EnviroCentre recommended that 3 days of full time ECoW supervision would be appropriate each week from w/b 28 August 2023 and this was agreed by SSE on 24 August 2023. It is noted ECoW supervision is not taking place during weekend working. This report, from w/b 28/08/2023, details findings during Monday 28 August, Thursday 31 August, and Friday 1 September.

Based on the observations during the inspection, the current risk of the project being in breach of any of the above regulations or project documentation was considered to be **Low**.

¹ SEPA Rainfall taken from Esslemont House station (ID: 115221). This station is located approx. 17 miles southeast of the site. Data for 31/08 and 01/09 not available at time of report issue. <https://www2.sepa.org.uk/rainfall/data/index/115221>.

Comments for the Project Team

- Borehole drilling and trial trenches digging in Areas 1 and 3.
- A number of trial trenches and boreholes in east of Area 2 now complete.
- Active Private Water Supply (PWS) located in Area 1 at NGR NJ 81534 47531. Precautions to be taken to protect this supply, however concerns have been raised as a result of observed drilling and digging activities. It is understood SSE are organising testing of the supply to satisfy the PWS user there are no adverse effects from project activities.
- Field drain located along northern boundary of Area 2 which was observed to be actively flowing although the channel itself was well vegetated. Drain flow surfaced at NJ 81586 47406 (Area 1), and was observed to be clear under low flow conditions. Field drain running east between Area 4 and 5 (NJ 82290 47493) was well vegetated and was not observed to be flowing.
- All fields are minor tributaries of Burn of Greens watercourse. Intrinsically, both field drains on site have a low importance/value, however best efforts should be made not to discharge directly to them.
- Monkey Flower Invasive Non Native Species (INNS) present in vegetated ditches. Drilling activities not expected to cause disturbance therefore assessed probability of spread is low.
- All fuel bowsers were observed to have spill kits and nappies present. Site compound found to be kept organised and tidy.
- Given site setting and lack of surface water and ecological issues identified during w/b 28 August 2023, it is considered that EnviroCentre's initial recommendation during w/b 21 August 2023 that three days a week of ECoW supervision is appropriate for the Works has been confirmed.

Area 1	
Site setting	Grass field
Surface Water Management / Ecological constraints	Active PWS identified, extra caution and at least 10 m exclusion set up when working around asset infrastructure. Field drain surfacing at NJ 81586 47406, running clear. Recommended 10 m exclusion zone for any working around this point.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).
Area 2	
Site setting	Grass field with straw bales harvested.
Surface Water Management / Ecological constraints	Drainage ditch running along northern boundary is a minor tributary of Burn of Greens watercourse. Intrinsically low value receptor. Cognisance of Monkey Flower (INNS) present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Approx. 50% of drilling activities in area already complete. Drilling activities being well

	managed with no issues identified, (e.g., fuel and chemical management).
Area 3	
Site setting	Majority of area is cut barley/wheat and in far west there is area of unmanaged scrub.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).
Area 4	
Site setting	Cut barely/wheat field
Surface Water Management / Ecological constraints	Drainage ditch present between boundary of 4 and 5 but identified as having low value. Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works as of yet.
Area 5	
Site setting	Some pasture, not cut.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works as of yet.
Area 6	
Site setting	Cut barely/wheat field
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works as of yet.
Area 7	
Site setting	Agricultural field, cattle present
Surface Water Management / Ecological constraints	None identified.
SSPPP	No active works as of yet.

Report Actions Overview

Based on the findings of the EnvCoW walkover, it is recommended that the actions outlined within the Report Actions Summary table below are undertaken to improve the Development’s surface water management and to maintain compliance with the Development’s PPP and SWMP.

Key




General Comments and/or Positive Progress	Beneficial Action	Scheduled Action Required	Immediate Action Required
As above	Works required to comply with best practice	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with environmental impact	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with major environmental impact
No Action Required: Continue Following Good Practice	Completion Timescale: 1 Month	Completion Timescale: 1 Week	Completion Timescale: 72 hours

Report Actions Summary (New Deer = ND)

ID	Actions Summary
ND 01	Private Water Supply (Area 1): An active private water supply has been identified within Area 1 at NJ 81534 47531. Inlet and outlet locations have been identified and marked and there are no immediate concerns associated with the drilling work and this location. However, extra caution (i.e., monitoring) should be taken when operating within this area and it is recommended an exclusion zone of at least 10 m is setup around infrastructure related to the supply.
ND 02	Surface water management: Although drainage ditches on site are well vegetated and have intrinsically low value, drilling fluids should not be directly discharged to surface watercourses but instead allowed to infiltrate into the ground. No specific surface water mitigation measures have been identified as necessary but extra caution should be taken (e.g., exclusion zones of at least 10 m) within Area 1 around private water supply and where the field drain surfaces (NJ 81586 47406).
ND 03	Invasive species: Monkey Flower (NNS) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants but site staff should be aware of the issue and practice suitable caution when working near these areas.
ND 04	Present ecology: Badger latrines have been identified on site so although no sets have been found this is evidence badgers are likely present and using parts of the site. No nesting birds have been identified. Site staff should remain vigilant at all times of ecology present and if any badger sets or nesting bird locations are found, the ECoW should be informed immediately so applicable action (if required) can be taken.

Report Actions (New Deer = ND)

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
<p>ND 01</p>	<p>Private Water Supply</p> <ol style="list-style-type: none"> Private Water Supply (PWS) identified in Area 1 at NJ 81534 47531 No immediate concerns associated with the supply from the works however extra caution should be taken when working in this area, e.g., BH 04 is marked as being relatively close to PWS. Asset infrastructure has been marked and it is understood SSE are organising sampling/monitoring to take place to satisfy user there will be no adverse effects from the works. 	<p>Area 1 and Area 2</p>		<ol style="list-style-type: none"> It is recommended at least a 10 m exclusion zone is setup from any infrastructure, e.g., inlet, outlet pipes, power supply, from the Private Water Supply. Extra caution should be taken when working in this area however at this stage no specific mitigation is deemed necessary. 	<p>SSE are understood to be organising monitoring/sampling of supply to satisfy user no adverse effects will occur from project works.</p>	<p>August 2023</p>
<p>ND 02</p>	<p>Surface Water Management</p> <ol style="list-style-type: none"> Field drain surfacing in Area 1, then flowing east towards along northern boundary of Area 2, observed to be clear under low flow conditions. Drainage ditch between Area 4 and 5 not observed to be flowing. All drainage ditches on site are well vegetated and both are minor tributaries of Burn of Greens watercourse and appear on SEPA 1:20,000 map scale and FEH web service website. Area of standing water present within southeast of Area 3 (NJ 81844 47236), upstream of main field drain flowing east along northern boundary of Area 2. 	<p>Site wide</p>		<ol style="list-style-type: none"> It is recommended at least a 10m exclusion zone is setup around where field drain surfaces in Area 1. It is recommended the quality of water surfacing at NJ 81586 47406 is monitored. If discoloured water is identified proactive actions should be taken to identified the source of the issue and remediate it (if applicable, i.e., directly caused by the works). It is recommended drilling fluids are discharged to ground and allowed to infiltrate at a distance of >10m from drainage ditches on site. 		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
			 <p>31 August 2023 10:10</p>			
<p>ND 03</p>	<p>Invasive species</p> <ol style="list-style-type: none"> The invasive species Monkey Flower (has a yellow flower) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants. 	<p>Site wide</p>	 <p>31 August 2023 10:18</p>	<ol style="list-style-type: none"> Site staff should be aware of the presence of the INNS and practice suitable caution when working near these areas to stop spread of this plant. 		<p>August 2023</p>
<p>ND 04</p>	<p>Present Ecology</p> <ol style="list-style-type: none"> Badger latrines identified and provide evidence badger using site but no sets identified. No nesting bird nests identified. Nesting bird season is almost over (March to September) the potential of nesting bird constraints being identified is very low. Species sighted on site include roe deer, Asiatic pheasant, rabbits, sparrows, starlings, crows, buzzards and peacock butterflies. 	<p>Site wide</p>	 <p>31 August 2023 09:53</p>	<ol style="list-style-type: none"> Site staff should remain vigilant of any potential badger sets and nesting bird activity on site. If either are suspected, site staff should report findings to ECoW as soon as possible. It is proposed the ECoWs will give a toolbox talk to site staff within the next 2 weeks on ecology present on site. 		<p>August 2023</p>

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New Deer Substation GI Works: ECoW report w/c 25/09/23

Dates of visits:	Wednesday 27 th and Friday 29 th September
EnvCoW(s):	Paul Flynn (PF) Seb Cook (SC)
Author:	Paul Flynn
Reviewer:	Neil Gordon
CAR Licence:	n/a
Areas Visited:	1, 2, 4 and 5.
Weather during site visit:	27/09/23 (PF) – Dry, sunny, rain late afternoon into evening (12.4 mm ¹) 29/09/23 (PF & SC) – Light showers in the morning, cleared in the afternoon, overcast with sunny spells (0.0 mm ¹)
Preceding rainfall:	Tuesday 26 th – 0.0 mm ¹ , Thursday 28 th – 0.0 mm ¹

EnviroCentre has been instructed by BAM Ritchies to provide Ecological Clerk of Works (ECoW) support during ground investigation works at New Deer Substation (site entrance NGR: NJ 82208 46868). The Works are being undertaken on behalf of Scottish and Southern Energy (SSE) and commenced on w/b 21 August 2023 with the first week consisting of site establishment and intrusive works commencing w/b 28 August 2023.

This report provides a brief summary of the work undertaken by the ECoW and findings arising. Recommendations are offered with the intention of assisting the developer and contractors to comply with the requirements of the project's planning conditions (where applicable), e.g., Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) licence for the site (issued by the Scottish Environment Protection Agency (SEPA)), current environmental regulations, the Development's Construction Environmental Management Plan (CEMP), Site Specific Pollution Prevention Plans (SSPPP), Guidance for Pollution Prevention (GPP) and environmental good practice.

Based on the initial ECoW survey work/site walkovers (5 days full time w/b 21 August 2023), EnviroCentre recommended that 3 days of full time ECoW supervision would be appropriate each week from w/b 28 August 2023 and this was agreed by SSE on 24 August 2023. It is noted ECoW supervision is not taking place during weekend working. This report, from w/b 25/09/2023, details findings during Wednesday 27 September and Friday 29 September.

Based on the observations during the inspection, the current risk of the project being in breach of any of the above regulations or project documentation was considered to be **Low**.

Comments for the Project Team

- Borehole Drilling was observed in areas 1, 2, 4 and 5.
- Active Private Water Supply (PWS) located in Area 1 at NGR NJ 81534 47531. Precautions to be taken to protect this supply, however concerns have been raised by the PWS user as a result of observed drilling and digging activities. It is understood SSE are organising testing of the supply to satisfy the PWS user there are no adverse effects from project activities.
- Field drain located along northern boundary of Area 2 was observed to be actively flowing, although the channel itself was well vegetated. Drain flow surfaced at NJ 81586 47406 (Area 1), and was observed to be clear under low flow conditions. Field drain running east between Area 4 and 5 (NJ 82290 47493) was well vegetated and was observed to be flowing.
- All fields are minor tributaries of Burn of Greens watercourse. Intrinsicly, both field drains on site have a low importance/value, however best efforts should be made not to discharge directly to them.
- Monkey Flower Invasive Non-Native Species (INNS) present in vegetated ditches. Drilling activities not expected to cause disturbance therefore assessed probability of spread is low.
- All fuel bowsers were observed to have spill kits and nappies present. Site compound found to be kept organised and tidy.
- Camera trap confirmed presence of Badgers at (NJ 82101 47646). A 30m exclusion zone round the active sett has previously been established by the ECoW. Toolbox talk given to drill rigs crews on badgers and associated mammals that frequent badger setts.
- An abandoned badger sett was found within the fenced area at the northern boundary of area 5, approximately 20m NW of BH24 (NJ 82216 47630).

Area 1	
Site setting	Grass field
Surface Water Management / Ecological constraints	<p>Active PWS identified, extra caution and at least 10 m exclusion set up when working around asset infrastructure.</p> <p>Field drain surfacing at NJ 81586 47406, running clear, checked 27/09.</p> <p>Recommended 10 m exclusion zone for any working in the vicinity of this point.</p>
SSPPP	<p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Drill rig pre-tracked in to BH08, checks conducted in area, no environmental constraints present, 27/09.</p>

Area 2	
Site setting	Grass field with straw bales harvested.
Surface Water Management / Ecological constraints	Drainage ditch running along northern boundary is a minor tributary of Burn of Greens watercourse. Intrinsically low value receptor. Cognisance of Monkey Flower (INNS) present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management). Drill rig pre-tracked in to BH11, checks conducted in area, no environmental constraints present, 29/09.
Area 3	
Site setting	Majority of area is cut barley/wheat and in far west there is area of unmanaged scrub.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works.
Area 4	
Site setting	Cut barley/wheat field
Surface Water Management / Ecological constraints	Drainage ditch present between boundary of Areas 4 and 5 but identified as having low value. Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management). Drill rig pre-tracked in to BH11, checks conducted in area, no environmental constraints present, 29/09.

Area 5	
Site setting	Some pasture, not cut.
Surface Water Management / Ecological constraints	<p>Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.</p> <p>Camera traps confirmed presence of badgers in area, 18/09.</p>
SSPPP	<p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Drill rig tracked in to BH10, checks conducted in area, in accordance with 30m exclusion zone around active badger sett, no environmental constraints present, 27/09.</p>
Area 6	
Site setting	Cut barley/wheat field
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works.
Area 7	
Site setting	Agricultural field
Surface Water Management / Ecological constraints	<p>Flow visible on surface at end of ditch, possible presence of a collapsed culvert. New area of flow observed on track leading to farm 27/09.</p> <p>Vehicle movements over crossing have resulted in rutting of the area and further flooding of farm track. It is assumed that this was done by tractor rather than works plant. 29/09</p>
SSPPP	No active works.

Report Actions Overview

Based on the findings of the EnvCoW walkover, it is recommended that the actions outlined within the Report Actions Summary table below are undertaken to improve the Development's surface water management and to maintain compliance with the Development's PPP and SWMP.

Key




General Comments and/or Positive Progress	Beneficial Action	Scheduled Action Required	Immediate Action Required
As above	Works required to comply with best practice	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with environmental impact	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with major environmental impact
No Action Required: Continue Following Good Practice	Completion Timescale: 1 Month	Completion Timescale: 1 Week	Completion Timescale: 72 hours




Report Actions Summary (New Deer = ND)

ID	Actions Summary
ND 01	Private Water Supply (Area 1): An active private water supply has been identified within Area 1 at NJ 81534 47531. Inlet and outlet locations have been identified and marked and there are no immediate concerns associated with the drilling work and this location. However, extra caution (i.e., monitoring) should be taken when operating within this area and it is recommended an exclusion zone of at least 10 m is setup around infrastructure related to the supply.
ND 02	Surface water management: Although drainage ditches on site are well vegetated and have intrinsically low value, drilling fluids should not be directly discharged to surface watercourses but instead allowed to infiltrate into the ground. No specific surface water mitigation measures have been identified as necessary but extra caution should be taken (e.g., exclusion zones of at least 10 m) within Area 1 in vicinity of private water supply and where the field drain surfaces (NJ 81586 47406).
ND 03	Invasive species: Monkey Flower (INNS) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants but site staff should be aware of the issue and practice suitable caution when working near these areas.
ND 04	Present ecology: No nesting birds have been identified. Site staff should remain vigilant at all times of ecology present and if any nesting bird locations are found, the ECoW should be informed immediately so applicable action (if required) can be taken.
ND 05	Present ecology: Badger Sett identified comprising 1 main hole and numerous secondary holes (NJ 82101 47646). A 30m exclusion zone has been established by the ECoW 08/09/2023. Camera traps installed in sett area 15/09/2023.
ND 06	Present ecology: Badger presence confirmed by camera trap (NJ 82101 47646) 18/09/2023.
ND 07	Present Ecology: Abandoned badger sett identified within the fenced area at the northern boundary of area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023

Report Actions (New Deer = ND)

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
<p>ND 01</p>	<p>Private Water Supply</p> <ol style="list-style-type: none"> Private Water Supply (PWS) identified in Area 1 at NJ 81534 47531 No immediate concerns associated with the supply from the works however extra caution should be taken when working in this area, e.g., BH 04 is marked as being relatively close to PWS. Asset infrastructure has been marked and it is understood SSE are organising sampling/monitoring to take place to satisfy user there will be no adverse effects from the works. 	<p>Area 1 and Area 2</p>		<ol style="list-style-type: none"> It is recommended at least a 10 m exclusion zone is setup from any infrastructure, e.g., inlet, outlet pipes, power supply, from the Private Water Supply. Extra caution should be taken when working in this area however at this stage no specific mitigation is deemed necessary. 	<p>SSE are understood to be organising monitoring/sampling of supply to satisfy user no adverse effects will occur from project works.</p>	<p>August 2023</p>
<p>ND 02</p>	<p>Surface Water Management</p> <ol style="list-style-type: none"> Field drain surfacing in Area 1, then flowing east towards along northern boundary of Area 2, observed to be clear under low flow conditions 27/09/2023. Drainage ditch running along the southern boundary of Area 6 converging with the ditch on the western boundary and flowing through area 7 towards Burn of Greens remains flowing over the access point from area 6 to area 7 (NJ 82595 47016). It is assumed that the culvert is either collapsed or blocked causing the flow across the access point. Trees on both side of the obstruction have fallen after the flow has undercut the root systems. After the excavator had crossed between area 6 and area 7, the flow altered course flowing on to the access track to the abandoned farm (Stirling JG). 	<p>Site wide</p>		<ol style="list-style-type: none"> It is recommended at least a 10m exclusion zone is setup around where field drain surfaces in Area 1. It is recommended the quality of water surfacing at NJ 81586 47406 is monitored. If discoloured water is identified, proactive actions should be taken to identify the source of the issue and remediate it (if applicable, i.e., directly caused by the works). It is recommended drilling fluids are discharged to ground and allowed to infiltrate at a distance of >10m from drainage ditches on site. The access point between areas 6 and 7 to be regularly monitored with mitigation measures employed as required to ensure that the flow is maintained into the ditch running into Burn of Greens. A small channel has been cut into the access point that directs the flow of the ditch from area 6 directly into the ditch running through area 7 towards the Burn of Greens. This has relieved the flooding previously occurring at this location. 		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
			 <p>27 September 2023 08:43</p>			
<p>ND 03</p>	<p>Invasive species</p> <ol style="list-style-type: none"> The invasive species Monkey Flower (has a yellow flower) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants. 	<p>Site wide</p>	 <p>31 August 2023 10:18</p>	<ol style="list-style-type: none"> Site staff should be aware of the presence of the INNS and practice suitable caution when working near these areas to stop spread of this plant. 		<p>August 2023</p>
<p>ND 04</p>	<p>Present Ecology</p> <ol style="list-style-type: none"> No nesting bird nests identified. Nesting bird season is almost over (March to September) and the potential for nesting bird constraints being identified is therefore very low. Species sighted on site include roe deer, Asiatic pheasant, rabbits, sparrows, starlings, crows, buzzards and peacock butterflies. 	<p>Site wide</p>	 <p>31 August 2023 09:53</p>	<ol style="list-style-type: none"> Site staff should remain vigilant of any potential nesting bird activity on site. If either are suspected, site staff should report findings to ECoW as soon as possible. It is proposed the ECoWs will give a toolbox talk to site staff within the next 2 weeks on ecology present on site. 		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
ND 05	<p>Present Ecology</p> <p>1. Possible Badger sett identified in Area 5 (NJ 82101 47646).</p>	Area 5		<p>1. Site staff to be aware when accessing Area 5 that a 30m exclusion zone is in effect. Test trenches are complete, boreholes BH10 and 24 to be undertaken. Both boreholes are out with the 30m exclusion zone, crews advised to avoid tracking through or close to exclusion zone to avoid disturbance by noise and vibration.</p>		September 2023
ND 06	<p>Present Ecology</p> <p>1. Badger presence confirmed (18/09/2023) in Area 5 (NJ 82101 47646).</p>	Area 5		<p>1. Toolbox talk on Badgers given to drill rigs crews during lunch break, 20/09/2023.</p>		September 2023
ND 07	<p>1. Abandoned badger sett found at the northern boundary of Area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023</p>	Area 5	 <p>20 September 2023 14:13</p>	<p>1. No actions required.</p>		September 2023

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New Deer Substation GI Works: ECoW report w/c 18/09/23

Dates of visits:	Monday 18 th , Wednesday 20 th
EnvCoW(s):	Paul Flynn (PF)
Author:	Paul Flynn
Reviewer:	Neil Gordon
CAR Licence:	n/a
Areas Visited:	1,5 and 6
Weather during site visit:	18/09/23 (PF) – Overcast, occasional showers(4.6 mm ¹) 20/09/23 (PF) – Showers in the morning, cleared in the afternoon, overcast with sunny spells (0.8 mm ¹)
Preceding rainfall:	Sunday 17 th – 9.2 mm ¹ , Tuesday 19 th – 11.2 mm ¹

EnviroCentre has been instructed by BAM Ritchies to provide Ecological Clerk of Works (ECoW) support during ground investigation works at New Deer Substation (site entrance NGR: NJ 82208 46868). The Works are being undertaken on behalf of Scottish and Southern Energy (SSE) and commenced on w/b 21 August 2023 with the first week consisting of site establishment and intrusive works commencing w/b 28 August 2023.

This report provides a brief summary of the work undertaken by the ECoW and findings arising. Recommendations are offered with the intention of assisting the developer and contractors to comply with the requirements of the project's planning conditions (where applicable), e.g., Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) license for the site (issued by the Scottish Environment Protection Agency (SEPA)), current environmental regulations, the Development's Construction Environmental Management Plan (CEMP), Site Specific Pollution Prevention Plans (SSPPP), Guidance for Pollution Prevention (GPP) and environmental good practice.

Based on the initial ECoW survey work/site walkovers (5 days full time w/b 21 August 2023), EnviroCentre recommended that 3 days of full time ECoW supervision would be appropriate each week from w/b 28 August 2023 and this was agreed by SSE on 24 August 2023. It is noted ECoW supervision is not taking place during weekend working. This report, from w/b 18/09/2023, details findings during Monday 18 September and Wednesday 20 September.

Based on the observations during the inspection, the current risk of the project being in breach of any of the above regulations or project documentation was considered to be **Low**.

Comments for the Project Team

- Borehole Drilling was observed in areas 1 ,5 and 6.
- Active Private Water Supply (PWS) located in Area 1 at NGR NJ 81534 47531. Precautions to be taken to protect this supply, however concerns have been raised by the PWS user as a result of observed drilling and digging activities. It is understood SSE are organising testing of the supply to satisfy the PWS user there are no adverse effects from project activities.
- Field drain located along northern boundary of Area 2 was observed to be actively flowing, although the channel itself was well vegetated. Drain flow surfaced at NJ 81586 47406 (Area 1), and was observed to be clear under low flow conditions. Field drain running east between Area 4 and 5 (NJ 82290 47493) was well vegetated and was observed to be flowing.
- All fields are minor tributaries of Burn of Greens watercourse. Intrinsically, both field drains on site have a low importance/value, however best efforts should be made not to discharge directly to them.
- Monkey Flower Invasive Non Native Species (INNS) present in vegetated ditches. Drilling activities not expected to cause disturbance therefore assessed probability of spread is low.
- All fuel bowsers were observed to have spill kits and nappies present. Site compound found to be kept organised and tidy.
- Camera trap confirmed presence of Badgers at (NJ 82101 47646). A 30m exclusion zone has previously been established by the ECoW. Toolbox talk given to drill rigs crews on badgers and associated mammals that frequent badger setts.
- An abandoned badger sett was found within the fenced area at the northern boundary of area 5, approximately 20m NW of BH24 (NJ 82216 47630).

Area 1	
Site setting	Grass field
Surface Water Management / Ecological constraints	<p>Active PWS identified, extra caution and at least 10 m exclusion set up when working around asset infrastructure.</p> <p>Field drain surfacing at NJ 81586 47406, running clear, checked 20/09.</p> <p>Recommended 10 m exclusion zone for any working in the vicinity of this point.</p>
SSPPP	<p>Drilling and test trench activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Drill rig operating at BH03, checks conducted in area, no environmental constraints present, 18/09.</p> <p>Drill rig tracked in to BH02, checks conducted in area, no environmental constraints present, 20/09.</p>

Area 2	
Site setting	Grass field with straw bales harvested.
Surface Water Management / Ecological constraints	Drainage ditch running along northern boundary is a minor tributary of Burn of Greens watercourse. Intrinsically low value receptor. Cognisance of Monkey Flower (INNS) present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works.
Area 3	
Site setting	Majority of area is cut barley/wheat and in far west there is area of unmanaged scrub.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works.
Area 4	
Site setting	Cut barely/wheat field
Surface Water Management / Ecological constraints	Drainage ditch present between boundary of Areas 4 and 5 but identified as having low value. Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works.
Area 5	
Site setting	Some pasture, not cut.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate. Camera traps confirmed presence of Badgers in area, 18/09.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management). Drill rig tracked in to BH39, checks conducted in area, no environmental constraints present, 18/09.

	<p>Pre-track checks from BH39 to BH38, no environmental constraints present in area of BH38, 18/09.</p> <p>Track in from BH38 to BH24, secondary check of area identified abandoned badger sett 20m NW of BH24 (NJ 82216 47630). No actions required, 20/09.</p>
Area 6	
Site setting	Cut barely/wheat field
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	<p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Track in from BH34 to BH33 18/09. Area checked, no environmental constraints observed.</p>
Area 7	
Site setting	Agricultural field
Surface Water Management / Ecological constraints	Flow visible on surface at end of ditch, possible presence of a collapsed culvert..
SSPPP	No active works.

Report Actions Overview

Based on the findings of the EnvCoW walkover, it is recommended that the actions outlined within the Report Actions Summary table below are undertaken to improve the Development’s surface water management and to maintain compliance with the Development’s PPP and SWMP.

Key




General Comments and/or Positive Progress	Beneficial Action	Scheduled Action Required	Immediate Action Required
As above	Works required to comply with best practice	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with environmental impact	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with major environmental impact
No Action Required: Continue Following Good Practice	Completion Timescale: 1 Month	Completion Timescale: 1 Week	Completion Timescale: 72 hours




Report Actions Summary (New Deer = ND)

ID	Actions Summary
ND 01	<p>Private Water Supply (Area 1): An active private water supply has been identified within Area 1 at NJ 81534 47531. Inlet and outlet locations have been identified and marked and there are no immediate concerns associated with the drilling work and this location. However, extra caution (i.e., monitoring) should be taken when operating within this area and it is recommended an exclusion zone of at least 10 m is setup around infrastructure related to the supply.</p>
ND 02	<p>Surface water management: Although drainage ditches on site are well vegetated and have intrinsically low value, drilling fluids should not be directly discharged to surface watercourses but instead allowed to infiltrate into the ground. No specific surface water mitigation measures have been identified as necessary but extra caution should be taken (e.g., exclusion zones of at least 10 m) within Area 1 in vicinity of private water supply and where the field drain surfaces (NJ 81586 47406).</p>
ND 03	<p>Invasive species: Monkey Flower (INNS) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants but site staff should be aware of the issue and practice suitable caution when working near these areas.</p>
ND 04	<p>Present ecology: No nesting birds have been identified. Site staff should remain vigilant at all times of ecology present and if any nesting bird locations are found, the ECoW should be informed immediately so applicable action (if required) can be taken.</p>
ND 05	<p>Present ecology: Badger Sett identified comprising 1 main hole and numerous secondary holes (NJ 82101 47646). A 30m exclusion zone has been established by the ECoW 08/09/2023. Camera traps installed in sett area 15/09/2023.</p>
ND 06	<p>Present ecology: Badger presence confirmed by camera trap (NJ 82101 47646) 18/09/2023.</p>
ND 07	<p>Present Ecology: Abandoned badger sett identified within the fenced area at the northern boundary of area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023</p>

Report Actions (New Deer = ND)

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
<p>ND 01</p>	<p>Private Water Supply</p> <ol style="list-style-type: none"> Private Water Supply (PWS) identified in Area 1 at NJ 81534 47531 No immediate concerns associated with the supply from the works however extra caution should be taken when working in this area, e.g., BH 04 is marked as being relatively close to PWS. Asset infrastructure has been marked and it is understood SSE are organising sampling/monitoring to take place to satisfy user there will be no adverse effects from the works. 	<p>Area 1 and Area 2</p>		<ol style="list-style-type: none"> It is recommended at least a 10 m exclusion zone is setup from any infrastructure, e.g., inlet, outlet pipes, power supply, from the Private Water Supply. Extra caution should be taken when working in this area however at this stage no specific mitigation is deemed necessary. 	<p>SSE are understood to be organising monitoring/sampling of supply to satisfy user no adverse effects will occur from project works.</p>	<p>August 2023</p>
<p>ND 02</p>	<p>Surface Water Management</p> <ol style="list-style-type: none"> Field drain surfacing in Area 1, then flowing east towards along northern boundary of Area 2, observed to be clear under low flow conditions 20/09/2023. Drainage ditch running along the southern boundary of Area 6 converging with the ditch on the western boundary and flowing through area 7 towards Burn of Greens remains flowing over the access point from area 6 to area 7 (NJ 82595 47016). It is assumed that the culvert is either collapsed or blocked causing the flow across the access point. Trees on both side of the obstruction have fallen after the flow has undercut the root systems. After the excavator had crossed between area 6 and area 7, the flow altered course flowing on to the access track to the abandoned farm (Stirling JG). 	<p>Site wide</p>		<ol style="list-style-type: none"> It is recommended at least a 10m exclusion zone is setup around where field drain surfaces in Area 1. It is recommended the quality of water surfacing at NJ 81586 47406 is monitored. If discoloured water is identified proactive actions should be taken to identified the source of the issue and remediate it (if applicable, i.e., directly caused by the works). It is recommended drilling fluids are discharged to ground and allowed to infiltrate at a distance of >10m from drainage ditches on site. The access point between areas 6 and 7 to be regularly monitored with mitigation measures employed as required to ensure that the flow is maintained into the ditch running into Burn of Greens. A small channel has been cut into the access point that directs the flow of the ditch from area 6 directly into the ditch running through area 7 towards the Burn of Greens. This has relieved the flooding previously occurring at this location. 		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
						
<p>ND 03</p>	<p>Invasive species</p> <ol style="list-style-type: none"> The invasive species Monkey Flower (has a yellow flower) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants. 	<p>Site wide</p>		<ol style="list-style-type: none"> Site staff should be aware of the presence of the INNS and practice suitable caution when working near these areas to stop spread of this plant. 		<p>August 2023</p>
<p>ND 04</p>	<p>Present Ecology</p> <ol style="list-style-type: none"> No nesting bird nests identified. Nesting bird season is almost over (March to September) the potential of nesting bird constraints being identified is very low. Species sighted on site include roe deer, Asiatic pheasant, rabbits, sparrows, starlings, crows, buzzards and peacock butterflies. 	<p>Site wide</p>		<ol style="list-style-type: none"> Site staff should remain vigilant of any potential nesting bird activity on site. If either are suspected, site staff should report findings to ECoW as soon as possible. It is proposed the ECoWs will give a toolbox talk to site staff within the next 2 weeks on ecology present on site. 		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
ND 05	<p>Present Ecology</p> <p>1. Possible Badger sett identified in Area 5 (NJ 82101 47646).</p>	Area 5		<p>1. Site staff to be aware when accessing Area 5 that a 30m exclusion zone is in effect. Test trenches are complete, boreholes BH10 and 24 to be undertaken. Both boreholes are out with the 30m exclusion zone, crews advised to avoid tracking through or close to exclusion zone to avoid disturbance by noise and vibration.</p>		September 2023
ND 06	<p>Present Ecology</p> <p>1. Badger presence confirmed (18/09/2023) in Area 5 (NJ 82101 47646).</p>	Area 5		<p>1. Toolbox talk on Badgers given to drill rigs crews during lunch break, 20/09/2023.</p>		September 2023
ND 07	<p>1. Abandoned badger sett found at the northern boundary of Area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023</p>	Area 5	 <p>20 September 2023 14:13</p>	<p>1. No actions required.</p>		September 2023

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New Deer Substation GI Works: ECoW report w/c 16/10/23

Dates of visits:	Monday 16 th , Wednesday 18 th October 2023
EnvCoW(s):	Paul Flynn (PF)
Author:	Paul Flynn (PF)
Reviewer:	John Gall
Areas Visited:	Area 1 to 7
Weather during site visit(s):	Monday 16 th (PF) – Dry, Sunny (rainfall: 0.0 mm ¹) Wednesday 18 th (PF) – Cloudy, Moderate winds (rainfall: 0.0 mm ¹)
Preceding rainfall:	Sunday 15 th – 1.0 mm ¹ , Tuesday 17 th – 0.0 mm ¹

EnviroCentre has been instructed by BAM Ritchies to provide Ecological Clerk of Works (ECoW) support during ground investigation (GI) works at New Deer Substation (site entrance NGR: NJ 82208 46868). The works are being undertaken on behalf of Scottish and Southern Energy (SSE) and commenced w/c 21st August with the first week consisting of site establishment and intrusive works commencing w/c 28th August. This report, from w/c 16th October, details findings during site visits undertaken on Monday 16th October and Wednesday 18th October only.

This report provides a brief summary of the works being undertaken on site by BAM Ritchies and the subsequent observations made by the ECoW. Recommendations are offered with the intention of assisting the developer and contractors to comply with the requirements of the Site Specific Pollution Prevention Plans (SSPPP), the Development's Construction Environmental Management Plan (CEMP), project's planning conditions (where applicable), current environmental regulations, and environmental good practice (e.g. Guidance for Pollution Prevention (GPP) documentation).

Based on the initial ECoW site walkovers (undertaken w/c 21st August), EnviroCentre recommended that a reduction in supervision from five days to three days of ECoW supervision would be appropriate each week from w/c 28th August and this was agreed by SSE on 24th August. It should be noted that ECoW supervision is not taking place during weekend working.

The current risk of the project being in breach of any of the above regulations or project documentation was considered to be **Low**.

Comments for the Project Team

- Borehole drilling was observed in Area 7 (extended).
- An active Private Water Supply (PWS) is located in Area 1 at NGR NJ 81534 47531. Precautions to protect this supply have been taken (for example no drilling or test pit operations to take place within 10m and to keep vehicle movements in the area of supply and discharge pipes to a minimum), however concerns have been previously raised by the PWS user to the ECoW. It is understood SSE are organising testing of the supply to satisfy the PWS user there are no current or historical adverse effects to the supply from project activities.
- The field drain located along the northern boundary of Area 2 was observed to be actively flowing, although the channel itself was well vegetated. Drain flow surfaced at NJ 81586 47406 (Area 1), and was observed to be clear under low flow conditions. The field drain between Area 4 and 5 (NJ 82290 47493) was well vegetated and was observed clear under low flow conditions.
- Monkey Flower which is an Invasive Non Native Species (INNS) was observed to be present in vegetated ditches. Drilling activities should continue not to cause disturbance to these areas through the appropriate use of mitigation measures as outlined within Biosecurity and management of invasive non-native species for construction sites and Controlled Activities.

¹ SEPA Rainfall data can be accessed at <https://www2.sepa.org.uk/rainfall/> (Esslemont House Station ID: 115221)

- Fuel bowzers present on site were observed to have spill kits and plant nappies present. The site compound was observed to be kept organised and tidy.
- The camera trap installed within Area 5 (NJ 82101 47646) confirmed the presence of badgers. A 30m exclusion zone as specified within Protected Species Advice for Developers has previously been established by the ECoW. A toolbox talk was given to the drill rig crews on 20th September on badgers and associated mammals that frequent badger setts and the expected protection requirements.
- An abandoned badger sett was found within the fenced area at the northern boundary of the extended Area 7, approximately 50m northwest of BH40 (NJ 82636 47478).
- A field vole nest was found within a piece of windblown waste on 16th October (NJ 82612 47047) which was first observed on 11th October. Drill rig crews were informed of the presence of nest by the ECoW and were instructed to avoid vehicle movements in close proximity.
- The presence of a barn owl in the abandoned cottage between area 5 and area 7 (NJ 82498 47316) was reported on 16th October by ecologists working for SSE. The cottage has been visited numerous times throughout the initial ecological survey and secondary ecological surveys undertaken by EnviroCentre, with no barn owl sightings observed. In discussion with the ecologist from SSE it was agreed that the owl was temporarily sheltering within the cottage and not nesting there.
- A boundary ecological survey of the entire works area (Area 1 to Area 7) was undertaken on 18th October, prior to GI and ECoW demobilisation to confirm that no additional ecological and environmental damage or constraints have occurred since the initial survey w/c 21st August. It was confirmed that no detrimental impact has been observed due to the works undertaken.

Observation Record

Criteria	Observation
Area 1	
Site setting	Grass field
Surface Water Management / Ecological constraints	Active PWS identified, extra caution should be used when moving vehicles / equipment in the PWS area and at least 10 m exclusion set up when working around asset infrastructure, checked 18/10. Field drain issuing at NJ 81586 47406, running clear, checked 18/10. Recommended 10 m exclusion zone for any working in the vicinity of this point.
SSPPP	No active works. Full area boundary final ecological survey undertaken 18/10.
Area 2	
Site setting	Grass field with straw bales harvested.
Surface Water Management / Ecological constraints	Drainage ditch running along northern boundary is a minor tributary of Burn of Greens watercourse. Cognisance of Monkey Flower (INNS) present in drainage ditches with precautionary measures to be taken (for example cleaning of clothes, boots and equipment to avoid spreading Monkey Flower beyond the site boundaries) as appropriate.
SSPPP	No active works. Full area boundary final ecological survey undertaken 18/10.
Area 3	
Site setting	Majority of area is cut barley/wheat and in far west there is area of unmanaged scrub.

Criteria	Observation
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken (for example avoiding disturbing the plants to avoid it spreading further) as appropriate.
SSPPP	No active works. Full area boundary final ecological survey undertaken 18/10.
Area 4	
Site setting	Cut barley/wheat field
Surface Water Management / Ecological constraints	Drainage ditch present between boundary of Areas 4 and 5. Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken (for example avoiding disturbing the plants to avoid it spreading further) as appropriate.
SSPPP	No active works. Full area boundary final ecological survey undertaken 18/10.
Area 5	
Site setting	Some pasture, not cut.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken (for example cleaning of clothes, boots and equipment to avoid spreading Monkey Flower beyond the site boundaries) as appropriate. Camera traps confirmed presence of badgers in area, 18/09. New sett being excavated within the northern fence line, approximately 10m north of the existing sett entrance. Observed during site visit by Police Scotland Wildlife Officer 07/10/2023. Logged on 09/10/2023 (NJ 81877 48124). 30m exclusion zone around active badger sett removed 9 October, on advice from Hannah Corbett of Police Scotland. Badger sett checked 16/10. Additional materials (soil, sand and rocks) excavated from the sett.
SSPPP	No active works. Full area boundary final ecological survey undertaken 18/10.
Area 6	
Site setting	Cut barley/wheat field
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken (for example cleaning of clothes, boots and equipment to avoid spreading Monkey Flower beyond the site boundaries) as appropriate.
SSPPP	No active works. Full area boundary final ecological survey undertaken 18/10.
Area 7	
Site setting	Agricultural / grazing fields
Surface Water Management / Ecological constraints	Vehicle movements over crossing has resulted in rutting of the track, and subsequently further flooding of farm track. It is considered likely that this was the result of the landowners tractor rather than a works vehicle. Area around crossing has flooded becoming unsuitable to traverse vehicles across. 02/10

Criteria	Observation
	<p>Alternative route chosen for entry into area across ditch leading to Burn of Greens, checked for environmental constraints, none were found.</p> <p>A bridge was constructed over the ditch using low ground pressure matts. This created minor siltation that cleared prior to entering the Burn of Greens. The operation to install the bridge was supervised by the ECoW. The siltation of the ditch is to be monitored for the remainder of the operations in Area 7.</p>
SSPPP	<p>Works commenced (11/10/2023)</p> <p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Pre-tracked drill rig from BH40 to BH41, BH41 to BH46 , BH site ecological surveys undertaken covering areas surrounding BH40 – BH46.</p> <p>Field Vole nest found within a piece of windblown waste 16/10, which was first observed on 11/10. Drill rig crews informed of presence of nest by ECoW and instructed to avoid vehicle movements in close proximity.</p> <p>Full area boundary final ecological survey undertaken 18/10.</p>

Report Actions Overview

Based on the findings of the EnvCoW walkover, it is recommended that the actions outlined within the Report Actions Summary table below are undertaken to improve the Development’s surface water and ecological constraint management and to maintain compliance with the Development’s PPP and SWMP.




Key




General Comments and/or Positive Progress	Beneficial Action	Scheduled Action Required	Immediate Action Required
As above	Works required to comply with best practice	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with environmental impact	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with major environmental impact
No Action Required: Continue Following Good Practice	Completion Timescale: 1 Month	Completion Timescale: 1 Week	Completion Timescale: 72 hours

Report Actions Summary (New Deer = ND)

ID	Actions Summary
ND 01	<p>Private Water Supply (Area 1): An active PWS has been identified within Area 1 at NJ 81534 47531. Inlet and outlet locations have been identified and marked and there are no immediate concerns associated with the drilling work and this location.</p> <p>However, it is recommended that additional visual monitoring is undertaken when operating within this area. Additionally, it is recommended that an exclusion zone of at least 10 m is setup around infrastructure related to the supply.</p>
ND 02	<p>Surface Water Management: Although drainage ditches on site are well vegetated, drilling water should not be directly discharged to surface watercourses but instead allowed to infiltrate into the ground.</p> <p>No specific surface water mitigation measures have been identified as necessary but extra caution should be taken (e.g., exclusion zones of at least 10 m) within Area 1 in vicinity of private water supply and where the field drain surfaces (NJ 81586 47406).</p>
ND 03	<p>Invasive Species: Monkey Flower (INNS) has been identified as being present in some drainage ditches and hedgerows around the site.</p> <p>It is not expected drilling operations will disturb these plants but site staff should be aware of the issue and practice suitable caution (i.e. adhering to exclusion zones) when working near these areas.</p>
ND 04	<p>Badgers: Badger sett identified comprising one main entrance and numerous secondary entrances (NJ 82101 47646). A 30m exclusion zone has been established by the ECoW 08/09/2023. Camera traps installed in sett area 15/09/2023. Badger presence confirmed by camera trap (NJ 82101 47646) 18/09/2023.</p> <p>Abandoned badger sett identified within the fenced area at the northern boundary of area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023</p> <p>Abandoned badger sett identified within the fenced area at the northern boundary of area 7, approximately 50m NW of BH40 (NJ 82636 47478). 02/10/2023</p> <p>New sett excavations in the area of existing active sett within the fenced area at the northern boundary of area 5, approximately 10m north of existing sett. (NJ 81877 48124) 07/10/2023.</p>
ND05	<p>Field Vole: Field Vole nest discovered in area 7 within a piece of windblow waste, with single occupant of nest.(NJ 82612 47047).</p> <p>Site management and drill rig crews informed of presence of nest by ECoW and instructed to avoid vehicle movements in close proximity 16/10/2023.</p>

Report Actions (New Deer = ND)

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
ND 01	<p>Private Water Supply</p> <ol style="list-style-type: none"> 1. A PWS has previously been identified in Area 1 at NJ 81534 47531. This was checked 18/10/2023. 2. No immediate concerns associated with the supply from the works. 3. Asset infrastructure has been marked and it is understood SSE are organising sampling / monitoring to take place to satisfy user there will be no adverse effects from the works. 	Area 1 and Area 2	 <p>18 October 2023 08:37</p>	<ol style="list-style-type: none"> 1. It is recommended that the previously utilised exclusion zone (at least 10m) is setup from associated infrastructure, e.g., inlet, outlet pipes, power supply, from the PWS when works continue in this area. 2. Extra caution (for example marking of infrastructure and alternative access routes) should be taken when working in this area however at this stage no specific mitigation is deemed necessary. 	SSE are understood to be organising monitoring / sampling of supply to satisfy user no adverse effects will occur from project works.	August 2023
ND 02	<p>Surface Water Management</p> <ol style="list-style-type: none"> 1. Field drain surfacing at water trough in Area 1, then flowing east towards along northern boundary of Area 2 continuing through Areas 6 & 7, observed to be clear under increased flow conditions 18/10/2023 (top photograph). 2. Drainage ditch running along the southern boundary of Area 6 converging with the ditch on the western boundary and flowing through area 7 towards Burn of Greens remains flowing over the access point from area 6 to area 7 (NJ 82595 47016). It is assumed that the culvert is either collapsed or blocked causing the flow across the access point. Trees on both side of the obstruction have fallen after the flow has undercut the root systems. 3. After the excavator had crossed between area 6 and area 7, the flow altered course flowing on to the access track to the abandoned farm (Stirling JG) 4. The crossing between areas 6 and 7 has been deemed unsuitable to move equipment across due to the churned up area and subsequent flooding – middle photograph. An alternative route has been selected through the barley field adjacent to area 7. A temporary bridge has been constructed to avoid heavy siltation of the ditch leading to the Burn of Greens (bottom photograph). 	Site wide	 <p>18 October 2023 08:35</p>  <p>4 October 2023 14:22</p>	<ol style="list-style-type: none"> 1. It is recommended at least a 10m exclusion zone is setup around where field drain surfaces in Area 1. 2. It is recommended the quality of water surfacing at NJ 81586 47406 is visually monitored during the works. If discoloured water is identified proactive actions should be taken to identify the source of the issue and remediate it. 3. It is recommended drilling water are discharged to ground and allowed to infiltrate at a distance of >10m from drainage ditches on site. 4. The access point between Areas 6 and 7 (middle photograph) to be regularly monitored with mitigation measures employed as required to ensure that the flow is maintained into the ditch running into Burn of Greens. A small channel has been cut into the access point that directs the flow of the ditch from Area 6 directly into the ditch running through Area 7 towards the Burn of Greens. This has relieved the flooding previously occurring at this location. 5. The construction of the temporary bridge is recommended. When in use the ECoW will monitor the ditch and Burn of Greens for in the release of silt to the water environment (bottom photograph). 		August 2023

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
			 <p>16 October 2023 09:45</p>			
<p>ND 03</p>	<p>Invasive Species</p> <ol style="list-style-type: none"> 1. The invasive species Monkey Flower has been identified as being present in some drainage ditches and hedgerows around the site. 2. It is not expected drilling operations will disturb these plants. 	<p>Site wide</p>	 <p>31 August 2023 10:18</p>	<ol style="list-style-type: none"> 1. Site staff should be aware of the presence of the INNS and practice suitable caution (i.e. avoidance) when working near these areas to stop spread of this plant. 		<p>August 2023</p>
<p>ND 04</p>	<p>Present Ecology</p> <ol style="list-style-type: none"> 1. Possible Badger sett identified in Area 5 (NJ 82101 47646). – top photograph 2. Badger presence confirmed (18/09/2023) in Area 5 (NJ 82101 47646) – middle photograph 3. Abandoned badger sett found at the northern boundary of Area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023 4. Abandoned badger sett found at the northern boundary of Area 7, approximately 50m NW of BH40 (NJ 82636 47478). 02/10/2023 5. New sett excavations in the area of existing active sett within the fenced area at the northern boundary of area 5, approximately 10m north of existing sett. (NJ 81877 48124) 07/10/2023 – bottom photograph. 	<p>Area 5</p>		<ol style="list-style-type: none"> 1. Site staff to be aware when accessing Area 5 that a 30m exclusion zone is in effect. Test trenches are complete, boreholes BH10 and 24 to be undertaken. Both boreholes are out with the 30m exclusion zone, crews advised to avoid tracking through or close to exclusion zone to avoid disturbance by noise and vibration. 2. Toolbox talk on Badgers given to drill rigs crews during lunch break, 20/09/2023. 		<p>September & October 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
<p>ND05</p>	<p>1. Field Vole nest discovered within a piece of windblown waste, with single occupant of nest.(NJ 82612 47047).</p>	<p>Area 7</p>		<p>1. Site management and drill rig crews informed of presence of nest and instructed to avoid vehicle movements in close proximity 16/10/2023.</p>		<p>October 2023</p>

New Deer Substation GI Works: ECoW report w/c 11/09/23

Dates of visits:	Monday 11 th , Wednesday 13 th and Friday 15 th September 2023
EnvCoW(s):	Paul Flynn (PF)
Author:	Paul Flynn
Reviewer:	Neil Gordon
CAR Licence:	n/a
Areas Visited:	All areas (1 to 7)
Weather during site visit:	11/09/23 (PF) – Dry, sunny spells with patchy cloud (0.0 mm ¹) 13/09/23 (PF) – Dry, overcast (0.0 mm ¹) 15/09/23 (PF) – Dry, overcast (0.0 mm ¹)
Preceding rainfall:	Sunday 10 th – 9.2 mm ¹ , Tuesday 12 th – 0.0 mm ¹ Thursday 14 th – 0.0 mm ¹

EnviroCentre has been instructed by BAM Ritchies to provide Ecological Clerk of Works (ECoW) support during ground investigation works at New Deer Substation (site entrance NGR: NJ 82208 46868). The Works are being undertaken on behalf of Scottish and Southern Energy (SSE) and commenced on w/b 21 August 2023 with the first week consisting of site establishment and intrusive works commencing w/b 28 August 2023.

This report provides a brief summary of the work undertaken by the ECoW and findings arising. Recommendations are offered with the intention of assisting the developer and contractors to comply with the requirements of the project's planning conditions (where applicable), e.g., Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) licence for the site (issued by the Scottish Environment Protection Agency (SEPA)), current environmental regulations, the Development's Construction Environmental Management Plan (CEMP), Site Specific Pollution Prevention Plans (SSPPP), Guidance for Pollution Prevention (GPP) and environmental good practice.

Based on the initial ECoW survey work/site walkovers (5 days full time w/b 21 August 2023), EnviroCentre recommended that 3 days of full time ECoW supervision would be appropriate each week from w/b 28 August 2023 and this was agreed by SSE on 24 August 2023. It is noted ECoW supervision is not taking place during weekend working. This report, from w/b 28/08/2023, details findings during Monday 28 August, Thursday 31 August, and Friday 1 September.

Based on the observations during the inspection, the current risk of the project being in breach of any of the above regulations or project documentation was considered to be **Low**.

¹ SEPA Rainfall taken from Esslemont House station (ID: 115221). This station is located approx. 17 miles southeast of the site. Data for 31/08 and 01/09 not available at time of report issue. <https://www2.sepa.org.uk/rainfall/data/index/115221>.

Comments for the Project Team

- Trial trench excavations were observed by the EnvCoW in Areas,2,4 and 6.
- Borehole Drilling was observed in areas 1,2, 4 and 6.
- Active Private Water Supply (PWS) located in Area 1 at NGR NJ 81534 47531. Precautions to be taken to protect this supply, however concerns have been raised as a result of observed drilling and digging activities. It is understood SSE are organising testing of the supply to satisfy the PWS user there are no adverse effects from project activities.
- Field drain located along northern boundary of Area 2 which was observed to be actively flowing although the channel itself was well vegetated. Drain flow surfaced at NJ 81586 47406 (Area 1), and was observed to be clear under low flow conditions. Field drain running east between Area 4 and 5 (NJ 82290 47493) was well vegetated and was not observed to be flowing.
- All fields are minor tributaries of Burn of Greens watercourse. Intrinsically, both field drains on site have a low importance/value, however best efforts should be made not to discharge directly to them.
- Monkey Flower Invasive Non Native Species (INNS) present in vegetated ditches. Drilling activities not expected to cause disturbance therefore assessed probability of spread is low.
- All fuel bowsers were observed to have spill kits and nappies present. Site compound found to be kept organised and tidy.
- Badger Sett identified comprising 1 main hole and numerous secondary holes (NJ 82101 47646). A 30m exclusion zone has been established by the ECoW

Area 1	
Site setting	Grass field
Surface Water Management / Ecological constraints	<p>Active PWS identified, extra caution and at least 10 m exclusion set up when working around asset infrastructure.</p> <p>Field drain surfacing at NJ 81586 47406, running clear, checked 11/09.</p> <p>Recommended 10 m exclusion zone for any working around this point.</p>
SSPPP	<p>Drilling and test trench activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Drill rig tracked in to BH04, close proximity to PWS, checks conducted in area of BH01 & TP06. Pre-tracked and checked areas of TP07, TP08, TP09, TP10 & BH09, no environmental constraints present, 15/09.</p>
Area 2	
Site setting	Grass field with straw bales harvested.
Surface Water Management / Ecological constraints	Drainage ditch running along northern boundary is a minor tributary of Burn of Greens watercourse. Intrinsically low value receptor. Cognisance of Monkey Flower

	(INNS) present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management). BH18 & BH19 rechecked for environmental constraints, no constraints observed. Borehole BH18 ongoing 11/09. Borehole BH19 ongoing 13/09.
Area 3	
Site setting	Majority of area is cut barley/wheat and in far west there is area of unmanaged scrub.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works.
Area 4	
Site setting	Cut barely/wheat field
Surface Water Management / Ecological constraints	Drainage ditch present between boundary of 4 and 5 but identified as having low value. Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management). Borehole BH23 ongoing 11/09. Area rechecked, no environmental constraints observed.
Area 5	
Site setting	Some pasture, not cut.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate. Camera traps set up in area of suspected Badger sett, 15/09.
SSPPP	No active works.

Area 6	
Site setting	Cut barely/wheat field
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management). Borehole BH36 ongoing 15/09. Area rechecked, no environmental constraints observed.
Area 7	
Site setting	Agricultural field
Surface Water Management / Ecological constraints	Flow visible on surface at end of ditch, possible presence of a collapsed culvert..
SSPPP	Test trench activities being well managed with no issues identified, (e.g., fuel and chemical management). Pre-tracked and checked areas of TP46, TP47, TP48 & TP49, no environmental constraints present, 13/09. Test trench activities now complete in area 7 13/09.

Report Actions Overview

Based on the findings of the EnvCoW walkover, it is recommended that the actions outlined within the Report Actions Summary table below are undertaken to improve the Development’s surface water management and to maintain compliance with the Development’s PPP and SWMP.

Key




General Comments and/or Positive Progress	Beneficial Action	Scheduled Action Required	Immediate Action Required
As above	Works required to comply with best practice	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with environmental impact	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with major environmental impact
No Action Required: Continue Following Good Practice	Completion Timescale: 1 Month	Completion Timescale: 1 Week	Completion Timescale: 72 hours

Report Actions Summary (New Deer = ND)

ID	Actions Summary
ND 01	<p>Private Water Supply (Area 1): An active private water supply has been identified within Area 1 at NJ 81534 47531. Inlet and outlet locations have been identified and marked and there are no immediate concerns associated with the drilling work and this location. However, extra caution (i.e., monitoring) should be taken when operating within this area and it is recommended an exclusion zone of at least 10 m is setup around infrastructure related to the supply.</p>
ND 02	<p>Surface water management: Although drainage ditches on site are well vegetated and have intrinsically low value, drilling fluids should not be directly discharged to surface watercourses but instead allowed to infiltrate into the ground. No specific surface water mitigation measures have been identified as necessary but extra caution should be taken (e.g., exclusion zones of at least 10 m) within Area 1 around private water supply and where the field drain surfaces (NJ 81586 47406).</p>
ND 03	<p>Invasive species: Monkey Flower (INNS) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants but site staff should be aware of the issue and practice suitable caution when working near these areas.</p>
ND 04	<p>Present ecology: Badger latrines have been identified on site so although no sets have been found this is evidence badgers are likely present and using parts of the site. No nesting birds have been identified. Site staff should remain vigilant at all times of ecology present and if any badger sets or nesting bird locations are found, the ECoW should be informed immediately so applicable action (if required) can be taken.</p>
ND 05	<p>Present ecology: Badger Sett identified comprising 1 main hole and numerous secondary holes (NJ 82101 47646). A 30m exclusion zone has been established by the ECoW 08/09/2023. Camera traps installed in sett area 15/09/2023.</p>

Report Actions (New Deer = ND)

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
<p>ND 01</p>	<p>Private Water Supply</p> <ol style="list-style-type: none"> Private Water Supply (PWS) identified in Area 1 at NJ 81534 47531 No immediate concerns associated with the supply from the works however extra caution should be taken when working in this area, e.g., BH 04 is marked as being relatively close to PWS. Asset infrastructure has been marked and it is understood SSE are organising sampling/monitoring to take place to satisfy user there will be no adverse effects from the works. 	<p>Area 1 and Area 2</p>		<ol style="list-style-type: none"> It is recommended at least a 10 m exclusion zone is setup from any infrastructure, e.g., inlet, outlet pipes, power supply, from the Private Water Supply. Extra caution should be taken when working in this area however at this stage no specific mitigation is deemed necessary. 	<p>SSE are understood to be organising monitoring/sampling of supply to satisfy user no adverse effects will occur from project works.</p>	<p>August 2023</p>
<p>ND 02</p>	<p>Surface Water Management</p> <ol style="list-style-type: none"> Field drain surfacing in Area 1, then flowing east towards along northern boundary of Area 2, observed to be clear under low flow conditions 11/09/2023. Drainage ditch running along the southern boundary of Area 6 converging with the ditch on the western boundary and flowing through area 7 towards Burn of Greens remains flowing over the access point from area 6 to area 7 (NJ 82595 47016). It is assumed that the culvert is either collapsed or blocked causing the flow across the access point. Trees on both side of the obstruction have fallen after the flow has undercut the root systems. After the excavator had crossed between area 6 and area 7, the flow altered course flowing on to the access track to the abandoned farm (Stirling JG). 	<p>Site wide</p>		<ol style="list-style-type: none"> It is recommended at least a 10m exclusion zone is setup around where field drain surfaces in Area 1. It is recommended the quality of water surfacing at NJ 81586 47406 is monitored. If discoloured water is identified proactive actions should be taken to identified the source of the issue and remediate it (if applicable, i.e., directly caused by the works). It is recommended drilling fluids are discharged to ground and allowed to infiltrate at a distance of >10m from drainage ditches on site. The access point between areas 6 and 7 to be regularly monitored with mitigation measures employed as required to ensure that the flow is maintained into the ditch running into Burn of Greens. 		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
						
<p>ND 03</p>	<p>Invasive species</p> <ol style="list-style-type: none"> The invasive species Monkey Flower (has a yellow flower) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants. 	<p>Site wide</p>		<ol style="list-style-type: none"> Site staff should be aware of the presence of the INNS and practice suitable caution when working near these areas to stop spread of this plant. 		<p>August 2023</p>
<p>ND 04</p>	<p>Present Ecology</p> <ol style="list-style-type: none"> Badger latrines identified and provide evidence badger using site but no sets identified. No nesting bird nests identified. Nesting bird season is almost over (March to September) the potential of nesting bird constraints being identified is very low. Species sighted on site include roe deer, Asiatic pheasant, rabbits, sparrows, starlings, crows, buzzards and peacock butterflies. 	<p>Site wide</p>		<ol style="list-style-type: none"> Site staff should remain vigilant of any potential badger sets and nesting bird activity on site. If either are suspected, site staff should report findings to ECoW as soon as possible. It is proposed the ECoWs will give a toolbox talk to site staff within the next 2 weeks on ecology present on site. 		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
ND 05	<p>Present Ecology</p> <p>4. Possible Badger sett identified in Area 5 (NJ 82101 47646).</p>	Area 5		<p>3. Site staff to be aware when accessing Area 5 that a 30m exclusion zone is in effect. Test trenches are complete, boreholes BH10 and 24 to be undertaken. Both boreholes are out with the 30m exclusion zone.</p>		September 2023

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New Deer Substation GI Works: ECoW report w/c 09/10/23

Dates of visits:	Monday 9 th , Wednesday 11 th and Friday 13 th .
EnvCoW(s):	Paul Flynn (PF) and Seb Cook (SC)
Author:	Paul Flynn (PF)
Reviewer:	John Gall
Areas Visited:	Area 1, Area 5 and Area 7 (extended area)
Weather during site visit:	Monday 9 th (PF) – Dry, partially sunny (1.6 mm ¹) Wednesday 11 th (PF) – Sunny intervals and high winds (0.0 mm ¹) Friday 13 th (PF & SC) – Moderate showers in the morning, cleared in the afternoon (0.0 mm ¹)
Preceding rainfall:	Sunday 8 th - 9.6 mm ¹ , Tuesday 10 th – 1.8 mm ¹ , Thursday 12 th – 0.0 mm ¹

EnviroCentre has been instructed by BAM Ritchies to provide Ecological Clerk of Works (ECoW) support during ground investigation works at New Deer Substation (site entrance NGR: NJ 82208 46868). The Works are being undertaken on behalf of Scottish and Southern Energy (SSE) and commenced on w/c 21 August 2023 with the first week consisting of site establishment and intrusive works commencing w/c 28 August 2023. This report, from w/c 09/10/2023, details findings during Monday 9th October, Wednesday 11th October and Friday 13th. No site operations occurred on Monday 9th October.

This report provides a brief summary of the works being undertaken on site by BAM Ritchies and the subsequent observations made by the ECoW. Recommendations are offered with the intention of assisting the developer and contractors to comply with the requirements of the Site Specific Pollution Prevention Plans (SSPPP), the Development's Construction Environmental Management Plan (CEMP), project's planning conditions (where applicable), current environmental regulations, and environmental good practice (e.g. Guidance for Pollution Prevention (GPP) documentation).

Based on the initial ECoW site walkovers (undertaken w/c 21 August 2023), EnviroCentre recommended that a reduction in supervision from five days to three days of ECoW supervision would be appropriate each week from w/c 28 August 2023 and this was agreed by SSE on 24 August 2023. It is noted ECoW supervision is not taking place during weekend working.

An allegation of licence breaches and criminal activity in relation to drilling operations being within 30m of an active badger sett was received by Police Scotland Thursday 12 October. It was reported that a badger sett is located within the area of the abandoned cottage between areas 5 & 7 (NJ 82499 47306) and as such within the minimum 30m exclusion zone set within the projects SSPPP documentation and its compliance monitored by EnviroCentre.

In addition to the routine ECoW site visit undertaken on Friday 13 October (PF&SC), Police Scotland Wildlife Officers, Hannah Corbett and Michael Flaherty, also visited the site to investigate the allegations along with members of the EnviroCentre team (PF&SC). An extensive search of the area was undertaken and no sett was found, with only a badger latrine identified in the area. The results of the investigation by Police Scotland Wildlife Officers found no breaches of licensing and no criminal activity in relation to badgers in the area of BH40. No evidence of current occupation had been found in previous surveys of the area Wednesday 4 October (PF & SC) and Wednesday 11 October (PF). Sett to be monitored regularly for the remainder of the ground investigation.

¹ SEPA Rainfall data can be accessed at <https://www2.sepa.org.uk/rainfall/> (Esslemont House Station ID: 115221)

Based on the outcome of discussions with Police Scotland and the site visit, the current risk of the project being in breach of any of the above regulations or project documentation was considered to be **Low**.

Comments for the Project Team

- Borehole drilling was observed in Area 7 from the 11th October onwards.
- An active Private Water Supply (PWS) is located in Area 1 at NGR NJ 81534 47531. Precautions to protect this supply have been taken (for example no drilling or test pit operations to take place within 10m and to keep vehicle movements in the area of supply and discharge pipes to a minimum), however concerns have been previously raised by the PWS user to the ECoW. It is understood SSE are organising testing of the supply to satisfy the PWS user there are no current or historical adverse effects to the supply from project activities.
- The field drain located along northern boundary of Area 2 was observed to be actively flowing, although the channel itself was well vegetated. Drain flow surfaced at NJ 81586 47406 (Area 1), and was observed to be clear under low flow conditions. The field drain between Area 4 and 5 (NJ 82290 47493) was well vegetated and was observed clear under low flow conditions.
- All field drains within each of the Work Areas are minor tributaries of the Burn of Greens watercourse.
- Monkey Flower which is an Invasive Non Native Species (INNS) was observed to be present in vegetated ditches. Drilling activities should continue not to cause disturbance to these areas.
- Fuel bowsers present on site were observed to have spill kits and plant nappies present. The site compound was observed to be kept organised and tidy.
- The camera trap installed within Area 5 (NJ 82101 47646) confirmed the presence of badgers-. A 30m exclusion zone as specified within Protected Species Advice for Developers has previously been established by the ECoW. A toolbox talk was given to the drill rig crews 20 September on badgers and associated mammals that frequent badger setts and the expected protection requirements.
- An abandoned badger sett was found within the fenced area at the northern boundary of the extended Area 7, approximately 50m northwest of BH40 (NJ 82636 47478).

Observation Record

Criteria	Observation
Area 1	
Site setting	Grass field
Surface Water Management / Ecological constraints	Active PWS identified, extra caution should be used when moving vehicles / equipment in the PWS area and at least 10 m exclusion set up when working around asset infrastructure, checked 09/10. Field drain issuing at NJ 81586 47406, running clear, checked 09/10. Recommended 10 m exclusion zone for any working in the vicinity of this point.
SSPPP	No active works.
Area 2	
Site setting	Grass field with straw bales harvested.
Surface Water Management / Ecological constraints	Drainage ditch running along northern boundary is a minor tributary of Burn of Greens watercourse. Cognisance of Monkey Flower (INNS) present in drainage ditches with precautionary measures to be taken

Criteria	Observation
	(for example cleaning of clothes, boots and equipment to avoid spreading Monkey Flower beyond the site boundaries) as appropriate.
SSPPP	No active works.
Area 3	
Site setting	Majority of area is cut barley/wheat and in far west there is area of unmanaged scrub.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken (for example avoiding disturbing the plants to avoid it spreading further) as appropriate.
SSPPP	No active works.
Area 4	
Site setting	Cut barley/wheat field
Surface Water Management / Ecological constraints	Drainage ditch present between boundary of Areas 4 and 5. Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken (for example avoiding disturbing the plants to avoid it spreading further) as appropriate.
SSPPP	No active works.
Area 5	
Site setting	Some pasture, not cut.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken (for example cleaning of clothes, boots and equipment to avoid spreading Monkey Flower beyond the site boundaries) as appropriate. Camera traps confirmed presence of badgers in area, 18/09. New sett being excavated within the northern fence line, approximately 10m north of the existing sett entrance. Observed during site visit by Police Scotland Wildlife Officer 07/10/2023. Logged on 09/10/2023 (NJ 81877 48124). 30m exclusion zone around active badger sett removed 9 October, on advice from Hannah Corbett of Police Scotland.
SSPPP	No active works.
Area 6	
Site setting	Cut barley/wheat field
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken (for example cleaning of clothes, boots and equipment to avoid spreading Monkey Flower beyond the site boundaries) as appropriate.
SSPPP	No active works.
Area 7	
Site setting	Agricultural field

Criteria	Observation
Surface Water Management / Ecological constraints	<p>Vehicle movements over crossing has resulted in rutting of the track, and subsequently further flooding of farm track. It is considered likely that this was the result of the landowners tractor rather than a works vehicle.</p> <p>Area around crossing has flooded becoming unsuitable to traverse vehicles across. 02/10</p> <p>Alternative route chosen for entry into area across ditch leading to Burn of Greens, checked for environmental constraints, none were found.</p> <p>A bridge was constructed over the ditch using low ground pressure matts. This created minor siltation that cleared prior to entering the Burn of Greens. The operation to install the bridge was supervised by the ECoW. The siltation of the ditch is to be monitored for the remainder of the operations in Area 7.</p>
SSPPP	<p>No active works (09/10/2023).</p> <p>Works commenced (11/10/2023)</p> <p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Tracked in drill rig from area 2 to area 7, through abandoned farm.</p> <p>Pre-tracking and BH site ecological surveys undertaken covering areas surrounding BH40 – BH46.</p>

Report Actions Overview

Based on the findings of the EnvCoW walkover, it is recommended that the actions outlined within the Report Actions Summary table below are undertaken to improve the Development’s surface water and ecological constraint management and to maintain compliance with the Development’s PPP and SWMP.

Key



General Comments and/or Positive Progress	Beneficial Action	Scheduled Action Required	Immediate Action Required
As above	Works required to comply with best practice	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with environmental impact	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with major environmental impact
No Action Required: Continue Following Good Practice	Completion Timescale: 1 Month	Completion Timescale: 1 Week	Completion Timescale: 72 hours

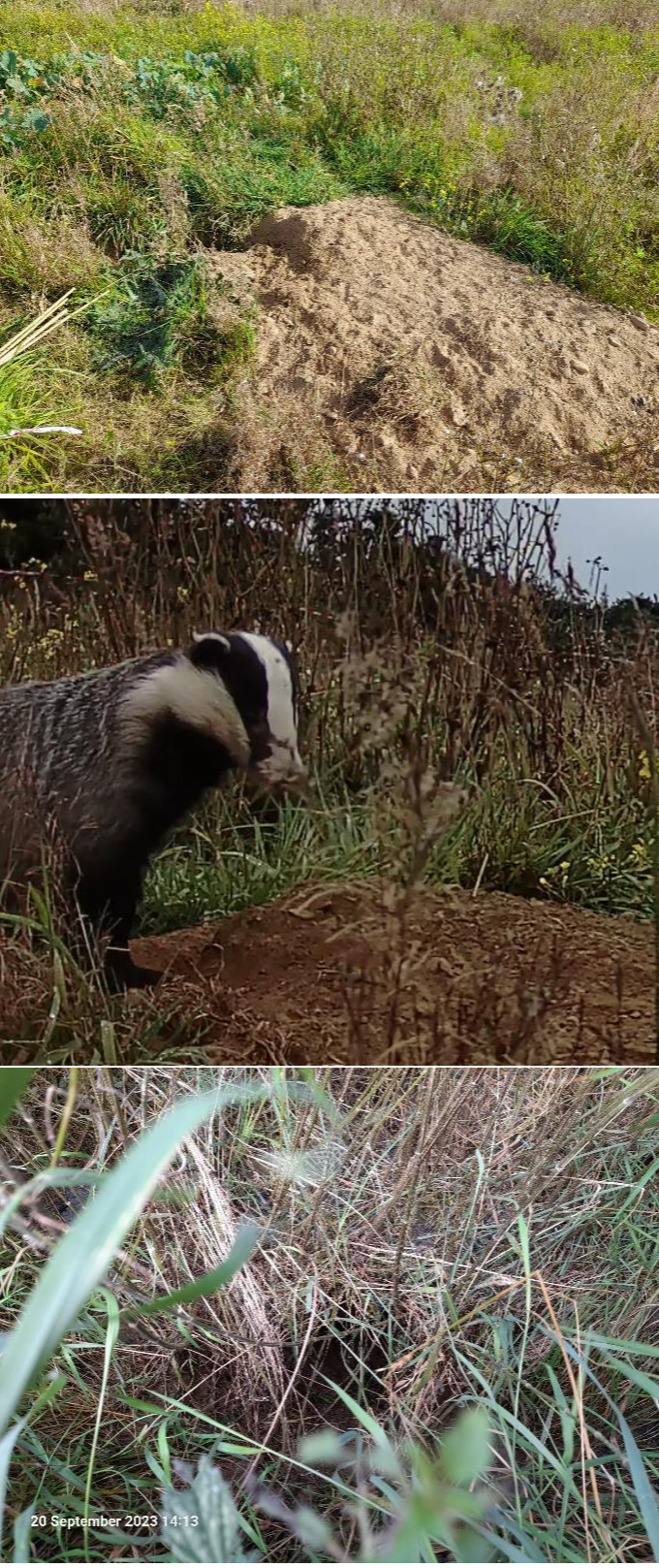
Report Actions Summary (New Deer = ND)

ID	Actions Summary
ND 01	<p>Private Water Supply (Area 1): An active private water supply has been identified within Area 1 at NJ 81534 47531. Inlet and outlet locations have been identified and marked and there are no immediate concerns associated with the drilling work and this location. However, it is recommended that additional visual monitoring is undertaken when operating within this area. Additionally, it is recommended that an exclusion zone of at least 10 m is setup around infrastructure related to the supply.</p>
ND 02	<p>Surface Water Management: Although drainage ditches on site are well vegetated, drilling water should not be directly discharged to surface watercourses but instead allowed to infiltrate into the ground. No specific surface water mitigation measures have been identified as necessary but extra caution should be taken (e.g., exclusion zones of at least 10 m) within Area 1 in vicinity of private water supply and where the field drain surfaces (NJ 81586 47406).</p>
ND 03	<p>Invasive Species: Monkey Flower (INNS) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants but site staff should be aware of the issue and practice suitable caution (i.e. adhering to exclusion zones) when working near these areas.</p>
ND 04	<p>Badgers: Badger Sett identified comprising 1 main hole and numerous secondary holes (NJ 82101 47646). A 30m exclusion zone has been established by the ECoW 08/09/2023. Camera traps installed in sett area 15/09/2023. Badger presence confirmed by camera trap (NJ 82101 47646) 18/09/2023.</p> <p>Abandoned badger sett identified within the fenced area at the northern boundary of area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023</p> <p>Abandoned badger sett identified within the fenced area at the northern boundary of area 7, approximately 50m NW of BH40 (NJ 82636 47478). 02/10/2023</p> <p>New sett excavations in the area of existing active sett within the fenced area at the northern boundary of area 5, approximately 10m north of existing sett. (NJ 81877 48124) 07/10/2023.</p>

Report Actions (New Deer = ND)

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
<p>ND 01</p>	<p>Private Water Supply</p> <ol style="list-style-type: none"> Private Water Supply (PWS) identified in Area 1 at NJ 81534 47531. Checked 09/10/2023. No immediate concerns associated with the supply from the works. Asset infrastructure has been marked and it is understood SSE are organising sampling/monitoring to take place to satisfy user there will be no adverse effects from the works. 	<p>Area 1 and Area 2</p>		<ol style="list-style-type: none"> It is recommended at least a 10 m exclusion zone is setup from associated infrastructure, e.g., inlet, outlet pipes, power supply, from the PWS. Extra caution should be taken when working in this area however at this stage no specific mitigation is deemed necessary. 	<p>SSE are understood to be organising monitoring/sampling of supply to satisfy user no adverse effects will occur from project works.</p>	<p>August 2023</p>
<p>ND 02</p>	<p>Surface Water Management</p> <ol style="list-style-type: none"> Field drain surfacing at water trough in Area 1, then flowing east towards along northern boundary of Area 2 continuing through Areas 6 & 7, observed to be clear under low flow conditions 04/10/2023. Drainage ditch running along the southern boundary of Area 6 converging with the ditch on the western boundary and flowing through area 7 towards Burn of Greens remains flowing over the access point from area 6 to area 7 (NJ 82595 47016). It is assumed that the culvert is either collapsed or blocked causing the flow across the access point. Trees on both side of the obstruction have fallen after the flow has undercut the root systems. After the excavator had crossed between area 6 and area 7, the flow altered course flowing on to the access track to the abandoned farm (Stirling JG). 	<p>Site wide</p>		<ol style="list-style-type: none"> It is recommended at least a 10m exclusion zone is setup around where field drain surfaces in Area 1 (top photograph). It is recommended the quality of water surfacing at NJ 81586 47406 is visually monitored during the works. If discoloured water is identified proactive actions should be taken to identify the source of the issue and remediate it. It is recommended drilling water are discharged to ground and allowed to infiltrate at a distance of >10m from drainage ditches on site. The access point between Areas 6 and 7 (middle photograph) to be regularly monitored with mitigation measures employed as required to ensure that the flow is maintained into the ditch running into Burn of Greens. A small channel has been cut into the access point that directs the flow of the ditch from Area 6 directly into the ditch running through Area 7 towards the Burn of Greens. This has relieved the flooding previously occurring at this location. 		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
	<p>4. The crossing between areas 6 and 7 has been deemed unsuitable to move equipment across due to the churned up area and subsequent flooding. An alternative route has been selected through the barley field adjacent to area 7. It is proposed that a temporary bridge will be constructed to avoid heavy siltation of the ditch leading to the Burn of Greens.</p>		 <p>The top photograph shows a muddy, churned-up area with a fence in the background. The bottom photograph shows a ditch with a fence on the right side, flowing through a field.</p>	<p>5. The construction of the temporary bridge is recommended. When in use the ECoW will monitor the ditch and Burn of Greens for in the release of silt to the water environment (bottom photograph).</p>		
<p>ND 03</p>	<p>Invasive Species</p> <p>1. The invasive species Monkey Flower has been identified as being present in some drainage ditches and hedgerows around the site.</p> <p>2. It is not expected drilling operations will disturb these plants.</p>	<p>Site wide</p>	 <p>The photograph shows a drainage ditch with Monkey Flower plants growing along the edge. A large metal container is visible in the foreground.</p>	<p>1. Site staff should be aware of the presence of the INNS and practice suitable caution when working near these areas to stop spread of this plant.</p>		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
<p>ND 04</p>	<p>Present Ecology</p> <ol style="list-style-type: none"> Possible Badger sett identified in Area 5 (NJ 82101 47646). – top photograph Badger presence confirmed (18/09/2023) in Area 5 (NJ 82101 47646) – second photograph Abandoned badger sett found at the northern boundary of Area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023 – third photograph Abandoned badger sett found at the northern boundary of Area 7, approximately 50m NW of BH40 (NJ 82636 47478). 02/10/2023 – fourth photograph New sett excavations in the area of existing active sett within the fenced area at the northern boundary of area 5, approximately 10m north of existing sett. (NJ 81877 48124) 07/10/2023 – bottom photograph. 	<p>Area 5</p>	 <p>20 September 2023 14:13</p>	<ol style="list-style-type: none"> Site staff to be aware when accessing Area 5 that a 30m exclusion zone is in effect. Test trenches are complete, boreholes BH10 and 24 to be undertaken. Both boreholes are out with the 30m exclusion zone, crews advised to avoid tracking through or close to exclusion zone to avoid disturbance by noise and vibration. Toolbox talk on Badgers given to drill rigs crews during lunch break, 20/09/2023. 		<p>September & October 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
						

New Deer Substation GI Works: ECoW report w/c 04/09/23

Dates of visits:	Monday 4 th , Wednesday 6 th and Friday 8 th September 2023
EnvCoW(s):	Paul Flynn (PF)
Author:	Paul Flynn
Reviewer:	Neil Gordon
CAR Licence:	n/a
Areas Visited:	All areas (1 to 7)
Weather during site visit:	04/09/23 (PF) – Dry, sunny spells with patchy cloud (0.0 mm ¹) 06/09/23 (PF) – Dry, sunny (0.0 mm ¹) 08/09/23 (PF) – Dry, sunny (0.0 mm ¹)
Preceding rainfall:	Sunday 3 rd – 0.0 mm ¹ , Tuesday 5 th – 0.0 mm ¹ Thursday 7 th – 0.2 mm ¹

EnviroCentre has been instructed by BAM Ritchies to provide Ecological Clerk of Works (ECoW) support during ground investigation works at New Deer Substation (site entrance NGR: NJ 82208 46868). The Works are being undertaken on behalf of Scottish and Southern Energy (SSE) and commenced on w/b 21 August 2023 with the first week consisting of site establishment and intrusive works commencing w/b 28 August 2023.

This report provides a brief summary of the work undertaken by the ECoW and findings arising. Recommendations are offered with the intention of assisting the developer and contractors to comply with the requirements of the project's planning conditions (where applicable), e.g., Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) licence for the site (issued by the Scottish Environment Protection Agency (SEPA)), current environmental regulations, the Development's Construction Environmental Management Plan (CEMP), Site Specific Pollution Prevention Plans (SSPPP), Guidance for Pollution Prevention (GPP) and environmental good practice.

Based on the initial ECoW survey work/site walkovers (5 days full time w/b 21 August 2023), EnviroCentre recommended that 3 days of full time ECoW supervision would be appropriate each week from w/b 28 August 2023 and this was agreed by SSE on 24 August 2023. It is noted ECoW supervision is not taking place during weekend working. This report, from w/b 28/08/2023, details findings during Monday 28 August, Thursday 31 August, and Friday 1 September.

Based on the observations during the inspection, the current risk of the project being in breach of any of the above regulations or project documentation was considered to be **Low**.

¹ SEPA Rainfall taken from Esslemont House station (ID: 115221). This station is located approx. 17 miles southeast of the site. Data for 31/08 and 01/09 not available at time of report issue. <https://www2.sepa.org.uk/rainfall/data/index/115221>.

Comments for the Project Team

- Trial trench excavations were observed by the EnvCoW in Areas 3,4,5 and 7, with Area 5 now complete..
- Borehole Drilling was observed in areas 2,3,4 and 7.
- Active Private Water Supply (PWS) located in Area 1 at NGR NJ 81534 47531. Precautions to be taken to protect this supply, however concerns have been raised as a result of observed drilling and digging activities. It is understood SSE are organising testing of the supply to satisfy the PWS user there are no adverse effects from project activities.
- Field drain located along northern boundary of Area 2 which was observed to be actively flowing although the channel itself was well vegetated. Drain flow surfaced at NJ 81586 47406 (Area 1), and was observed to be clear under low flow conditions. Field drain running east between Area 4 and 5 (NJ 82290 47493) was well vegetated and was not observed to be flowing.
- All fields are minor tributaries of Burn of Greens watercourse. Intrinsically, both field drains on site have a low importance/value, however best efforts should be made not to discharge directly to them.
- Monkey Flower Invasive Non Native Species (INNS) present in vegetated ditches. Drilling activities not expected to cause disturbance therefore assessed probability of spread is low.
- All fuel bowsers were observed to have spill kits and nappies present. Site compound found to be kept organised and tidy.
- Badger Sett identified comprising 1 main hole and numerous secondary holes (NJ 82101 47646). A 30m exclusion zone has been established by the ECoW.

Area 1	
Site setting	Grass field
Surface Water Management / Ecological constraints	Active PWS identified, extra caution and at least 10 m exclusion set up when working around asset infrastructure. Field drain surfacing at NJ 81586 47406, running clear. Recommended 10 m exclusion zone for any working around this point.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).
Area 2	
Site setting	Grass field with straw bales harvested.
Surface Water Management / Ecological constraints	Drainage ditch running along northern boundary is a minor tributary of Burn of Greens watercourse. Intrinsically low value receptor. Cognisance of Monkey Flower (INNS) present in drainage ditches with precautionary measures to be taken as appropriate.

SSPPP	<p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Borehole BH06 ongoing 04/09 – 06/09.</p> <p>Borehole BH06 ongoing 08/09.</p>
Area 3	
Site setting	Majority of area is cut barley/wheat and in far west there is area of unmanaged scrub.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	<p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Test Trench TP13 completed</p> <p>Borehole BH31 ongoing 04/09 – 06/09</p>
Area 4	
Site setting	Cut barely/wheat field
Surface Water Management / Ecological constraints	<p>Drainage ditch present between boundary of 4 and 5 but identified as having low value.</p> <p>Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.</p>
SSPPP	<p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Test Trenches TP11, 18, 20 and 29 completed 04/09.</p> <p>Borehole BH23 and 32 ongoing 06/09 – 08/09.</p>
Area 5	
Site setting	Some pasture, not cut.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Excavation activities being well managed with no issues identified, (e.g., fuel and chemical management).

	<p>Test Trenches TP19, 30, 32, 51 and 52 completed 06/09.</p> <p>Badger sett identified within this area with 30 m exclusion zone established by ECoW.</p>
Area 6	
Site setting	Cut barely/wheat field
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works as of yet.
Area 7	
Site setting	Agricultural field
Surface Water Management / Ecological constraints	Flow visible on surface at end of ditch, possible presence of a collapsed culvert..
SSPPP	<p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Test trench 43 completed.</p>

Report Actions Overview

Based on the findings of the EnvCoW walkover, it is recommended that the actions outlined within the Report Actions Summary table below are undertaken to improve the Development’s surface water management and to maintain compliance with the Development’s PPP and SWMP.




Key




General Comments and/or Positive Progress	Beneficial Action	Scheduled Action Required	Immediate Action Required
As above	Works required to comply with best practice	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with environmental impact	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with major environmental impact
No Action Required: Continue Following Good Practice	Completion Timescale: 1 Month	Completion Timescale: 1 Week	Completion Timescale: 72 hours

Report Actions Summary (New Deer = ND)

ID	Actions Summary
ND 01	<p>Private Water Supply (Area 1): An active private water supply has been identified within Area 1 at NJ 81534 47531. Inlet and outlet locations have been identified and marked and there are no immediate concerns associated with the drilling work and this location. However, extra caution (i.e., monitoring) should be taken when operating within this area and it is recommended an exclusion zone of at least 10 m is setup around infrastructure related to the supply.</p>
ND 02	<p>Surface water management: Although drainage ditches on site are well vegetated and have intrinsically low value, drilling fluids should not be directly discharged to surface watercourses but instead allowed to infiltrate into the ground. No specific surface water mitigation measures have been identified as necessary but extra caution should be taken (e.g., exclusion zones of at least 10 m) within Area 1 around private water supply and where the field drain surfaces (NJ 81586 47406).</p>
ND 03	<p>Invasive species: Monkey Flower (INNS) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants but site staff should be aware of the issue and practice suitable caution when working near these areas.</p>
ND 04	<p>Present ecology: Badger latrines have been identified on site so although no sets have been found this is evidence badgers are likely present and using parts of the site. No nesting birds have been identified. Site staff should remain vigilant at all times of ecology present and if any badger sets or nesting bird locations are found, the ECoW should be informed immediately so applicable action (if required) can be taken.</p>
ND 05	<p>Present ecology: Badger Sett identified comprising 1 main hole and numerous secondary holes (NJ 82101 47646). A 30m exclusion zone has been established by the ECoW 08/09/2023.</p>

Report Actions (New Deer = ND)

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
ND 01	<p>Private Water Supply</p> <ol style="list-style-type: none"> Private Water Supply (PWS) identified in Area 1 at NJ 81534 47531 No immediate concerns associated with the supply from the works however extra caution should be taken when working in this area, e.g., BH 04 is marked as being relatively close to PWS. Asset infrastructure has been marked and it is understood SSE are organising sampling/monitoring to take place to satisfy user there will be no adverse effects from the works. 	Area 1 and Area 2	 	<ol style="list-style-type: none"> It is recommended at least a 10 m exclusion zone is setup from any infrastructure, e.g., inlet, outlet pipes, power supply, from the Private Water Supply. Extra caution should be taken when working in this area however at this stage no specific mitigation is deemed necessary. 	SSE are understood to be organising monitoring/sampling of supply to satisfy user no adverse effects will occur from project works.	August 2023
ND 02	<p>Surface Water Management</p> <ol style="list-style-type: none"> Field drain surfacing in Area 1, then flowing east towards and then along northern boundary of Area 2, observed to be clear with increased flow conditions 06/09/2023. Drainage ditch running along the southern boundary of Area 6 converging with the ditch on the western boundary and flowing through area 7 towards Burn of Greens is flowing over the access point from area 6 to area 7 (NJ 82101 47646)..It is assumed that the culvert is either collapsed or blocked, causing the flow across the access point. Trees on both side of the obstruction have fallen after the flow has undercut the root systems. . After the excavator had crossed between area 6 and area 7, the flow altered course flowing on to the access track to the abandoned farm (Stirling JG). 	Site wide		<ol style="list-style-type: none"> It is recommended at least a 10m exclusion zone is setup around where field drain surfaces in Area 1. It is recommended the quality of water surfacing at NJ 81586 47406 is monitored. If discoloured water is identified, proactive actions should be taken to identify the source of the issue and remediate it (if applicable, i.e., directly caused by the works). It is recommended drilling fluids are discharged to ground and allowed to infiltrate at a distance of >10m from drainage ditches on site. The access point between areas 6 and 7 to be regularly monitored with mitigation measures employed as required to ensure that the flow is maintained into the ditch running into Burn of Greens. 		August 2023

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
						
<p>ND 03</p>	<p>Invasive species</p> <ol style="list-style-type: none"> The invasive species Monkey Flower (has a yellow flower) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants. 	<p>Site wide</p>		<ol style="list-style-type: none"> Site staff should be aware of the presence of the INNS and practice suitable caution when working near these areas to stop spread of this plant. 		<p>August 2023</p>
<p>ND 04</p>	<p>Present Ecology</p> <ol style="list-style-type: none"> Badger latrines identified and provide evidence badger using site but no setts identified. No nesting bird nests identified. Nesting bird season is almost over (March to September), therefore the potential for nesting bird constraints being identified is very low. Species sighted on site include roe deer, Asiatic pheasant, rabbits, sparrows, starlings, crows, buzzards and peacock butterflies. 	<p>Site wide</p>		<ol style="list-style-type: none"> Site staff should remain vigilant of any potential badger sets and nesting bird activity on site. If either are suspected, site staff should report findings to ECoW as soon as possible. It is proposed the ECoWs will give a toolbox talk to site staff within the next 2 weeks on ecology present on site. 		<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
ND 05	<p>Present Ecology</p> <p>4. Badger sett identified in area 5 (NJ 82101 47646).</p>	Area 5		<p>3. Site staff to be aware when accessing Area 5 that a 30m exclusion zone is in effect. Test trenches are complete, boreholes BH10 and 24 to be undertaken. Both boreholes are out with the 30m exclusion zone.</p>		September 2023

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New Deer Substation GI Works: ECoW report w/c 02/10/23

Dates of visits:	Monday 2 nd Wednesday 4 th , Friday 6 th Saturday 7 th
EnvCoW(s):	Paul Flynn (PF) Seb Cook (SC)
Author:	Paul Flynn
Reviewer:	Neil Gordon
CAR Licence:	n/a
Areas Visited:	1, 4, 5 and 7 (extended area)
Weather during site visit:	02/10/23 (PF & SC) – Dry, partially sunny (0.0 mm ¹) 04/10/23 (PF) – Light to moderate showers throughout the day (4.0 mm ¹) 06/10/23 (PF & SC) – Moderate / Heavy showers throughout the day (16.4 mm ¹) (PF & SC) 07/10/23 (PF) – Heavy showers throughout the day (31.0 mm ¹) (PF)
Preceding rainfall:	Sunday 1 st - 0.0 mm ¹ , Tuesday 3 rd – 1.4 mm ¹ , Thursday 5 th – 1.4 mm ¹

EnviroCentre has been instructed by BAM Ritchies to provide Ecological Clerk of Works (ECoW) support during ground investigation works at New Deer Substation (site entrance NGR: NJ 82208 46868). The Works are being undertaken on behalf of Scottish and Southern Energy (SSE) and commenced on w/b 21 August 2023 with the first week consisting of site establishment and intrusive works commencing w/b 28 August 2023.

This report provides a brief summary of the work undertaken by the ECoW and findings arising. Recommendations are offered with the intention of assisting the developer and contractors to comply with the requirements of the project's planning conditions (where applicable), e.g., Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) licence for the site (issued by the Scottish Environment Protection Agency (SEPA)), current environmental regulations, the Development's Construction Environmental Management Plan (CEMP), Site Specific Pollution Prevention Plans (SSPPP), Guidance for Pollution Prevention (GPP) and environmental good practice.

Based on the initial ECoW survey work/site walkovers (5 days full time w/b 21 August 2023), EnviroCentre recommended that 3 days of full time ECoW supervision would be appropriate each week from w/b 28 August 2023 and this was agreed by SSE on 24 August 2023. It is noted ECoW supervision is not taking place during weekend working. This report, from w/b 02/10/2023, details findings during Monday 2nd October and Wednesday 4th October. No site operations occurred on Friday 6th October.

An allegation of licence breaches and criminal activity in relation to drilling operations being within 30m of an active badger sett was received by Police Scotland. An MS Teams meeting was held to discuss the allegations and was attended by Hannah Corbett (Wildlife Crime Officer) of Police Scotland, Neil Gordon and Paul Flynn of EnviroCentre and Josh Robertson, Jennifer Lucas, Anthony Gill and Chris Gardner of SSE. During this meeting, EnviroCentre explained to Police Scotland that steps were undertaken in accordance with best practice badger protection requirements by EnviroCentre and BAM Ritchies following identification of the active badger sett on site and that a badger licence had not been required.

An additional site visit was then undertaken on Saturday 7 October and was a joint visit by Paul Flynn of EnviroCentre and Police Scotland Wildlife Officer, Hannah Corbett, to investigate the allegations.



Hannah Corbett was satisfied that EnviroCentre and BAM Ritchies had acted properly, that no badger licence was required and that no further action was necessary.

Based on the outcome of discussions with Police Scotland, the current risk of the project being in breach of any of the above regulations or project documentation was considered to be **Low**.

Comments for the Project Team

- Borehole Drilling was observed in areas 1, 4, 5 and 7.
- Active Private Water Supply (PWS) located in Area 1 at NGR NJ 81534 47531. Precautions to be taken to protect this supply, however concerns have been raised by the PWS user as a result of observed drilling and digging activities. It is understood SSE are organising testing of the supply to satisfy the PWS user there are no adverse effects from project activities.
- Field drain located along northern boundary of Area 2 was observed to be actively flowing, although the channel itself was well vegetated. Drain flow surfaced at NJ 81586 47406 (Area 1), and was observed to be clear under low flow conditions. Field drain running east between Area 4 and 5 (NJ 82290 47493) was well vegetated and was observed to be flowing.
- All fields are minor tributaries of Burn of Greens watercourse. Intrinsicly, both field drains on site have a low importance/value, however best efforts should be made not to discharge directly to them.
- Monkey Flower Invasive Non Native Species (INNS) present in vegetated ditches. Drilling activities not expected to cause disturbance therefore assessed probability of spread is low.
- All fuel bowzers were observed to have spill kits and nappies present. Site compound found to be kept organised and tidy.
- Camera trap confirmed presence of Badgers at (NJ 82101 47646). A 30m exclusion zone has previously been established by the ECoW. Toolbox talk given to drill rigs crews on badgers and associated mammals that frequent badger setts.
- An abandoned badger sett was found within the fenced area at the northern boundary of the extended area 7, approximately 50m NW of BH40 (NJ 82636 47478).
- The results of the investigation by Police Scotland Wildlife Officer found no breaches of licensing and no criminal activity in relation to badgers in the area of BH24. An abandoned sett in an overgrown area in proximity to this location could not be located due to high winds and heavy rain. No evidence of current occupation had been found in previous surveys of the area 24/08/2023 (AS) and 20/09/2023 (PF). Sett to be monitored regularly for the remainder of the ground investigation.

Area 1	
Site setting	Grass field
Surface Water Management / Ecological constraints	Active PWS identified, extra caution and at least 10 m exclusion set up when working around asset infrastructure. Field drain surfacing at NJ 81586 47406, running clear, checked 02/10. Recommended 10 m exclusion zone for any working in the vicinity of this point.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management). Drill rig pre-tracked in to BH08, checks conducted in area, no environmental constraints present, 27/09.

Area 2	
Site setting	Grass field with straw bales harvested.
Surface Water Management / Ecological constraints	Drainage ditch running along northern boundary is a minor tributary of Burn of Greens watercourse. Intrinsically low value receptor. Cognisance of Monkey Flower (INNS) present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management). Drill rig pre-tracked in to BH11, checks conducted in area, no environmental constraints present, 29/09.
Area 3	
Site setting	Majority of area is cut barley/wheat and in far west there is area of unmanaged scrub.
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works.
Area 4	
Site setting	Cut barley/wheat field
Surface Water Management / Ecological constraints	Drainage ditch present between boundary of Areas 4 and 5 but identified as having low value. Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management). Drill rig pre-tracked in to BH11, checks conducted in area, no environmental constraints present, 29/09.
Area 5	
Site setting	Some pasture, not cut.

Surface Water Management / Ecological constraints	<p>Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.</p> <p>Camera traps confirmed presence of Badgers in area, 18/09.</p>
SSPPP	<p>Drilling activities being well managed with no issues identified, (e.g., fuel and chemical management).</p> <p>Drill rig tracked in to BH10, checks conducted in area, in accordance with 30m exclusion zone, no environmental constraints present, 27/09.</p>
Area 6	
Site setting	Cut barley/wheat field
Surface Water Management / Ecological constraints	Cognisance of Monkey Flower present in drainage ditches with precautionary measures to be taken as appropriate.
SSPPP	No active works.
Area 7	
Site setting	Agricultural field
Surface Water Management / Ecological constraints	<p>Vehicle movements over crossing has rutting of the track, resulting in further flooding of farm track. It is assumed that this was done by tractor rather than a works vehicle. 29/09</p> <p>Area around crossing has flooded becoming unsuitable to traverse vehicles across. 02/10</p> <p>Alternative route chosen for entry into area across ditch leading to Burn of Greens, checked for environmental constraints, none were found.</p> <p>It is proposed to create a "bridge" across the ditch using 12" pipe and low ground pressure mats to avoid heavy siltation flowing into the burn. The operation to install the bridge should be supervised by the ECoW.</p>
SSPPP	No active works.

Report Actions Overview

Based on the findings of the EnvCoW walkover, it is recommended that the actions outlined within the Report Actions Summary table below are undertaken to improve the Development’s surface water and ecological constraint management and to maintain compliance with the Development’s PPP and SWMP.

Commented [NG1]: Bot of an oversight here - I should have mentioned this previously as we’re basically looking at both

Key




General Comments and/or Positive Progress	Beneficial Action	Scheduled Action Required	Immediate Action Required
As above	Works required to comply with best practice	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with environmental impact	Failure to comply with CEMP, SSPPP, GPP, or risk of an incident with major environmental impact
No Action Required: Continue Following Good Practice	Completion Timescale: 1 Month	Completion Timescale: 1 Week	Completion Timescale: 72 hours


Report Actions Summary (New Deer = ND)




ID	Actions Summary
ND 01	Private Water Supply (Area 1): An active private water supply has been identified within Area 1 at NJ 81534 47531. Inlet and outlet locations have been identified and marked and there are no immediate concerns associated with the drilling work and this location. However, extra caution (i.e., monitoring) should be taken when operating within this area and it is recommended an exclusion zone of at least 10 m is setup around infrastructure related to the supply.
ND 02	Surface water management: Although drainage ditches on site are well vegetated and have intrinsically low value, drilling fluids should not be directly discharged to surface watercourses but instead allowed to infiltrate into the ground. No specific surface water mitigation measures have been identified as necessary but extra caution should be taken (e.g., exclusion zones of at least 10 m) within Area 1 in vicinity of private water supply and where the field drain surfaces (NJ 81586 47406).
ND 03	Invasive species: Monkey Flower (INNS) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants but site staff should be aware of the issue and practice suitable caution when working near these areas.
ND 04	Present ecology: No nesting birds have been identified. Site staff should remain vigilant at all times of ecology present and if any nesting bird locations are found, the ECoW should be informed immediately so applicable action (if required) can be taken.
ND 05	Present ecology: Badger Sett identified comprising 1 main hole and numerous secondary holes (NJ 82101 47646). A 30m exclusion zone has been established by the ECoW 08/09/2023. Camera traps installed in sett area 15/09/2023.
ND 06	Present ecology: Badger presence confirmed by camera trap (NJ 82101 47646) 18/09/2023.
ND 07	Present Ecology: Abandoned badger sett identified within the fenced area at the northern boundary of area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023

ID	Actions Summary
ND08	Present Ecology: Abandoned badger sett identified within the fenced area at the northern boundary of area 7, approximately 50m NW of BH40 (NJ 82636 47478). 02/10/2023

Report Actions (New Deer = ND)

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
ND 01	<p>Private Water Supply</p> <ol style="list-style-type: none"> Private Water Supply (PWS) identified in Area 1 at NJ 81534 47531. Checked 04/10/2023. No immediate concerns associated with the supply from the works however extra caution should be taken when working in this area, e.g., BH 04 is marked as being relatively close to PWS. Asset infrastructure has been marked and it is understood SSE are organising sampling/monitoring to take place to satisfy user there will be no adverse effects from the works. 	Area 1 and Area 2	 	<ol style="list-style-type: none"> It is recommended at least a 10 m exclusion zone is setup from any infrastructure, e.g., inlet, outlet pipes, power supply, from the Private Water Supply. Extra caution should be taken when working in this area however at this stage no specific mitigation is deemed necessary. 	SSE are understood to be organising monitoring/sampling of supply to satisfy user no adverse effects will occur from project works.	August 2023
ND 02	<p>Surface Water Management</p> <ol style="list-style-type: none"> Field drain surfacing in Area 1, then flowing east towards along northern boundary of Area 2, observed to be clear under low flow conditions 04/10/2023. Drainage ditch running along the southern boundary of Area 6 converging with the ditch on the western boundary and flowing through area 7 towards Burn of Greens remains flowing over the access point from area 6 to area 7 (NJ 82595 47016). It is assumed that the culvert is either collapsed or blocked causing the flow across the access point. Trees on both side of the obstruction have fallen after the flow has undercut the root systems. After the excavator had crossed between area 6 and area 7, the flow altered course flowing on to the access track to the abandoned farm (Stirling JG). The crossing between areas 6 and 7 has been deemed unsuitable to move equipment across due to the churned up 	Site wide		<ol style="list-style-type: none"> It is recommended at least a 10m exclusion zone is setup around where field drain surfaces in Area 1. It is recommended the quality of water surfacing at NJ 81586 47406 is monitored. If discoloured water is identified proactive actions should be taken to identified the source of the issue and remediate it (if applicable, i.e., directly caused by the works). It is recommended drilling fluids are discharged to ground and allowed to infiltrate at a distance of >10m from drainage ditches on site. The access point between areas 6 and 7 to be regularly monitored with mitigation measures employed as required to ensure that the flow is maintained into the ditch running into Burn of Greens. A small channel has been cut into the access point that directs the flow of the ditch from area 6 directly into the ditch running through area 7 towards the Burn of Greens. This has relieved the flooding previously occurring at this location. The construction of the temporary bridge should be supervised by the ECoW. When in use the ECoW will monitor the ditch and Burn of Greens for an increase in silt. 		August 2023

ID	Description	Locations	Photographs	Actions Required	Date First Identified
	<p>area and subsequent flooding. An alternative route has been selected through the barley field adjacent to area 7. It is proposed that a temporary bridge will be constructed to avoid heavy siltation of the ditch leading to the Burn of Greens.</p>				
<p>ND 03</p>	<p>Invasive species</p> <ol style="list-style-type: none"> The invasive species Monkey Flower (has a yellow flower) has been identified as being present in some drainage ditches and hedgerows around the site. It is not expected drilling operations will disturb these plants. 	<p>Site wide</p>		<ol style="list-style-type: none"> Site staff should be aware of the presence of the INNS and practice suitable caution when working near these areas to stop spread of this plant. 	<p>August 2023</p>

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
ND 04	<p>Present Ecology</p> <p>1. No nesting bird nests identified. Nesting bird season is almost over (March to September) the potential of nesting bird constraints being identified is very low.</p> <p>2. Species sighted on site include roe deer, Asiatic pheasant, rabbits, sparrows, starlings, crows, buzzards and peacock butterflies.</p>	Site wide		<p>1. Site staff should remain vigilant of any potential nesting bird activity on site. If either are suspected, site staff should report findings to ECoW as soon as possible.</p> <p>2. It is proposed the ECoWs will give a toolbox talk to site staff within the next 2 weeks on ecology present on site.</p>		August 2023
ND 05	<p>Present Ecology</p> <p>1. Possible Badger sett identified in Area 5 (NJ 82101 47646).</p>	Area 5		<p>1. Site staff to be aware when accessing Area 5 that a 30m exclusion zone is in effect. Test trenches are complete, boreholes BH10 and 24 to be undertaken. Both boreholes are out-with the 30m exclusion zone, crews advised to avoid tracking through or close to exclusion zone to avoid disturbance by noise and vibration.</p>		September 2023
ND 06	<p>Present Ecology</p> <p>1. Badger presence confirmed (18/09/2023) in Area 5 (NJ 82101 47646).</p>	Area 5		<p>1. Toolbox talk on Badgers given to drill rigs crews during lunch break, 20/09/2023.</p>		September 2023

ID	Description	Locations	Photographs	Actions Required	Contractor Feedback	Date First Identified
ND 07	1. Abandoned badger sett found at the northern boundary of Area 5, approximately 20m NW of BH24 (NJ 82216 47630). 20/09/2023	Area 5		1. No actions required.		September 2023
ND08	1. Abandoned badger sett found at the northern boundary of Area 7, approximately 50m NW of BH40 (NJ 82636 47478). 02/10/2023	Area 7		1. No actions required		October 2023



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**APPENDIX 3.0
EXPLORATORY HOLE LOGS**

**APPENDIX 3.1
BOREHOLE LOGS**



BOREHOLE LOG

Borehole No:
BH01
Sheet 1 of 3

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381422.08 mE 847540.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	151.83 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	13/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	15/09/2023			Print Date:	15/02/2024
				Final Depth:	20.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular, fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.30	151.53	0.50	B-2										
Soft brown very silty very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of siltstone and mudstone. Sand is fine to coarse. [Till]		0.90		0.50	D-1										
No recovery - Weathered PELITE [Macduff Formation]		1.20	150.63	1.00	B-4										
				1.00	D-3										
				1.19	EW										
				1.20 - 1.51					S	50 / 160					
				1.20 - 2.00	B-2										
				1.20 - 2.00	D-1										
Weak brown PELITE. Moderately weathered, recovered as clayey angular gravel in sandy matrix. [Macduff Formation]		2.00	149.83	1.20 - 2.70	RC	95					53				
				2.70	D-2						0				
Moderately weak to very weak thinly to thickly bedded yellowish brown PELITE. Slightly weathered with occasional orange discolouration on fracture surfaces (1-2m) penetration. Discontinuities: 1) 80 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		2.70	149.13	2.70 - 3.15					S	N=18					
				2.70 - 4.20	RC	95					100	[15]			
				4.20	D-4						74				
				4.20 - 5.70	C						0				
				4.20 - 5.70	RC	95					100	[11]			
5.06 - 5.29m : Recovered as non intact cores of angular to subangular, fine to medium gravels of mudstone.				5.70 - 6.10	U-3	100	90	131							
				6.10 - 6.15	D-5										
				6.15 - 7.20	C						100	[11]			
				6.15 - 7.20	RC	95					100				
				7.20 - 7.65					S	N=46	74				
8.13 - 8.22m : Recovered as non intact cores of sandy angular to subangular, fine to medium gravels of mudstone.				7.20 - 8.70	C						100	[8]			
8.58 - 8.70m : Recovered as non intact cores of angular to subangular, fine to medium gravels of mudstone.				7.20 - 8.70	RC	95					81				
Assessed zone of core loss.											81				
Moderately weak to medium strong thinly to thickly foliated reddish brown medium grained SEMI-PELITE with bands of greenish grey fine grained pelite. Slightly weathered with black and reddish brown staining on fracture surfaces (1-3mm penetration). Discontinuities: 80 to 90 degrees vertical parallel fractures, very closely spaced, planar to undulating rough with infill of clay and sand (<1mm) and clean. [Macduff Formation]		8.70	143.13												
				8.70 - 10.20	RC	87					43	[1]			
											21				
											16				

Stratum depths measured along borehole axis.	Remarks
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.	Water flush used during drilling process - no Groundwater strikes noted.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'	
Further details given on appended 'Borehole Information Sheet'.	



BOREHOLE LOG

Borehole No:
BH01
Sheet 3 of 3

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381422.08 mE 847540.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	151.83 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	13/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	15/09/2023			Print Date:	15/02/2024
				Final Depth:	20.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing								TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/ [mins]	Test	Test Result	Units					
Moderately weak to medium strong thinly to thickly foliated greenish grey micaceous fine grained PELITE with vugs of mica and feldspar and occasional lenses of quartz. Slightly weathered with orange reddish brown and black staining on fracture surfaces (1-5mm) penetration. Discontinuities: 1) 80 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. [Macduff Formation]		20.20	131.63													
Borehole Terminated at 20.20m																

Stratum depths measured along borehole axis. Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant. Explanation of symbols and abbreviations given in 'Key to Exploratory Holes' Further details given on appended 'Borehole Information Sheet'.	Remarks Water flush used during drilling process - no Groundwater strikes noted.
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BOREHOLE INFORMATION SHEET

Borehole No
BH01
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381422.08 mE 847540.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	151.83 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	13/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	15/09/2023			Final Depth:	20.20m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	13/09/2023	13/09/2023	Insulated digging tools	Sw	Had	Robert Boomer / John Adam	Lawrence Ahukannah	
1.20	8.70	SNC	14/09/2023	14/09/2023	Frastrite Sonic CRS XL 140			Robert Boomer / John Adam	Lawrence Ahukannah	
8.70	20.20	RC	14/09/2023	14/09/2023	Frastrite Sonic CRS XL 140	T2-101	Pcd	Robert Boomer / John Adam	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
13/09/2023	07:30	0.00	0.00	Dry	Start of shift	8.70	195		8.70	195	
13/09/2023	17:30	1.20	0.00	Dry	End of shift	20.20	101				
14/09/2023	07:30	1.20	0.00	0.80	Start of shift						
14/09/2023	17:30	20.20	8.70	2.10	End of shift						
15/09/2023	07:30	20.20	8.70	4.80	Start of shift						
15/09/2023	17:30	20.20	8.70	4.90	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
1.20	20.20		Water added: Sonic + rotary. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic					1.20	2.70		None	
2.70	4.20	Sonic					2.70	4.20		None	
4.20	5.70	Sonic					4.20	5.70		None	
6.15	7.20	Sonic					6.15	7.20		None	
7.20	8.70	Sonic					7.20	8.70		None	
8.70	10.20	Rotary					8.70	10.20		Water	Yellow
10.20	11.70	Rotary					10.20	11.70		Water	Yellow
11.70	13.20	Rotary					11.70	13.20		Water	Yellow
13.20	14.70	Rotary					13.20	14.70		Water	Yellow
14.70	15.45	Rotary					14.70	15.45		Water	Yellow

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
15/09/2023						Drilling with water - no strike recorded		1	0.00	1.00	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	1.00	5.00	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	1.00	903	Bentonite
														1.00	5.00	902	Gravel
														5.00	20.20	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	50 / 160	1.20	0.80	0	8	75	8	75	8	75	15	75	27	10			T820-799	81
2.70	S	N=18	2.70	1.80	0	3	75	3	75	5	75	4	75	4	75	5	75	T820-799	81
7.20	S	N=46	7.20	3.90	0	5	75	9	75	10	75	12	75	11	75	13	75	T820-799	81
10.20	S	50 / 0	8.70	3.30	0	15	75	10	0	50	0							T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH01
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381422.08 mE 847540.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	151.83 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	13/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	15/09/2023			Final Depth:	20.20m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress						Hole Diameter by Depth			Casing Diameter by Depth		
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						8.70	195		8.70	195	
						20.20	101				

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
15.45	16.20	Rotary					15.45	16.20		Water	Yellow
16.20	17.70	Rotary					16.20	17.70		Water	Yellow
17.70	19.20	Rotary					17.70	19.20		Water	Yellow
19.20	20.20	Rotary					19.20	20.00			
							19.20	20.20		Water	Yellow

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
15/09/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																			
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH02
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381610.37 mE 847737.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	149.48 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	19/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	21/09/2023			Print Date:	15/02/2024
				Final Depth:	20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	D	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result						Units
Grass over dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is angular to subangular, fine to coarse of sandstone and siltstone. [Topsoil]		0.50		0.50	B-2 D-1											
Yellowish brown very silty very gravelly fine to coarse SAND with a medium cobble content. Gravel is angular to subangular of sandstone and siltstone. Cobbles are angular to subangular of sandstone (<90mm). [Till]		0.70		1.00 1.00 1.20	B-4 D-3 D-5											
Medium dense brown silty fine to medium SAND. [Till]		0.90		1.20 - 1.65 1.20 - 2.00 1.20 - 2.00	B-2 D-1				S	N=20						
Possible highly weathered PSAMMITE. Recovered as as yellowish white sandy angular to subangular fine to coarse gravel. [Macduff Formation]		2.10	147.38	1.20 - 2.70	RC	95					99 0 0					
Moderately weak to medium strong thickly to narrowly laminated greyish white, fine to medium grained PSAMMITE with vugs of quartz and feldspar. Slightly weathered with black, yellow and brown staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 60 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		2.70	146.78	2.70 2.70 - 2.93	D-6				S	50 / 80						
2.70 - 3.62m : Recovered as non intact cores of angular to subangular, fine to medium sandy gravels of sandstone.				2.70 - 4.20	RC	87					100 34 0	[8]				
4.20 - 4.23m : Recovered as non intact cores of angular to subangular, fine to medium sandy gravels of sandstone.				4.20 - 5.70	RC	87					100 86 37	[17]				
5.22 - 5.26m : Recovered as non intact cores of angular to subangular, fine to medium sandy gravels of sandstone.																
5.99 - 6.40m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.		9.00		5.70 - 7.20	RC	87					100 90 39	[13]				
7.20 - 7.41m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.																
7.71 - 7.77m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.				7.20 - 8.70	RC	87					100 60 29	[6]				
8.20 - 8.30m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.																
8.57 - 8.64m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.																
9.35 - 9.58m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.				8.70 - 10.20	RC	87					100 77 33	[10]				

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH02
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381610.37 mE 847737.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	149.48 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	19/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	21/09/2023			Print Date:	15/02/2024
				Final Depth:	20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
<p>Moderately weak to medium strong thickly to narrowly laminated greyish white, fine to medium grained PSAMMITE with vugs of quartz and feldspar. Slightly weathered with black, yellow and brown staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 60 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean.</p> <p>[Macduff Formation]</p> <p>10.34 - 10.72m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.</p> <p>11.00 - 11.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.</p> <p>Moderately weak to medium strong thickly to narrowly foliated greyish white mottled orange micaceous medium grained PSAMMITE with vugs of calcite and lenses of quartz. Slightly weathered with brown, red & yellow staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 60 to 80 degrees, extremely closely to very closely spaced, planar to undulating rough and with infill of brown sand (<1mm) and occasionally clean. 2) 0 to 25 degrees, extremely closely to very closely spaced, planar to undulating rough and clean.</p> <p>[Macduff Formation]</p> <p>12.37 - 12.64m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</p> <p>12.84 - 12.93m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</p> <p>13.50 - 13.58m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</p> <p>14.40 - 14.53m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</p> <p>14.70 - 15.03m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</p> <p>15.87 - 16.09m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</p> <p>17.64 - 17.77m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</p> <p>17.98 - 18.06m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</p> <p>18.96 - 19.02m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</p>															
			10.20 - 11.70	RC	87							100 56 25	[11]		
			11.70	137.78											
			11.70 - 13.20	RC	87							100 57 23	[7]		
			13.20 - 14.70	RC	87							100 88 50	[9]		
			14.70 - 16.20	RC	87							100 57 25	[9]		
			(8.30)												
			16.20 - 17.70	RC	87							100 85 30	[13]		
			17.70 - 19.20	RC	87							100 90 32	[13]		
			19.20 - 20.00	RC	87							99 99 39	[8]		
Borehole Terminated at 20.00m		20.00	129.48												

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH02
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381610.37 mE 847737.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	149.48 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	19/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	21/09/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	19/09/2023	19/09/2023	Insulated digging tools	Sw	Dw	Robert Boomer / John Adam	Lawrence Ahukannah	
1.20	2.70	SNC	19/09/2023	19/09/2023	Frastr Sonic CRS XL 140			Robert Boomer / John Adam	Lawrence Ahukannah	
2.70	20.00	RC	20/09/2023	20/09/2023	Frastr Sonic CRS XL 140	T2-101	Impreg	Robert Boomer / John Adam	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
19/09/2023	07:30	0.00	0.00	Dry	Start of shift	2.70	185		2.70	185	
19/09/2023	17:30	2.70	2.70	Dry	End of shift	20.00	101				
20/09/2023	07:30	2.70	2.70	0.70	Start of shift						
20/09/2023	17:30	20.00	2.70	3.80	End of shift						
21/09/2023	07:30	20.00	2.70	3.60	Start of shift						
21/09/2023	17:30	20.00	2.70	3.60	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.70	20.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic					1.20	2.70		None	
2.70	4.20	Rotary					2.70	4.20		Water	Grey
4.20	5.70	Rotary					4.20	5.70		Water	Grey
5.70	7.20	Rotary					5.70	7.20		Water	Grey
7.20	8.70	Rotary					7.20	8.70		Water	Grey
8.70	10.20	Rotary					8.70	10.20		Water	Grey
10.20	11.70	Rotary					10.20	11.70		Water	Grey
11.70	13.20	Rotary					11.70	13.20		Water	Grey
13.20	14.70	Rotary					13.20	14.70		Water	Grey
14.70	16.20	Rotary					14.70	16.20		Water	Grey

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
20/09/2023						Drilling with water - no strike recorded		1	0.00	0.50	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	0.50	3.50	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	0.50	903	Bentonite
														0.50	3.50	902	Gravel
														3.50	20.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=20	1.20	Dry	0	5	75	5	75	5	75	6	75	4	75	5	75	T820-799	81
2.70	S	50 / 80	2.70	1.00	0	10	75	10	75	35	75	15	5					T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH02
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381610.37 mE 847737.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	149.48 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	19/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	21/09/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress						Hole Diameter by Depth			Casing Diameter by Depth		
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						2.70	185		2.70	185	
						20.00	101				

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks				Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks		From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
16.20	17.70	Rotary						16.20	17.70		Water	Grey
17.70	19.20	Rotary						17.70	19.20		Water	Grey
19.20	20.00	Rotary						19.20	20.00		Water	Grey

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
20/09/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																				
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%	

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE LOG

Borehole No:
BH03
Sheet 1 of 3

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 16/09/2023
Date Completed: 19/09/2023

Survey Grid System: OSGB
Co-ordinates: 381577.46 mE
847631.01 mN
Ground Level: 150.55 mOD
Orientation: - - deg.
Inclination: 90 deg.
Hole Type: SNC+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 20.60m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/ [mins]	Test	Test Result					Units
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subrounded, fine to coarse of quartz and siltstone. Sand is fine to medium. [Topsoil]		(0.50)													
Soft yellowish brown slightly gravelly sandy CLAY. Gravel is angular to subangular, fine to coarse of sandstone and siltstone. Sand is fine to coarse. [Till]		(0.70)	150.05	0.50	B-2 D-1										
Medium dense yellowish brown mottled grey silty fine to medium SAND. (Probable Weathered bedrock). [Macduff Formation]		(1.20)	149.35	1.00 1.00 1.20	B-4 B-6 D-3 D-5				S	N=20					
Assessed zone of core loss.		(1.50)		1.20 - 2.70 1.20 - 2.70 1.20 - 2.70	B-2 D-1 RC	87					99 0 0				
Assessed zone of core loss.		(2.70)	147.85	2.70					S	50 / 0					
Greenish grey fine to coarse GRAVEL with a medium cobble content. Gravel is angular to subangular, fine to coarse of psammite. Cobbles are angular to subangular of psammite (<90mm). Driller note weathered rock. [Macduff Formation]		(3.45)	147.10	2.70 - 4.20	RC	87					50 0 0				
Assessed zone of core loss.		(4.59)	145.96	4.20 - 4.95	RC	87					46 0 0				
Greenish grey fine to coarse GRAVEL with a medium cobble content. Gravel is angular to subangular, fine to coarse of psammite. Cobbles are angular to subangular, fine to coarse of psammite (<80mm). Driller notes weathered rock. [Macduff Formation]		(4.95)	145.60	4.95 - 5.70	RC	87					100 0 0				
Yellowish brown mottled white silty fine to coarse SAND. (Probable weathered bedrock). [Macduff Formation]		(6.00)	144.55	5.70 - 7.20 6.00 - 7.20	RC D-3	87					100 0 0				
Yellowish brown slightly gravelly silty fine to coarse SAND. Gravel is angular to subangular of sandstone and siltstone. (Probable weathered bedrock). [Macduff Formation]		(7.20)	143.35	7.20 - 7.85	B-4						100 0 0				
Yellowish brown fine to coarse SAND. (Probable weathered Bedrock). [Macduff Formation]		(7.85)	142.70	7.20 - 8.70	RC	95					100 0 0				
Assessed zone of core loss		(8.70)	141.85	7.85 - 8.70	B-5										
Moderately weak to medium strong thickly to narrowly laminated greyish yellow clastic fine to coarse grained PSAMMITE with fine gravel sized white porphyroblasts of feldspar. Slightly weathered with orange and black staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel very closely spaced, planar to undulating rough and clean. [Macduff Formation]		(1.00)		8.70 - 10.20	RC	87					33 25 0	[6]			
Assessed zone of core loss		(9.70)	140.85												

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH03
Sheet 2 of 3

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381577.46 mE 847631.01 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	150.55 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	16/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	19/09/2023			Print Date:	15/02/2024
				Final Depth:	20.60m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [FI]	Water	Well/ Backfill								
				Depth (m)	Type	Dia (mm)	Rec %	Blows/ [mins]	Test	Test Result					Units							
<p>Moderately weak to medium strong thickly to narrowly laminated greyish yellow clastic fine to coarse grained PSAMMITE with fine gravel sized white porphyroblasts of feldspar. Slightly weathered with orange and black staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel very closely spaced, planar to undulating rough and clean. [Macduff Formation]</p> <p>Moderately weak to medium strong coarse grained PSAMMITE with fine gravel sized porphyroblasts of feldspar. Recovered as non intact cores of grey mottled yellow angular to subangular, fine to coarse gravels of conglomerate. [Macduff Formation]</p> <p>Assessed zone of core loss.</p> <p>Moderately weak to medium strong coarse grained PSAMMITE recovered as grey mottled yellow angular to subangular gravel. [Macduff Formation]</p> <p>Moderately weak to medium strong thickly to narrowly laminated light grey to white mottled yellow clastic fine to coarse grained CONGLOMERATE. Slightly weathered with brown, red and black discolouration on fracture surfaces (1-5mm penetration). Discontinuities: Set 1) 0 to 15 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough and clean. Set 2) 80 to 90 degrees vertical parallel fractures extremely closely to very closely spaced planar to undulating rough on a small scale with infill of grey sand and clay (<1mm) and clean in most areas. Set 3) Occasional fractures of 45 to 60 degrees, extremely closely to very closely spaced, planar to undulating rough with infill of silt & sand (<1mm) and clean in most areas [Macduff Formation]</p> <p>11.70 - 12.60m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>12.98 - 13.20m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>13.34 - 13.44m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>13.73 - 13.83m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>14.35 - 14.45m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>14.76 - 14.84m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>15.80 - 15.92m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>16.77 - 16.85m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>17.23 - 17.29m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>19.07 - 19.20m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p> <p>19.77 - 19.92m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate.</p>		10.20	140.35	10.20 - 10.28																		
			10.40	140.15	10.20 - 10.95	C																
			(0.55)		10.20 - 10.95	RC	87															
			10.95	139.60	10.95	C				S	50 / 75											
			(0.75)		10.95 - 11.70	RC	87															
			11.70	138.85	11.70 - 13.20	RC	87															
					13.20 - 14.70	RC	87															
					14.70 - 16.20	RC	87															
			(8.90)		16.20 - 17.70	RC	87															
					17.70 - 19.20	C																
					17.70 - 19.20	RC	87															
					19.20 - 20.60	RC	87															

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH03
Sheet 3 of 3

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381577.46 mE 847631.01 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	150.55 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	16/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	19/09/2023			Print Date:	15/02/2024
				Final Depth:	20.60m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing								TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/ [mins]	Test	Test Result	Units				
Moderately weak to medium strong thickly to narrowly laminated light grey to white mottled yellow clastic fine to coarse grained CONGLOMERATE. Slightly weathered with brown, red and black discolouration on fracture surfaces (1-5mm penetration). Discontinuities: Set 1) 0 to 15 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough and clean. Set 2) 80 to 90 degrees vertical parallel fractures extremely closely to very closely spaced planar to undulating rough on a small scale with infill of grey sand and clay (<1mm) and clean in most areas. Set 3) Occasional fractures of 45 to 60 degrees, extremely closely to very closely spaced, planar to undulating rough with infill of silt & sand (<1mm) and clean in most areas [Macduff Formation] 20.08 - 21.08m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of conglomerate. Borehole Terminated at 20.60m		20.60	129.95												

Stratum depths measured along borehole axis. Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant. Explanation of symbols and abbreviations given in 'Key to Exploratory Holes' Further details given on appended 'Borehole Information Sheet'.	Remarks
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BOREHOLE INFORMATION SHEET

Borehole No
BH03
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381577.46 mE 847631.01 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	150.55 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	16/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	19/09/2023			Final Depth:	20.60m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	16/09/2023	16/09/2023	Insulated digging tools	Sw	Hd	Robert Boomer / Chris coyle	Lawrence Ahukannah	
1.20	2.70	SNC	16/09/2023	16/09/2023	Fraste Sonic CRS XL 140			Robert Boomer / Chris coyle	Lawrence Ahukannah	
2.70	13.20	RC	17/09/2023	17/09/2023	Fraste Sonic CRS XL 140	T2-101	Pcd	Robert Boomer / Chris coyle	Lawrence Ahukannah	
13.20	20.60	RC	19/09/2023	19/09/2023	Fraste Sonic CRS XL 140	T2-101	Impreg	Robert Boomer / Chris coyle	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
16/09/2023	07:30	0.00	0.00		Start of shift	8.70	185		8.70	185	
16/09/2023	16:00	2.70	2.70	1.80	End of shift	20.60	101				
17/09/2023	07:30	2.70	2.70	1.80	Start of shift						
17/09/2023	17:00	13.20	8.70	2.00	End of shift						
19/09/2023	07:30	13.20	8.70	9.10	Start of shift						
19/09/2023	17:30	20.60	8.70	6.80	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.70	20.60		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic					1.20	2.70		None	
2.70	4.20	Rotary					2.70	4.20		Water	Yellow
4.20	4.95	Rotary					4.20	4.95		Water	Yellow
4.95	5.70	Rotary					4.95	5.70		Water	Yellow
5.70	7.20	Rotary					5.70	7.20		Water	Yellow
7.20	8.70	Rotary. Couldn't retrieve sample. Trying sonic.					7.20	8.70		None	
8.70	10.20	Rotary					8.70	10.20		Water	Grey
10.20	10.95	Rotary					10.20	10.95		Water	Grey
10.95	11.70	Rotary					10.95	11.70		Water	Grey
11.70	13.20	Rotary					11.70	13.20		Water	Grey

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
19/09/2023						Drilling with water - no strike recorded								0.00	0.25	905	Arisings
														0.25	18.70	903	Bentonite
														18.70	20.60	905	Arisings

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=20	1.20	Dry	0	5	75	5	75	5	75	5	75	5	75	5	75	T820-799	81
2.70	S	50 / 0	2.70	1.70	0	25	0		50	0								T820-799	81
10.20	S	50 / 75	8.70	2.30	0	25	0		42	75	8	0						T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH03
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381577.46 mE 847631.01 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	150.55 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	16/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	19/09/2023			Final Depth:	20.60m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress						Hole Diameter by Depth			Casing Diameter by Depth		
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						8.70	185		8.70	185	
						20.60	101				

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
13.20	14.70	Rotary					13.20	14.70		Water	Grey
14.70	16.20	Rotary					14.70	16.20		Water	White
16.20	17.70	Rotary					16.20	17.70		Water	White
17.70	19.20	Rotary					17.70	19.20		Water	White
19.20	20.60	Rotary					19.20	20.30			
								20.30		Water	White
								20.60			

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
19/09/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																				
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%	

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE LOG

Borehole No:
BH04
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381538.58 mE 847508.17 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	145.22 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	15/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	16/09/2023			Print Date:	15/02/2024
				Final Depth:	20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over soft dark brown sandy CLAY. Sand is fine to medium. [Topsoil]		0.30	144.92											
Soft brown gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of siltstone and sandstone. Sand is fine to medium. [Till]		0.70		0.50	B-2 D-1									
Soft brown slightly gravelly slightly sandy CLAY. Gravel is angular to subangular fine to coarse of Pelite. Residual soil [Macduff Formation]		1.00	144.22	1.00	B-4 D-3									
		1.20	144.02	1.20	D-5				S	N=17				
Extremely weak to very weak thinly to thickly bedded greyish brown fine grained PELITE. Slightly weathered with orange and grey staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. [Macduff Formation]				1.20 - 2.70	C RC	95					100			
				1.20 - 2.70							-			
				2.70	D-6				S	N=16				
				2.70 - 3.15										
		(4.50)		2.70 - 4.20	C RC	95					100			
				2.70 - 4.20							-			
				4.20	D-7				S	N=20				
				4.20 - 4.65										
				4.20 - 5.70	C RC	95					100			
				4.20 - 5.70							-			
Extremely weak to very weak thinly to thickly bedded brown fine grained PELITE. Slightly weathered with orange discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. [Macduff Formation]		5.70	139.52	5.70	D-8				S	50 / 85				
				5.70 - 5.94										
				5.70 - 7.20	RC	95					100			
				5.70 - 7.20							-			
6.97 - 7.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels of mudstone.				7.20	D-9				S	N=35				
				7.20 - 7.65										
				7.20 - 8.70	RC	95					100			
				7.20 - 8.70							-			
8.70 - 9.12m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				8.70	D-10				S	50 / 75				
				8.70 - 8.85										
9.10 - 10.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite.				8.70 - 10.20	RC	95					100		[NI]	
											30			
											22			

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE LOG

Borehole No:
BH04
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381538.58 mE 847508.17 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	145.22 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	15/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	16/09/2023			Print Date:	15/02/2024
				Final Depth:	20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/ [mins]	Test	Test Result				
Extremely weak to very weak thinly to thickly bedded brown fine grained PELITE. Slightly weathered with orange discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. [Macduff Formation] 10.60 - 10.73m : Recovered as non intact cores of angular to subangular cobbles of pelite. 10.96 - 11.40m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 11.56 - 11.66m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 11.70 - 12.13m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 12.33 - 13.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 13.20 - 13.50m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 13.82 - 14.70m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite.	[Wavy pattern]	(9.00)	10.20 - 11.70	RC	87						100 47 10	[12]		
												[NI]		
												[20]		
												[NI]		
Moderately weak to medium strong greenish grey PELITE. Recovered non intact as angular to subangular fine to coarse gravel and cobbles of pelite. [Macduff Formation]	[Wavy pattern]	(0.85)	14.70 - 16.20	RC	87						56 0 0	[NI]		
												[NR]		
Assessed zone of core loss.	[Wavy pattern]	(0.65)	16.20 - 16.95	RC	87						60 30 22	[NR]		
Extremely weak to very weak thinly to thickly foliated greenish grey fine grained PELITE. Slightly weathered with orange, reddish brown and black discolouration on fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation] 16.20 - 16.40m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 16.95 - 17.45m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 17.58 - 17.70m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.	[Wavy pattern]	(1.50)	16.20 - 16.95	RC	87				S	50 / 0	100 21 0	[NR]		
												[NI]		
Assessed zone of no recovery.	[Wavy pattern]	(0.60)	16.95 - 17.70	RC	87						40 40 13	[8]		
Extremely weak to very weak thinly to thickly foliated greenish grey fine grained PELITE. Slightly weathered with reddish brown, black and orange staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation] Moderately weak to medium strong greenish grey PELITE recovered non intact as angular to subangular fine to medium gravel of pelite with pockets of greenish grey sandy clay (<25mm). [Macduff Formation]	[Wavy pattern]	(0.90)	17.70 - 19.20	RC	87						100 0 0	[NI]		
												[NR]		
Borehole Terminated at 20.00m	[Wavy pattern]	(0.80)	19.20 - 20.00	RC	87									

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH04
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381538.58 mE 847508.17 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	145.22 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	15/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	16/09/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	15/09/2023	15/09/2023	Insulated digging tools			Robert Boomer / John Adam		
1.20	8.70	SNC	15/09/2023	15/09/2023	Frastrite Sonic CRS XL 140	SW	HD	Robert Boomer / John Adam	Lawrence Ahukannah	
8.70	20.00	RC	15/09/2023	16/09/2023	Frastrite Sonic CRS XL 140	T2-101	PCD	Robert Boomer / John Adam	Lawrence Ahukannah	

Boring-Drilling Progress					Hole Diameter by Depth				Casing Diameter by Depth			
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks	
15/09/2023	07:30	0.00	0.00		Start of shift	8.70	185		8.70	185		
15/09/2023	17:30	13.20	8.70	4.60	End of shift	20.00	101					
16/09/2023	07:30	13.20	8.70	9.80	Start of shift							
16/09/2023	16:00	20.00	8.70	4.90	Hole complete							

Water Added Records				Remarks
From (m)	To (m)	Volume (litres)	Remarks	
1.20	20.00		Water added: Sonic + Rotary Coring. No volume recorded.	

Depth Related Remarks				Chiselling / Hard Boring Details				Drilling Flush Details			
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic						1.20	2.70		None
2.70	4.20	Sonic						2.70	4.20		None
4.20	5.70	Sonic						4.20	5.70		None
5.70	7.20	Sonic						5.70	7.20		None
7.20	8.70	Sonic						7.20	8.70		None
8.70	10.20	Rotary						8.70	10.20		Water
10.20	11.70	Rotary						10.20	11.70		Water
11.70	13.20	Rotary						11.70	13.20		Water
13.20	14.70	Rotary						13.20	14.70		Water
14.70	16.20	Rotary						14.70	16.20		Water

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
16/09/2023						Drilling with water - no strike recorded								0.00	0.25	905	Arisings
														0.25	20.00	903	Bentonite

Standard Penetration Test Results																			
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=17	1.20	Dry	0	5	75	5	75	5	75	4	75	3	75	5	75	T820-799	81
2.70	S	N=16	2.70	1.00	0	4	75	4	75	5	75	5	75	3	75	3	75	T820-799	81
4.20	S	N=20	4.20	2.10	0	5	75	5	75	5	75	5	75	5	75	5	75	T820-799	81
5.70	S	N=85	5.70	3.90	0	10	75	10	75	31	75	19	10	0	0	0	0	T820-799	81
7.20	S	N=35	7.20	5.80	0	7	75	8	75	8	75	8	75	10	75	9	75	T820-799	81
8.70	S	N=75	8.70	2.90	0	20	75	5	0	38	75	12	0					T820-799	81
16.20	S	N=0	8.70	1.10	0	25	0			50	0							T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE INFORMATION SHEET

Borehole No
BH04
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381538.58 mE 847508.17 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	145.22 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	15/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	16/09/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress

Hole Diameter by Depth

Casing Diameter by Depth

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						8.70	185		8.70	185	
						20.00	101				

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks

Chiselling / Hard Boring Details

Drilling Flush Details

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
16.20	16.95	Rotary					16.20	16.95		Water	Yellow
16.95	17.70	Rotary					16.95	17.70		Water	Yellow
17.70	19.20	Rotary					17.70	19.20		Water	Yellow
19.20	20.00	Rotary					19.20	20.00		Water	Yellow

Water Strikes

Monitoring Installation Pipe Work

Backfill Details

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
16/09/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH05
Sheet 1 of 2

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 28/08/2023
Date Completed: 31/08/2023

Survey Grid System: OSGB
Co-ordinates: 381484.52 mE
847389.07 mN
Ground Level: 150.55 mOD
Orientation: - - deg.
Inclination: 90 deg.
Hole Type: SNC+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [FI]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over dark brown gravelly cobbly fine to medium SAND. Gravel is subangular to subangular fine to coarse of psammite. Cobbles are angular to subangular of psammite (<100mm). [Topsoil]		0.30	150.25	0.30	B-2 D-1										
Dark brown silty very gravelly fine to coarse SAND with some cobbles. Gravel is angular to subangular fine to coarse of psammite. Cobbles are angular of psammite. (Probably weathered Psammite). [Macduff Formation]		1.50		1.00	B-4 D-3										
Light brown and light grey mottled gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of psammite. (Probably completely weathered Psammite). [Macduff Formation]		1.80	148.75	1.20 - 2.70	RC	95					99	[NI]			
Orange and brown mottled light grey very sandy angular fine to coarse GRAVEL of psammite. With occasional cobbles of psammite. (Completely weathered Psammite). [Macduff Formation]		2.70	147.85	2.70 - 4.20	RC	95					100	[NI]			
Very weak thinly to very thinly foliated yellowish brown fine to medium grained micaceous PSAMMITE . Highly weathered with frequent red, orange and white staining along fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures very closely spaced planar to undulating rough with mica infill (<1mm). [Macduff Formation] 6.20 - 7.20m : Recovered as sandy angular fine to coarse gravel of psammite		5.70	144.85	5.70 - 5.94	D-1				S	50 / 95		[12]			
Medium strong to strong orange brown and light grey mottled dark red fine grained PSAMMITE with penetrative discolouration through out. Discontinuities are. 1. 40 to 50 degrees, very closely to closely spaced planar, rough with brown and dark red staining. 2. 70 to 80 degrees, medium spaced, planar rough and stained. [Macduff Formation] 7.80 - 8.20m : Recovered as angular fine to coarse gravel.		7.20	143.35	7.20 - 7.42	D-2				S	50 / 75		[NI]			
		8.70		8.70	D-3				S	50 / 0		[NI]			
		10.20		8.70 - 10.20	RC	95					73	[NI]			

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH05
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381484.52 mE 847389.07 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	150.55 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	28/08/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	31/08/2023			Print Date:	15/02/2024
				Final Depth:	20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill		
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units	
Medium strong to strong orange brown and light grey mottled dark red fine grained PSAMMITE with penetrative discolouration through out. Discontinuities are. 1. 40 to 50 degrees, very closely to closely spaced planar, rough with brown and dark red staining. 2. 70 to 80 degrees, medium spaced, planar rough and stained. [Macduff Formation] <i>10.20 - 11.70m : Recovered as orange brown sandy angular fine to coarse gravel of psammite</i>				10.20 - 10.95	RC	95						66 0 0	[N]			
				10.95 - 11.70	RC	95						80 0 0	[N]			
Medium strong to strong light grey mottled yellow thickly to narrowly foliated medium to coarse grained PSAMMITE with porphyroblasts of quartz and feldspar. Slightly weathered with frequent red, brown, black and yellow staining along fracture surfaces (1-3mm penetration). Discontinuities: 1) 45-90 degrees, extremely closely to very closely spaced, planar to undulating rough, with infill of brown sand (<1mm) or clean. [Macduff Formation] <i>11.70 - 11.82m : Recovered as angular to subangular fine to coarse gravel of psammite</i> <i>12.06 - 12.14m : Recovered angular fine to coarse gravel of psammite.</i> <i>12.33 - 12.74m : Recovered as angular fine to coarse gravel of psammite.</i> <i>12.80 - 13.20m : Assumed Zone of core Loss</i> <i>14.20 - 14.50m : Assumed zone of core loss</i>			138.85	11.70 - 13.20	RC	87						93 44 20	[N]			
				(2.80)										[NR]		
				13.20 - 14.50	RC	87							99 0 0	[17]		
														[NR]		
Medium strong to strong thickly to narrowly foliated light grey mottled dark orange medium to coarse grained micaceous PSAMMITE with occasional porphyroblasts of quartz, feldspar and mica. moderately weathered with frequent black, orange and brown discolouration on fracture surfaces (1-3mm penetration). Discontinuities: 1) 0 to 15 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough with infill of yellow sand <1mm and clean in some areas. 2) 70 to 90 degrees, vertical parallel fracture very closely spaced, planar rough with infill of yellow sand <1mm. [Macduff Formation] <i>14.50 - 14.96m : Recovered as angular fine to coarse gravel and cobbles of psammite.</i> <i>15.17 - 15.45m : Recovered as angular fine to coarse gravel of psammite.</i> <i>16.10 - 16.17m : Recovered of angular fine to coarse gravel of psammite</i> <i>16.38 - 16.90m : Recovered as angular fine to coarse gravel of psammite</i> <i>17.60 - 17.80m : Recovered of angular fine to coarse gravel of psammite</i>			136.05	14.50 - 16.00	RC	87						100 53 23	[5]			
				(3.60)												
				16.00 - 17.50	RC	87							100 46 11	[10]		
														[N]		
Assumed zone of core loss.			132.45	17.50 - 19.00	RC	87						40 0 0	[NR]			
			(0.90)													
Moderately weak light grey mottled orange and dark red PSAMMITE AND SEMIPELITE. Recovered as non intact cores of angular fine to coarse gravel of psammite and semipelite. [Macduff Formation]			131.55	19.00 - 20.00	RC	87						100 0 0	[N]			
			(1.00)													
Borehole Terminated at 20.00m			130.55													

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH05
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381484.52 mE 847389.07 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	150.55 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	28/08/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	31/08/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.30	IP	28/08/2023	28/08/2023	Insulated digging tools			Robert Boomer / Jim McFarlane		
0.30	1.20	SNC	28/08/2023	28/08/2023	Frastr Sonic CRS XL 140	Sw	Heavy duty	Robert Boomer / Jim McFarlane	Lawrence Ahukannah	
1.20	2.70	RC	28/08/2023	28/08/2023	Frastr Sonic CRS XL 140	T2-101	Impreg	Robert Boomer / Jim McFarlane	Lawrence Ahukannah	
2.70	8.70	SNC	29/08/2023	29/08/2023	Frastr Sonic CRS XL 140	So	Hd	Robert Boomer / Jim McFarlane	Lawrence Ahukannah	
8.70	20.00	RC	29/08/2023	31/08/2023	Frastr Sonic CRS XL 140	T2-101	Pad	Robert Boomer / Jim McFarlane	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
28/08/2023	07:30	0.00	0.00		Start of shift	8.70	195		8.70	195	
28/08/2023	17:30	2.70	1.20	0.80	End of shift	20.00	101				
29/08/2023	07:30	2.70	2.70	0.90	Start of shift						
29/08/2023	17:30	11.70	8.70	0.20	End of shift						
30/08/2023	07:30	11.70	8.70	2.10	Start of shift						
30/08/2023	17:00	20.00	8.70	3.80	End of shift						
31/08/2023	07:30	20.00	8.70	12.00	Start of shift						
31/08/2023	17:30	20.00	8.70	12.00	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.70	20.00		Water added: Sonic + Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Weathered bedrock. Rotary only recovered 50%. Reverting to sonic to re-drill depth. Sonic 1 Rotary / Sonic Sonic 2 Sonic 3 Rotary 3 Rotary 4 Rotary 5					1.20	2.70		Water	Yellow
2.70	4.20		2.70	4.20			4.20	5.70		None	Yellow
4.20	5.70		5.70	7.20			7.20	8.70		None	
5.70	7.20		8.70	10.20			10.20	10.95		Water	Yellow
7.20	8.70		10.95	11.70			11.70	13.20		Water	White
8.70	10.20		13.20	14.50			14.50			Water	White
10.20	10.95									Water	Yellow
10.95	11.70									Water	Yellow

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
30/08/2023						Drilling with water - no strike recorded		1	0.00	1.00	50	PLAIN		0.00	0.10	910	Flush cover
								1	1.00	8.00	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	1.00	903	Bentonite
														1.00	8.00	902	Gravel
														8.00	20.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
5.70	S	50 / 95	5.70	3.80	0	12	75	12	75	18	75	32	20					T820-799	81
7.20	S	50 / 75	7.20	4.10	0	8	75	8	75	41	75	9	0					T820-799	81
8.70	S	50 / 0	8.70	2.70	0	25	0			50	0							T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH05
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381484.52 mE 847389.07 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	150.55 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	28/08/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	31/08/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress					Hole Diameter by Depth			Casing Diameter by Depth			
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						8.70	195		8.70	195	
						20.00	101				

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details					
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								14.50	16.00		Water	White
								16.00	17.50		Water	White
								17.50	19.00		Water	Yellow
								19.00	20.00		Water	Yellow

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
30/08/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																			
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH06
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381593.74 mE 847324.07 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	143.98 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	04/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	06/09/2023			Print Date:	15/02/2024
				Final Depth:	20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill			
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units		
Grass over soft dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is angular to subangular, fine to coarse of mudstone and sandstone. [Topsoil]		(0.40)	143.58	0.20 - 0.40	B-1												
				0.20 - 0.40	D-2												
				0.40 - 0.60	B-3												
				0.40 - 0.60	D-4												
Greyish brown slightly sandy slightly gravelly CLAY with high cobble content. Sand is fine. Gravel is angular to subangular fine to coarse of mudstone. [Till]		(0.80)	142.78	0.60 - 1.00	B-2												
				0.60 - 1.00	D-1												
				1.20 - 1.65				S	N=19								
				1.20 - 1.65	D-3												
Extremely weak to very weak highly weathered PELITE. Recovered as sandy gravel and cobbles. [Macduff Formation]		(3.00)	139.78	1.20 - 1.65													
				1.20 - 1.65	D-3												
				2.70 - 3.00				S	50 / 150								
				2.70 - 3.00	D-4												
Extremely weak to very weak thinly to thickly bedded greenish grey PELITE with occasional bands of medium strong Semi-pelite (<90mm thick). Slightly weathered to moderately weathered locally highly weathered with brown, yellow and orange discolouration on fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough with infill of yellow clay and sand on siltstone fracture surfaces <1mm and clean in most areas. [Macduff Formation]		(6.00)	139.78	2.70 - 4.20	RC	95						99					
				2.70 - 4.20													
				4.20 - 4.30				S	50 / 30								
				4.20 - 4.30	D-5												
				4.20 - 5.70	RC	95									100		
				4.20 - 5.70													
				5.70 - 6.15				C	N=44								
				5.70 - 6.15	D-6												
				5.70 - 7.20	RC	95										100	
				5.70 - 7.20													
				7.20 - 7.30				S	50 / 40								
				7.20 - 7.30	D-7												
7.20 - 8.70	RC	95											100				
7.20 - 8.70																	
8.70 - 9.00				S	50 / 150												
8.70 - 9.00	D-8																
9.29 - 10.20m : Non intact cores of angular to subangular gravels of mudstone and cobbles of siltstone				8.70 - 10.20	RC	95								100			

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH06
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381593.74 mE 847324.07 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	143.98 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	04/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	06/09/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.60	IP	04/09/2023	04/09/2023	Insulated digging tools			James McFarlane / John Adam		Refusal at 0.60m. Possible bedrock.
0.60	10.20	SNC	05/09/2023	05/09/2023	Frastr Sonic CRS XL 140			James McFarlane / Robert Boomer	Lawrence Ahukannah	
10.20	20.00	RC	05/09/2023	06/09/2023	Frastr Sonic CRS XL 140	T2-101	Impreg	James McFarlane / Robert Boomer	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
04/09/2023	07:30	0.00	0.00	Dry	Start of shift	10.20	185		10.20	101	
04/09/2023	17:00	1.20	0.00	Dry	End of shift	20.00	101		10.20	185	
05/09/2023	07:30	0.60	0.00		Start of shift						
05/09/2023	17:00	11.70	10.20	3.80	End of shift						
06/09/2023	07:30	11.70	10.20	9.60	Start of shift						
06/09/2023	17:00	20.00	10.20	5.90	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
0.60	11.70	7000	Water added: Sonic + rotary
11.70	20.00	5000	

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic					1.20	2.70		Water	Yellow
2.70	4.20	Sonic					2.70	4.20		Water	Yellow
4.20	5.70	Sonic					4.20	5.70		Water	Yellow
5.70	7.20	Sonic					5.70	7.20		Water	Yellow
7.20	8.70	Sonic					7.20	8.70		Water	Yellow
8.70	10.20	Sonic					8.70	10.20		Water	Yellow
10.20	11.70	Rotary					10.20	11.70		Water	Yellow
							11.70	13.20		Water	Yellow
							13.20	14.70		Water	Yellow
							14.70	16.20		Water	Yellow

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
06/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	20.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=19	1.20	0.50	0	3	75	3	75	4	75	5	75	5	75	5	75	T820-799	81
2.70	S	50 / 150	2.70	1.20	0	7	75	15	75	21	75	29	75					T820-799	81
4.20	S	50 / 30	4.20	0.00	0	25	70			50	30							T820-799	81
5.70	C	N=44	5.70	1.90	0	5	75	7	75	8	75	10	75	11	75	15	75	T820-799	81
7.20	S	50 / 40	7.20	2.10	0	25	60			50	40							T820-799	81
8.70	S	50 / 150	8.70	1.80	0	10	75	12	75	15	75	35	75					T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH06
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381593.74 mE 847324.07 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	143.98 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	04/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	06/09/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress					Hole Diameter by Depth			Casing Diameter by Depth			
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						10.20	185		10.20	101	
						20.00	101		10.20	185	

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details					
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								16.20	17.70		Water	Yellow
								17.70	19.20		Water	Yellow
								19.20	20.00		Water	Yellow

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
06/09/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																			
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH07
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC
Project No:	RGN.330G	Co-ordinates:	381630.56 mE 847419.26 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	142.17 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	31/08/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	01/09/2023			Print Date:	15/02/2024
				Final Depth:	20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular, fine to coarse of mudstone. [Topsoil]	[Symbol]	0.30	141.87	0.50	B-3									
		0.30		0.50	D-2									
Soft dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone. [Till]	[Symbol]	0.90	140.97	1.00	B-5									
		1.20		1.00	D-4									
Completely weathered PELITE. Recovered as a sandy clay. [Macduff Formation]	[Symbol]	1.20	140.97	1.20 - 1.65	D-6				S	N=13				
		1.50		1.20 - 2.70	RC	95					99	-		
Extremely weak to very weak thinly to thickly bedded greenish grey PELITE. Slightly weathered with rare grey reduction patches (<5mm) along surfaces and occasional brown and orange staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures very closely spaced, planar to undulating rough and clean. [Macduff Formation] 3.30 - 4.20m : Highly weathered MUDSTONE recovered as bluish white clayey sand	[Symbol]	2.70	139.47	2.70	D-7				S	50 / 160				
				2.70 - 3.01										
				2.70 - 4.20	RC	95					100	-		
				4.20	D-8					S	50 / 150			
5.25 - 5.70m : Highly weathered MUDSTONE recovered as bluish white clayey sand	[Symbol]		136.47	4.20 - 4.50										
				4.20 - 5.70	RC	95					100	-		
Extremely weak to very weak PELITE recovered as greyish white clayey sand [Macduff Formation]	[Symbol]	5.70	136.47	5.70	D-9				S	50 / 0				
				5.70										
	[Symbol]	1.50	134.97	5.70 - 7.20	RC	95								
				7.20										
Extremely weak to very weak thinly to thickly bedded brown mottled grey PELITE. Moderately weathered with occasional grey reduction patches <5mm along surfaces and occasional reddish brown staining on fracture surfaces (1-5m penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation] 8.40 - 8.70m : Highly weathered MUDSTONE recovered as sandy clay	[Symbol]	7.20	134.97	7.20	D-10				S	N=38				
				7.20 - 7.65										
	[Symbol]	1.50	133.47	7.20 - 8.70	RC	95								
				8.70										
Yellowish brown to grey mottled orange and black PELITE. Recovered as non intact as sandy angular to subrounded gravel of pelite. [Macduff Formation]	[Symbol]	8.70	133.47	8.70	D-11				S	50 / 150				
				8.70 - 9.00										
				8.70 - 10.20	RC	95								

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH07
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC
Project No:	RGN.330G	Co-ordinates:	381630.56 mE 847419.26 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	142.17 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	31/08/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	01/09/2023			Print Date:	15/02/2024
				Final Depth:	20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Yellowish brown to grey mottled orange and black PELITE. Recovered as non intact as sandy angular to subrounded gravel of pelite. [Macduff Formation]		10.20	128.97	10.20 - 10.65	D-2				S	N=32				
				10.20 - 11.70	RC	95					100 - -			
		(4.50)	11.70	11.70 - 11.78	D-3				S	50 / 0				
			11.70 - 13.20	RC	95					100 - -				
Extremely weak to very weak thinly to thickly bedded greenish grey PELITE with rare grey reduction patches (<5mm along surfaces). Slightly weathered with frequent bluish white and yellow discolouration on fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		13.20	128.97	13.20 - 13.65	D-4				S	N=29				
		(1.50)		13.20 - 14.70	RC	95					100 - -			
13.60 - 14.20m : <i>Highly weathered arenaceous MUDSTONE recovered as non intact cores of greenish grey sandy angular to subrounded cobbles and gravels of mudstone.</i>		14.70	127.47	14.70 - 14.94	D-5				S	50 / 85				
Greenish grey mottled brown PELITE. Recovered as non intact cores of sandy angular to subrounded gravel and cobbles. [Macduff Formation]		(1.50)		14.70 - 16.20	RC	95					100 - -			
Extremely weak to very weak thinly to thickly bedded greenish grey PELITE. Moderately weathered to slightly weathered with frequent yellow and grey staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		16.20	125.97	16.20 - 16.27	D-6				S	50 / 75				
				16.20 - 17.70	RC	95					100 - -			
		16.30 - 16.34m : <i>Recovered as non intact cores of greenish grey sandy angular to subangular gravels of mudstone.</i>		17.70	(3.80)	17.70 - 17.77	D-7				S	50 / 0		
		16.42 - 16.45m : <i>Recovered as non intact cores of greenish grey sandy angular to subangular gravels of mudstone.</i>		17.70 - 19.20		RC	95					100 - -		
		16.57 - 17.40m : <i>Recovered as non intact cores of greenish grey sandy angular to subangular gravels of mudstone.</i>		19.20		19.20 - 19.43	D-8				S	50 / 80		
17.94 - 18.34m : <i>Recovered as non intact cores of greenish grey sandy angular to subrounded cobbles and gravels of mudstone.</i>		19.20 - 20.00	RC	95					99 - -					
Borehole Terminated at 20.00m		20.00	122.17											

Stratum depths measured along borehole axis.
 Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
 Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
 Further details given on appended 'Borehole Information Sheet'.
 Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH07
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC
Project No:	RGN.330G	Co-ordinates:	381630.56 mE	Checked By:	SR
Client:	SSEN-T	Ground Level:	847419.26 mN	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	142.17 mOD	Log Status:	FINAL
Date Started:	31/08/2023	Inclination:	- - deg.	Print Date:	15/02/2024
Date Completed:	01/09/2023		90 deg.	Final Depth:	20.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.50	IP	31/08/2023	31/08/2023	Insulated digging tools			Robert Boomer / Jim McFarlane		
0.50	20.00	SNC	31/08/2023	01/09/2023	Fraste Sonic CRS XL 140	Sw	HD	Robert Boomer / Jim McFarlane	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
31/08/2023	07:30	0.00	0.00		Start of shift	19.20	185		19.20	185	
31/08/2023	17:30	8.70	8.70	3.10	End of shift	20.00	95				
01/09/2023	07:30	8.70	8.70	3.70	Start of shift						
01/09/2023	17:30	20.00	19.20	5.90	Hole complete						
02/09/2023	07:30	20.00	19.20	4.90	Start of shift						
02/09/2023	17:00	20.00	19.20	2.30	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
1.20	13.20		Water added: Sonic + Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
5.70	7.20	Rotary run attempted, had to recover with sonic					1.20	2.70		None	
11.70	13.20	Attempted rotary had to recover sample with sonic					2.70	4.20		None	
							4.20	5.70		None	
							5.70	7.20		None	
							7.20	8.70		None	
							8.70	10.20		None	
							10.20	11.70		None	
							11.70	13.20		None	
							13.20	14.70		None	
							14.70	16.20		None	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
01/09/2023						Drilling with water - no strike recorded		1	0.00	0.50	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	0.50	2.50	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	0.50	903	Bentonite
														0.50	2.50	902	Gravel
														2.50	19.20	903	Bentonite
														19.20	20.00	905	Arisings

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=13	1.20	Dry	0	3	75	3	75	3	75	2	75	4	75	4	75	T820-799	81
2.70	S	50 / 160	2.70	1.90	0	10	75	8	75	8	75	20	75	22	10			T820-799	81
4.20	S	50 / 150	4.20	1.80	3	10	75	10	75	22	75	20	75	8	0			T820-799	81
5.70	S	50 / 0	5.70	1.80	0	25	0			50	0							T820-799	81
7.20	S	N=38	7.20	2.20	0	8	75	8	75	8	75	10	75	10	75	10	75	T820-799	81
8.70	S	50 / 150	8.70	3.00	0	10	75	10	75	21	75	20	75	9	0			T820-799	81
10.20	S	N=32	10.20	2.90	0	10	75	10	75	8	75	8	75	9	75	7	75	T820-799	81
11.70	S	50 / 0	11.70	4.10	0	22	75	3	0	50	0							T820-799	81
13.20	S	N=29	13.20	2.90	0	4	75	4	75	4	75	5	75	10	75	10	75	T820-799	81
14.70	S	50 / 85	14.70	1.80	0	10	75	10	75	31	75	19	10					T820-799	81
16.20	S	50 / 75	16.20	3.80	0	25	0			41	75	9	0					T820-799	81
17.70	S	50 / 0	17.70	5.80	0	24	75	1	0	50	0							T820-799	81
19.20	S	50 / 80	19.20	3.60	0	10	75	10	75	33	75	17	5					T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH07
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC
Project No:	RGN.330G	Co-ordinates:	381630.56 mE 847419.26 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	142.17 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	31/08/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	01/09/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress						Hole Diameter by Depth			Casing Diameter by Depth		
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						19.20	185		19.20	185	
						20.00	95				

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								16.20	17.70	None	
								17.70	19.20	None	
								19.20	20.00	None	

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
01/09/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																				
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%	

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE LOG

Borehole No:
BH08
Sheet 1 of 3

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381618.16 mE 847551.31 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	148.07 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	28/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	29/09/2023			Print Date:	15/02/2024
				Final Depth:	20.30m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular, fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.20	147.87											
Soft brown sandy silty CLAY. Sand is fine to medium. [Till]		0.60		0.50	B-2 D-1									
Yellowish brown slightly gravelly silty fine to medium SAND. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Possible residual soil [Macduff Formation]		0.80	147.27	1.00	B-4 D-3 D-5				S	50 / 85				
		1.40		1.20 - 1.44										
		2.20		1.20 - 2.00	B-2 D-1						99 0 0			
		2.70	145.87	1.20 - 2.70	RC	95								
Possible weathered PSAMMITE. Recovered as yellowish brown clayey fine to coarse sand. [Macduff Formation]		2.70	145.37											
Moderately weak to medium strong thinly to thickly foliated whitish grey micaceous medium grained PSAMMITE. Slightly weathered with black, orange, yellow and brown discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 70 to 90 degrees vertical parallel fractures very closely spaced, planar to undulating rough and clean. 2) 0 to 10 degrees very closely spaced, planar to undulating rough and clean. [Macduff Formation]		4.50		2.70 - 4.20	RC	87					100 36 7	[15]		
2.70 - 2.90m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of psammite. 3.28 - 3.68m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of psammite. 3.90 - 4.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of psammite. 4.47 - 5.57m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.		5.70		4.20 - 5.70	RC	87					100 55 22	[9]		
5.22 - 6.10m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of psammite.		6.71		5.70 - 7.20	RC	87					100 26 10	[12]		
6.31 - 6.56m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of psammite. 6.80 - 8.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.		7.20	140.87	7.20 - 8.70	C RC	87					100 48 27	[NI] [8]		
Moderately weak to medium strong thinly to thickly laminated grey crystalline medium grained PSAMMITE with frequent lenses of quartz and porphyroblasts of calcite. Slightly weathered with black, orange and brown staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough with occasional infill of grey sand (<1mm) and clean. 2) 0 to 15 degrees, very closely spaced, planar to undulating rough on a small scale and clean. [Macduff Formation]		8.70		7.20 - 8.70										
8.88 - 8.96m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone. 9.77 - 9.90m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of sandstone.		10.20		8.70 - 10.20	RC	87					100 83 58	[8]		

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH08
Sheet 2 of 3

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381618.16 mE 847551.31 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	148.07 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	28/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	29/09/2023			Print Date:	15/02/2024
				Final Depth:	20.30m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/ [mins]	Test	Test Result					Units
<p>Moderately weak to medium strong thinly to thickly laminated grey crystalline medium grained PSAMMITE with frequent lenses of quartz and porphyroblasts of calcite. Slightly weathered with black, orange and brown staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough with occasional infill of grey sand (<1mm) and clean. 2) 0 to 15 degrees, very closely spaced, planar to undulating rough on a small scale and clean.</p> <p>[Macduff Formation] 10.38 - 10.70m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of sandstone.</p> <p>11.40 - 11.57m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of sandstone.</p> <p>Assessed zone of core loss.</p> <p>Moderately weak to medium strong thinly to thickly laminated whitish brown crystalline medium grained PSAMMITE with porphyroblasts of calcite and frequent lenses of quartz. Slightly weathered with orange & brown discolouration on fracture surfaces (1-5mm) penetration. Discontinuities: 1) 70 to 80 degrees vertical parallel fractures, very closely spaced, planar to undulating rough and clean.</p> <p>[Macduff Formation] 12.62 - 13.40m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of sandstone.</p> <p>13.56 - 14.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of sandstone.</p> <p>Assessed zone of core loss.</p> <p>Moderately weak to medium strong thinly to thickly laminated greenish grey mottled orange crystalline medium grained PSAMMITE with frequent lenses of quartz and porphyroblasts of calcite and feldspar. Slightly weathered with orange and reddish brown staining on fracture surfaces (1-5mm) penetration. Discontinuities: 1) 60 to 90 degrees vertical parallel fractures very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees, very closely spaced, planar to undulating rough on a small scale and clean.</p> <p>[Macduff Formation] 14.70 - 14.85m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone. 15.10 - 15.26m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone. 15.56 - 15.69m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone. 16.20 - 16.46m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone. 16.93 - 17.70m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone & pockets of sand 17.80 - 17.90m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.</p> <p>18.65 - 19.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of sandstone.</p> <p>19.34 - 19.40m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of sandstone.</p>															
				10.20 - 11.70	RC	87						100 55 40	[7]		
			12.05	136.02									[4]		
													[NR]		
			12.33	135.74	11.70 - 13.20	RC	87					86 37 0	[NI]		
			(1.87)										[NI]		
					13.20 - 14.70	RC	87					66 0 0	[NI]		
			14.20	133.87									[NR]		
			(0.50)										[NR]		
			14.70	133.37									[NR]		
				14.70 - 16.20	RC	87					100 32 0	[NI]			
												[2]			
				16.20 - 17.70	RC	87					100 27 6	[NI]			
		(5.60)										[NI]			
				17.70 - 19.20	RC	87					100 54 22	[12]			
												[8]			
				19.20 - 20.30	RC	87					99 81 55	[8]			

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH08
Sheet 3 of 3

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381618.16 mE 847551.31 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	148.07 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	28/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	29/09/2023			Print Date:	15/02/2024
				Final Depth:	20.30m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing								TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill		
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result	Units						
Moderately weak to medium strong thinly to thickly laminated greenish grey mottled orange crystalline medium grained PSAMMITE with frequent lenses of quartz and porphyroblasts of calcite and feldspar. Slightly weathered with orange and reddish brown staining on fracture surfaces (1-5mm) penetration. Discontinuities: 1) 60 to 90 degrees vertical parallel fractures very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees, very closely spaced, planar to undulating rough on a small scale and clean. [Macduff Formation]		20.30	127.77														
Borehole Terminated at 20.30m																	

Stratum depths measured along borehole axis. Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant. Explanation of symbols and abbreviations given in 'Key to Exploratory Holes' Further details given on appended 'Borehole Information Sheet'.	Remarks
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BOREHOLE INFORMATION SHEET

Borehole No
BH08
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381618.16 mE 847551.31 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	148.07 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	28/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	29/09/2023			Final Depth:	20.30m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.50	IP	28/09/2023	28/09/2023	Insulated digging tools Fraste Sonic CRS XL 140	Sw	HD	Robert Boomer / John Adam Robert Boomer / John Adam	Lawrence Ahukannah	
0.50	2.70	SNC	28/09/2023	28/09/2023						
2.70	20.30	RC	28/09/2023	29/09/2023	Fraste Sonic CRS XL 140	T2-101	Pad / 53 Impreg	Robert Boomer / John Adam	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
28/09/2023	07:30	0.00	0.00		Start of shift	2.70	185		2.70	185	
28/09/2023	17:00	14.70	7.20	2.70	End of shift						
29/09/2023	07:30	14.70	7.20	3.90	Start of shift						
29/09/2023	17:30	20.30	7.20	Dry	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
1.20	20.30		Water added: Sonic + Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic					1.20	2.70		None	
2.70	4.20	Rotary					2.70	4.20		Water	Yellow
4.20	5.70	Rotary					4.20	5.70		Water	Yellow
5.70	7.20	Rotary					5.70	7.20		Water	Yellow
7.20	8.70	Rotary					7.20	8.70		Water	White
8.70	10.20	Rotary					8.70	10.20		Water	White
10.20	11.70	Rotary					10.20	11.70		Water	White
11.70	13.20	Rotary					11.70	13.20		Water	White / yellow
13.20	14.70	Rotary					13.20	14.70		Water	Yellow
14.70	16.20	Rotary					14.70	16.20		Water	Yellow

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
29/09/2023						Drilling with water - no strike recorded		1	0.00	5.00	50	PLAIN		0.00	0.25	909	Upstanding cover
								1	5.00	7.50	50	SLOTTED		0.25	0.50	906	Concrete
														0.50	5.00	903	Bentonite
														5.00	7.50	902	Gravel
														7.50	20.30	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	50 / 85	1.20	Dry	0	10	75	10	75	31	75	19	10					T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH08
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381618.16 mE 847551.31 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	148.07 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	28/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	29/09/2023			Final Depth:	20.30m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress						Hole Diameter by Depth			Casing Diameter by Depth		
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						2.70	185		2.70	185	
						20.30	101				

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks				Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks		From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
16.20	17.70	Rotary						16.20	17.70		Water	Yellow
17.70	19.20	Rotary						17.70	19.20		Water	Yellow
19.20	20.30	Rotary						19.20	20.30		Water	Yellow

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
29/09/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																				
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%	

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH09
Sheet 1 of 2

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 21/09/2023
Date Completed: 28/09/2023

Survey Grid System: OSGB
Co-ordinates: 381706.17 mE
847627.19 mN
Ground Level: 146.35 mOD
Orientation: - - deg.
Inclination: 90 deg.

Hole Type: SNC+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.20 (0.30)	146.15												
Soft yellowish brown gravelly sandy CLAY with a medium cobble and low boulder content. Gravel is angular to subangular fine to coarse of sandstone, siltstone and quartz. Sand is fine to coarse. Cobbles are angular to subangular of sandstone (<80mm). Boulder is angular to subangular of sandstone (<380mm). [Till]		0.50	145.85	0.50 0.50	B-2 D-1										
Possible completely weathered yellowish brown coarse grained PSAMMITE. Recovered as gravelly fine and medium sand. [Macduff Formation]		1.00		1.00	B-4										
		1.20		1.20	D-3										
		1.20 - 1.65			D-5				S	N=19					
		(2.20)													
Weak to moderately weak yellowish brown coarse grained PSAMMITE. Recovered as non intact of sandy angular to subangular fine and medium gravel and cobbles. [Macduff Formation]		1.20 - 2.70			RC	95					99				
		2.70	143.65	2.70 2.70	D-1				S	50 / 0					
		2.70 - 4.20			RC	87					100	[NI]			
		4.20 - 5.70			RC	87					100	[NI]			
Possible weathered yellowish brown coarse grained PSAMMITE Recovered as gravelly sandy clay. [Macduff Formation]		5.70 - 7.20			RC	95					100				
		7.20 - 8.70			RC	95					100				
		(6.00)													
	8.70	137.65													
	(1.50)			8.70 - 10.20	RC	95					100				

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH09
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381706.17 mE 847627.19 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	146.35 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	21/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	28/09/2023			Print Date:	15/02/2024
				Final Depth:	20.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Possible weathered yellowish brown coarse grained PSAMMITE Recovered as gravelly sandy clay. [Macduff Formation] Moderately weak to medium strong thinly to thickly laminated greenish grey to grey medium grained PSAMMITE with occasional lenses of quartz. Slightly weathered with reddish brown, yellow and orange discolouration on fracture surfaces(1-3mm) penetration. Discontinuities 1): 70 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. [Macduff Formation] <i>10.20 - 10.32m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.</i> <i>10.67 - 10.76m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.</i> <i>10.85 - 11.70m : Recovered as yellowish brown fine to coarse sand.</i> <i>12.08 - 12.46m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.</i> <i>12.79 - 13.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite.</i>		10.20	136.15											
					10.20 - 11.70	RC	87							
		(4.50)			11.70 - 13.20	RC	87							
					13.20 - 14.70	RC	87							
Possible completely weathered yellowish brown coarse grained PSAMMITE. Recovered as gravelly clayey fine to coarse sand. [Macduff Formation]		14.70	131.65											
				14.70 - 15.70	RC	87								
	(1.50)			14.70 - 16.20	RC	95								
Moderately weak to medium strong light grey mottled orange brown coarse grained PSAMMITE. Recovered as angular to subangular fine to coarse gravel and cobbles. [Macduff Formation]		16.20	130.15											
	(1.50)			16.20 - 17.70	RC	87								
Assessed zone of no recovery.		17.70	128.65											
	(1.00)			17.70 - 18.70	RC	87								
Moderately weak to medium strong light grey mottled orange brown coarse grained PSAMMITE. Recovered as angular to subangular fine to coarse gravel and cobbles. [Macduff Formation]		18.70	127.65											
	(0.50)			18.70 - 19.20	RC	87								
Assessed zone of no recovery.		19.20	127.15											
	(0.80)			19.20 - 20.00	RC	87								
Borehole Terminated at 20.00m		20.00	126.35											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH09
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381706.17 mE 847627.19 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	146.35 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	21/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	28/09/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	21/09/2023	21/09/2023	Insulated digging tools	Sw	Hd	Robert Boomer / John Adam	Lawrence Ahukannah	
1.20	2.70	SNC	26/09/2023	26/09/2023	Fraсте Sonic CRS XL 140	T2-101	Pad	Robert Boomer / John Adam	Lawrence Ahukannah	
2.70	8.70	RC	26/09/2023	26/09/2023	Fraсте Sonic CRS XL 140			Robert Boomer / John Adam	Lawrence Ahukannah	
8.70	10.20	SNC	27/09/2023	27/09/2023	Fraсте Sonic CRS XL 140	Sw	HD	Robert Boomer / John Adam	Lawrence Ahukannah	
10.20	20.00	RC	27/09/2023	27/09/2023	Fraсте Sonic CRS XL 140	T2-101	Pcd	Robert Boomer / John Adam	Lawrence Ahukannah	

Boring-Drilling Progress						Hole Diameter by Depth			Casing Diameter by Depth		
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
21/09/2023	07:30	0.00	0.00	0.00	Start of shift	16.20	185		16.20	185	
21/09/2023	17:30	1.20	1.20		End of shift	20.00	101				
26/09/2023	10:00	1.20	1.20		Start of shift						
26/09/2023	17:30	8.70	8.70	1.80	End of shift						
27/09/2023	07:30	8.70	8.70	6.20	Start of shift						
27/09/2023	17:30	20.00	16.20	2.90	End of shift						
28/09/2023	07:30	20.00	16.20	3.90	Start of shift						
28/09/2023	17:30	20.00	16.20	2.90	Hole complete						

Depth Related Remarks						Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks				From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic								1.20	2.70		None	
2.70	4.20	Rotary								2.70	4.20		Water	Yellow
4.20	5.70	Rotary. No recovery. Try Sonic.								4.20	5.70		Water	Yellow
5.70	7.20	Rotary. No recovery. Try Sonic.								5.70	7.20		Water	Yellow
7.20	8.70	Rotary. No recovery. Try Sonic.								7.20	8.70		Water	Yellow
8.70	10.20	Sonic								8.70	10.20		None	
10.20	11.70	Rotary. No recovery. Try sonic.								10.20	11.70		None	Yellow
11.70	13.20	Rotary. No recovery. Try sonic.								11.70	13.20		Water	Yellow
13.20	14.70	Rotary. No recovery. Try sonic.								13.20	14.70		Water	Yellow
14.70	15.70	Rotary. No recovery. Try sonic.								14.70	15.70		Water	Yellow

Water Strikes						Monitoring Installation Pipe Work								Backfill Details			
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
27/09/2023						Drilling with water - no strike recorded								0.00	0.25	905	Arisings
														0.25	14.90	903	Bentonite
														14.90	20.00	905	Arisings Cave in

Standard Penetration Test Results																			
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=19	1.20	Dry	0	5	75	4	75	4	75	4	75	5	75	6	75	T820-799	81
2.70	S	50 / 0	2.70	Dry	0	25	0											T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE INFORMATION SHEET

Borehole No
BH09
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381706.17 mE 847627.19 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	146.35 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	21/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	28/09/2023			Final Depth:	20.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress						Hole Diameter by Depth			Casing Diameter by Depth		
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						16.20	185		16.20	185	
						20.00	101				

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
15.70	16.20	Rotary. No recovery. Try sonic.					14.70	16.20			
16.20	17.70						15.70	16.20		Water	Yellow
17.70	18.70						16.20	17.70		Water	Yellow
18.70	19.20						17.70	18.70		Water	Yellow
19.20	20.00						18.70	19.20		Water	Yellow

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
27/09/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																				
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%	

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE LOG

Borehole No:
BH10
Sheet 1 of 2

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 27/09/2023
Date Completed: 28/09/2023

Survey Grid System: OSGB
Co-ordinates: 381930.05 mE
847691.82 mN
Ground Level: 133.31 mOD
Orientation: - - deg.
Inclination: 90 deg.

Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.30	133.01												
Dark brown silty sandy fine to coarse GRAVEL with a high cobble and low boulder content. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Cobbles are angular to subangular of sandstone (<80mm). Boulder is angular to subangular of sandstone (<280mm). [Till]		0.60	132.41	0.50 - 0.60	B-1										
Possible weathered yellowish brown coarse grained PSAMMITE. Recovered as gravelly fine to coarse sand. [Macduff Formation]		0.90		1.05	EW										
		1.40		0.90 - 1.90	L-3										
		1.90		0.90 - 1.90	WS	86	100								
		2.30		1.90 - 2.13	D-4				S	50 / 80					
		2.30	131.01	1.90 - 2.20	D-5										
Moderately weak to medium strong thinly to thickly laminated yellowish brown medium grained PSAMMITE. Slightly weathered with grey and orange staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		2.30		2.20 - 2.30	WS	86	100								
		2.30		2.20 - 2.30	WS	86	100								
		2.00		2.30 - 3.30	C										
		2.00		2.30 - 3.30	RC	86									
		2.00		3.30 - 4.30	RC	86									
		2.00	129.01	3.30 - 4.30	RC	86									
Weak to moderately weak thinly to thickly laminated yellowish brown SEMI-PELITE with frequent clay smearing along surfaces. Highly weathered with reddish brown and black discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 70 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough with clay infill (1-3mm). [Macduff Formation]		4.30		4.30 - 5.30	RC	86									
		4.30		4.30 - 5.30	RC	86									
		2.00		5.30 - 6.30	C										
		2.00		5.30 - 6.30	RC	86									
		2.00	127.01	5.30 - 6.30	C										
		2.00		5.30 - 6.30	RC	86									
		2.00		6.30 - 7.30	RC	86									
		2.00	125.01	6.30 - 7.30	RC	86									
Weak to moderately weak thinly to thickly laminated yellowish brown SEMI-PELITE with occasional bands of medium grained sandstone (<50mm) and frequent clay smearing along surfaces. Moderately weathered with reddish brown and black discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough with clay infill (>1mm). [Macduff Formation]		6.30		7.30 - 8.80	C										
		6.30		7.30 - 8.80	RC	86									
		2.50		7.30 - 8.80	C										
		2.50	125.01	7.30 - 8.80	RC	86									
		2.50		8.80 - 10.30	C										
		2.50		8.80 - 10.30	RC	86									
		2.50	125.01	8.80 - 10.30	RC	86									

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH10
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381930.05 mE 847691.82 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	133.31 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	27/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	28/09/2023			Print Date:	15/02/2024
				Final Depth:	15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Weak to moderately weak weathered SEMI-PELITE. Recovered as non intact of angular to subangular fine to medium gravel and cobbles and pockets of sandy silty clay (<40mm). [Macduff Formation]															
Moderately weak to medium strong thinly to thickly laminated orangish grey medium grained PSAMMITE with occasional lenses of quartz. Moderately weathered with reddish brown and orange staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 60 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough, clean or with occasional infill of orange sandy clay (1-4mm). [Macduff Formation]		10.80	122.51	10.30 - 11.80	RC	86						100 52 18	[10]		
11.00 - 11.80m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone. 12.10 - 13.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.		(2.20)		11.80 - 13.30	RC	86						100 0 0	[NI]		
Weak to moderately weak weathered SEMI-PELITE. Recovered as non intact of angular to subangular fine to medium gravel and pockets of sandy silty clay (<40mm). [Macduff Formation]			120.31	13.30	C								[NI]		
		(1.00)											[NI]		
Moderately weak to medium strong thinly to thickly laminated grey medium grained PSAMMITE. Slightly weathered with black staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 70 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		14.00	119.31	13.30 - 14.80	RC	86						100 16 6	[NI]		
		(1.00)											[NI]		
14.33 - 15.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone. Borehole Terminated at 15.00m		15.00	118.31	14.80 - 15.00	RC	86						100 0 0			

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH10
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381930.05 mE 847691.82 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	133.31 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	27/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	28/09/2023			Final Depth:	15.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.90	IP	27/09/2023	27/09/2023	Insulated digging tools			Chris Coyle / Chris Jess		
0.90	2.30	DS	27/09/2023	27/09/2023	Fraste ML			Chris Coyle / Chris Jess	Lawrence Ahukannah	
2.30	15.00	RC	27/09/2023	28/09/2023	Fraste ML	T2-101	Good	Chris Coyle / Chris Jess	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
27/09/2023	07:30	10.30	2.30	2.30	Start of shift	10.30	152		2.30		
27/09/2023	10:00	0.00	0.00	0.00	Dry	15.00			2.30	152	
27/09/2023	14:15	15.00	2.30	2.30	Hole complete						
27/09/2023	17:00	10.30	2.30	2.30	End of shift						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.30	15.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.30	3.30	100 - 100	Water	
								3.30	4.30	100 - 100	Water	
								4.30	5.30	100 - 100	Water	
								5.30	6.30	100 - 100	Water	
								6.30	7.30	100 - 100	Water	Brown
								7.30	8.80	100 - 100	Water	
								8.80	10.30	100 - 100	Water	Brown
								10.30	11.80	100 - 100	Water	Brown
								11.80	13.30	100 - 100	Water	Brownish
								13.30	14.80	100 - 100	Water	Brownish

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
28/09/2023						Drilling with water - no strike recorded		1	0.00	4.30	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	4.30	7.30	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	4.30	903	Bentonite
														4.30	7.30	902	Gravel
														7.30	15.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.90	S	50 / 80	1.90	Dry	0	12	75	12	75	30	75	20	5					T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH10
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381930.05 mE 847691.82 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	133.31 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	27/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	28/09/2023			Final Depth:	15.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress						Hole Diameter by Depth			Casing Diameter by Depth		
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						10.30	152		2.30	152	
						15.00			2.30		

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details					
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								14.80	15.00	100 - 100	Water	Brownish

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
28/09/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																				
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%	

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE LOG

Borehole No:
BH11
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381800.86 mE 847562.29 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	140.29 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	30/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	01/10/2023			Print Date:	15/02/2024
				Final Depth:	15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [FI]	Water	Well/ Backfill		
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units	
Grass over soft dark brown sandy CLAY. Sand is fine to medium. [Topsoil]		(0.40)	139.89													
Soft to firm yellowish orange brown gravelly sandy CLAY with numerous cobbles. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of psammite. Cobbles are subangular to subrounded of psammite (<110mm). [Till]		(0.80)	139.09	0.40 - 1.30	L-1		100									
Very weak to weak orangish brown and red mottled medium grained PSAMMITE highly weathered indicated by significant loss in strength. Recovered non-intact. as subangular cobbles of psammite (<120mm) with frequent subangular to subrounded fine to coarse gravel of psammite. [Macduff Formation]		(1.40)	137.69	1.40 - 1.85	D-2				S	N=48						
				1.40 - 1.85												
Very weak to weak orangish grey SEMI-PELITE. Highly weathered indicated by loss in strength and local disintegration. Recovered as angular to subangular cobble sized (<100mm) of semi-pelite with numerous subangular to subrounded fine to coarse gravel. [Macduff Formation]		(4.20)	133.49	2.00 - 3.00	RC	84					60 7 0	[NI]				
				3.00 - 4.50	RC	84								[NI]		
				4.50 - 6.00	RC	84							100 12 0	[NI]		
				6.00 - 7.50	RC	84							100 42 17	[8]		
Assumed zone of no recovery.		(0.70)	132.79	6.00 - 7.50	RC	84					53 18 13	[NI]				
				7.50 - 9.00	RC	84								[7]		
Weak to medium strong yellowish light brown and light grey medium grained PSAMMITE moderately weathered indicated by significant loss in strength, locally complete disintegration and dark brownish orange staining. Recovered as non-intact. Recovered as subangular cobble sized (<190mm) of psammite with frequent subangular to subrounded fine to coarse gravel sized of psammite. [Macduff Formation]			132.79	7.50 - 9.00	RC	84					100 15 8	[NI]				
				9.00 - 10.50	RC	84							86 10 0	[NI]		

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE LOG

Borehole No:
BH11
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381800.86 mE 847562.29 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	140.29 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	30/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	01/10/2023			Print Date:	15/02/2024
				Final Depth:	15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Weak to medium strong yellowish light brown and light grey medium grained PSAMMITE moderately weathered indicated by significant loss in strength, locally complete disintegration and dark brownish orange staining. Recovered as non-intact. Recovered as subangular cobble sized (<190mm) of psammite with frequent subangular to subrounded fine to coarse gravel sized of psammite. [Macduff Formation] <i>10.00 - 10.30m : Weak grey fine grained siltstone moderately weathered indicated by loss in strength.</i> <i>10.30 - 10.50m : Assumed zone of no recovery</i> <i>10.70 - 12.00m : Assumed zone of no recovery</i> <i>12.70 - 13.50m : Assumed zone of no recovery</i> <i>13.80 - 14.40m : Assumed zone of no recovery</i>														
			10.50 - 12.00		RC	84						13 8 8	[NR]	
		(7.50)	12.00 - 12.75		RC	84						80 0 0	[NI]	
			12.75 - 13.50		RC	84						0 0 0	[NR]	
			13.50 - 14.25		RC	84						60 0 0	[NI]	
		14.25 - 15.00		RC	84						80 0 0	[NI]		
Borehole Terminated at 15.00m		15.00	125.29											

Stratum depths measured along borehole axis.
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 Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
 Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH11
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381800.86 mE 847562.29 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	140.29 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	30/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	01/10/2023			Final Depth:	15.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.40	IP	30/09/2023	30/09/2023	Insulated digging tools			James McFarlane / David Nayles		
0.40	2.00	DS	30/09/2023	30/09/2023	Frastr ML			James McFarlane / David Nayles	Mark Whyte	
2.00	6.00	RC	30/09/2023	30/09/2023	Frastr ML	T2-101	PCD	James McFarlane / David Nayles	Mark Whyte	
6.00	15.00	RC	01/10/2023	01/10/2023	Frastr ML	T2-101	PCD	James McFarlane / David Nayles	Mark Whyte	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
30/09/2023	11:00	0.00	0.00		Start of shift	2.00	125		2.00	125	
30/09/2023	16:30	6.00	2.00	3.10	End of shift	15.00	101		2.00	101	
01/10/2023	07:30	6.00	2.00	4.70	Start of shift						
01/10/2023	17:00	15.00	2.00	2.90	Hole complete						
02/10/2023	07:30	6.00	2.00		Start of shift						
02/10/2023	17:00	15.00	2.00		Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.00	6.00	1500	
6.00	15.00	4000	

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.00	3.00		Water	Yellow
								3.00	4.50		Water	Yellow
								4.50	6.00		Water	Yellow
								6.00	7.50		Water	Grey
								7.50	9.00		Water	Yellow/ gray
								9.00	10.50		Water	Grey
								10.50	12.00		Water	Yellow
								12.00	12.75		Water	Yellow
								12.00	13.50			
								12.75	13.50		Water	Yellow

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
01/10/2023						Drilling with water - no strike recorded								0.00	0.25	905	Arisings
														0.25	15.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.40	S	N=48	1.00	Dry	0	7	75	8	75	9	75	11	75	13	75	15	75	T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH11
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381800.86 mE 847562.29 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	140.29 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	30/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	01/10/2023			Final Depth:	15.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress					Hole Diameter by Depth				Casing Diameter by Depth			
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks	
						2.00	125		2.00	125		
						15.00	101		2.00	101		

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								13.50	14.25	Water	Yellow
								14.25	15.00	Water	Yellow
								13.50	15.00		

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
01/10/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																			
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE LOG

Borehole No:
BH12
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381776.64 mE 847419.37 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	139.91 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	02/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	03/10/2023			Print Date:	15/02/2024
				Final Depth:	11.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium . [Topsoil]		0.40	139.51	0.50	B-1										
Orangish brown very silty very gravelly fine to coarse SAND with a low cobble content. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Cobbles are angular to subangular of sandstone (<80mm). [Till]		0.80	138.71	1.00	D-2 B-3 D-4										
Orangish brown PSAMMITE. Recovered as gravelly fine and medium sand. [Macduff Formation]		0.80	137.91	1.20 - 1.90	L-5		100								
Assessed zone of no recovery.				1.90 - 2.00	D-6				S	50 / 70					
				2.00 - 3.00	RC	84					0 0 0				
				3.00 - 3.10	D-7				S	50 / 40					
				3.00 - 3.75	RC	84					0 0 0				
Moderately weak to medium strong weathered PSAMMITE. Recovered as non intact cores of angular to subangular fine and medium gravel of psammite with occasional pockets of clayey sand. [Macduff Formation]			136.16	3.75 - 4.50	RC	84					100 0 0				
				4.50 - 5.25	RC	84					80 0 0				
				5.25 - 6.00	RC	84					66 0 0				
Moderately weak to medium strong thinly to thickly foliated orangish brown mottled grey micaceous medium grained PSAMMITE with lenses of quartz and feldspar. Moderately weathered with orange, reddish brown, yellow and black discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 60 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough, with infill of yellow sand and clay (<1mm) and occasionally clean. 2) 0 to 30 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]			133.91	6.00 - 7.50	C RC	84					100 83 0	[7]			
				6.00 - 7.50											
Moderately weak to medium strong, thinly to thickly foliated greyish brown micaceous medium grained PSAMMITE with lenses of quartz, porphyroblasts of feldspar and occasional pockets of brown clayey sand (<40mm). Moderately weathered with yellow and black staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 80 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough with infill of yellow sand and clay (<1mm) and occasionally clean. 2) 0 to 15 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]			132.41	7.50 - 8.00	RC	84					100 60 0	[2]			
				8.00 - 9.50	RC	84					83 33 13	[6]			
7.50 - 7.67m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite. 8.00 - 8.75m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite and pockets of clayey sand. 9.50 - 10.45m : Assessed zone of no recovery.															

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH12
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381776.64 mE 847419.37 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	139.91 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	02/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	03/10/2023			Print Date:	15/02/2024
				Final Depth:	11.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Moderately weak to medium strong, thinly to thickly foliated greyish brown micaceous medium grained PSAMMITE with lenses of quartz, porphyroblasts of feldspar and occasional pockets of brown clayey sand (<40mm). Moderately weathered with yellow and black staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 80 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough with infill of yellow sand and clay (<1mm) and occasionally clean. 2) 0 to 15 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation] 10.45 - 11.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of psammite. Borehole Terminated at 11.00m		9.50 - 11.00	128.91	RC	84					36 0 0				

Stratum depths measured along borehole axis.
 Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
 Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
 Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH12
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381776.64 mE 847419.37 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	139.91 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	02/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	03/10/2023			Final Depth:	11.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	02/10/2023	02/10/2023	Insulated digging tools			James McFarlane / David Nayles		
1.20	2.00	DS	02/10/2023	02/10/2023	Fraсте ML	U86		James McFarlane / David Nayles	Lawrence Ahukannah	
2.00	11.00	RC	02/10/2023	03/10/2023	Fraсте ML	T2-101	PCD /Impreg	James McFarlane / David Nayles	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
02/10/2023	07:30	0.00	0.00		Start of shift	6.00	125		6.00	101	
02/10/2023	17:00	8.00	6.00	4.20	End of shift	11.00	101		6.00	125	
03/10/2023	07:30	8.00	6.00	4.90	Start of shift						
03/10/2023	17:00	11.00	6.00	2.60	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.00	8.00	2000	
8.00	11.00	1500	

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								2.00	3.00	Water	Yellow
								3.00	3.75	Water	Yellow
								3.75	4.50	Water	Yellow
								4.50	5.25	Water	Yellow
								5.25	6.00	Water	Grey
								6.00	7.50	Water	Grey
								7.50	8.00	Water	Grey
								8.00	9.50	Water	Grey
								9.50	11.00	Water	Grey

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
03/10/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	11.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.90	S	50 / 70	1.90	Dry	0	25	30			50	70							T820-792	70
3.00	S	50 / 40	2.00	1.50	0	25	60			50	40							T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH13
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381721.52 mE 847323.25 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	135.75 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	02/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	03/09/2023			Print Date:	15/02/2024
				Final Depth:	15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over dark brown sandy silty CLAY. Sand is fine to medium. [Topsoil]		(0.30)	135.45	0.30	B-2									
Very soft yellowish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine and medium. [Till]		(0.90)		0.30	D-1									
Extremely weak to very weak thinly to thickly bedded greenish grey PELITE. Moderately weathered with frequent brown staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures extremely closely spaced, planar to undulating rough on a small scale and clean. [Macduff Formation] <i>1.20 - 2.40m : Recovered as non intact cores of yellowish brown angular to subangular, fine to medium gravels of mudstone .</i> <i>2.65 - 2.70m : Recovered as non intact cores of yellowish brown sandy angular to subangular fine to medium gravels of mudstone.</i>		(1.20)	134.55	1.00	B-4									
		(1.50)		1.00	D-3									
		(1.20)		1.20	D-5				S	N=38				
		(1.50)		1.20 - 1.65							99			
		(1.50)		1.20 - 2.70	RC	95					-			
		(1.50)		2.70	D-6				S	50 / 0				
		(1.50)	133.05	2.70 - 2.78										
Extremely weak to very weak thinly to thickly bedded greenish grey becoming yellowish brown PELITE with occasional bands of moderately weak semi-pelite (<20mm). Moderately weathered with frequent reddish brown discolouration on fracture surfaces (1-3mm penetration). Discontinuities: 1) 80 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough with infill of grey clay (<1mm) and clean. [Macduff Formation] <i>2.82 - 3.93m : Recovered as non intact cores of yellowish brown angular to subangular fine to medium gravels of mudstone.</i>		(1.50)		2.70 - 4.20	RC	95					100			
		(1.50)		4.20	D-7				S	50 / 155				
		(1.50)	131.55	4.20 - 4.50										
		(1.50)		4.20 - 5.70	RC	87					100			
Moderately weak to medium strong thinly to thickly foliated greenish grey PELITE with porphyroblasts of quartz and feldspar. Slightly weathered with reddish brown and orange discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 0 to 15 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough with infill of greenish grey clay <1mm and clean. [Macduff Formation] <i>4.20 - 5.10m : Recovered as non intact cores of greenish grey angular to subangular fine to medium gravels of pelite.</i>		(1.50)		5.70	RC	87					100		[NI]	
		(2.00)		5.70 - 7.20							0			
		(2.00)		7.20							0			
Moderately weak to medium strong PELITE. Recovered as non intact of angular to subangular fine to medium gravel and cobbles of pelite. [Macduff Formation]		(2.00)		7.20 - 8.70	RC	87					40		[NR]	
Assessed zone of core loss.		(0.90)	128.05								0			
		(0.90)		8.70							0			
Moderately weak to medium strong PELITE recovered non intact as angular to subangular gravel and cobbles of pelite. [Macduff Formation]		(0.90)		8.70							0		[NR]	
		(0.90)		8.70							0		[NI]	
Moderately weak to medium strong thinly to thickly foliated greenish grey fine grained PELITE with porphyroblasts of feldspar and occasional lenses of quartz (<3mm). Slightly weathered with frequent black, brown and orange discolouration on fracture surfaces (<5mm penetration). Discontinuities: 1) 45 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		(1.50)	127.15	8.70 - 10.20	C	87					100		[NI]	
		(1.50)		8.70 - 10.20	RC						53		[10]	
		(1.50)	127.05								43			

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE LOG

Borehole No:
BH13
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381721.52 mE 847323.25 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	135.75 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	02/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	03/09/2023			Print Date:	15/02/2024
				Final Depth:	15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
<p>Moderately weak to medium strong thinly to thickly foliated greenish grey fine grained PELITE with porphyroblasts of feldspar and occasional lenses of quartz (<3mm). Slightly weathered with frequent black, brown and orange discolouration on fracture surfaces (<5mm penetration). Discontinuities: 1) 45 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]</p> <p>Moderately weak to medium strong thickly to narrowly foliated greenish grey fine to medium grained PELITE with frequent lenses of quartz (<3mm). Moderately weathered with orange, black, brown and grey staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 0 to 30 degrees cross core fractures extremely closely to very closely spaced planar to undulating rough and clean. 2) 60 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough on a medium scale and clean. [Macduff Formation]</p> <p>10.20 - 10.30m : Recovered as non intact cores of greenish grey angular to subangular fine to medium gravels of pelite.</p> <p>10.44 - 11.10m : Recovered as non intact cores of greenish grey angular to subangular, fine to medium gravels of pelite.</p> <p>11.42 - 11.70m : Recovered as non intact cores of greenish grey angular to subangular cobbles of pelite.</p> <p>12.03 - 13.40m : Recovered as non intact cores of greenish grey angular to subangular cobbles and gravels of pelite.</p> <p>14.20 - 14.70m : Recovered as non intact cores of greenish grey angular to subangular, fine to medium gravels and cobbles of pelite.</p> <p>14.70 - 15.00m : No Recovery</p>		10.20	125.55											
		10.20 - 11.70	RC	87						100 19 6	[NI]			
		11.70 - 13.20	RC	87						100 22 6	[NI]			
		13.20 - 14.70	RC	87						100 44 0	[NI]			
		14.70 - 15.00	RC	87						0 0 0	[NR]			
Borehole Terminated at 15.00m														

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH13
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381721.52 mE 847323.25 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	135.75 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	02/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	03/09/2023			Final Depth:	15.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.30	IP	02/09/2023	02/09/2023	Insulated digging tools			Jim McFarlane / Robert Boomer		
0.30	4.20	SNC	02/09/2023	02/09/2023	Frastr Sonic CRS XL 140	SW	HD	Jim McFarlane / Robert Boomer		
4.20	15.00	RC	02/09/2023	02/09/2023	Frastr Sonic CRS XL 140	T2-101		Jim McFarlane / Robert Boomer		

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks
02/09/2023	07:30	0.00	0.00		Start of shift
02/09/2023	17:30	15.00	4.20	8.20	End of shift
03/09/2023	07:30	0.00	0.00		Start of shift
03/09/2023	17:30	15.00	4.20	8.20	Hole complete

Hole Diameter by Depth

Depth (m)	Dia. (mm)	Remarks

Casing Diameter by Depth

Depth (m)	Dia. (mm)	Remarks

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
1.20	15.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks
1.20	2.70	Sonic
2.70	4.20	Sonic
4.20	5.70	Rotary
5.70	7.20	Rotary
7.20	8.70	Rotary
8.70	10.20	Rotary
10.20	11.70	Rotary
11.70	13.20	Rotary
13.20	14.70	Rotary
14.70	15.00	Rotary (Core loss)

Chiselling / Hard Boring Details

From (m)	To (m)	Duration (hh:mm)	Tool

Drilling Flush Details

From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70		None	
2.70	4.20		None	
4.20	5.70		Water	White
5.70	7.20		Water	White
7.20	8.70		Water	White
8.70	10.20		Water	White
10.20	11.70		Water	White
11.70	13.20		Water	White
13.20	14.70		Water	White
14.70	15.00		Water	White

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks
02/09/2023						Drilling with water - no strike recorded

Monitoring Installation Pipe Work

Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks

Backfill Details

From (m)	To (m)	Legend	Description
0.00	0.25	905	Arisings
0.25	15.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=38	1.20	Dry	0	8	75	8	75	10	75	8	75	10	75	10	75	T820-799	81
2.70	S	50 / 0	2.70	1.80	0	23	75	2	0	50	0	33	75	7	5	10	75	T820-799	81
4.20	S	50 / 155	4.20	0.80	0	10	75	10	75	10	75	33	75	7	5	10	75	T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH14
Sheet 1 of 2

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 07/09/2023
Date Completed: 08/09/2023

Survey Grid System: OSGB
Co-ordinates: 381644.46 mE
847186.30 mN
Ground Level: 141.92 mOD
Orientation: - - deg.
Inclination: 90 deg.

Hole Type: SNC+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 15.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is angular to subangular fine to coarse of siltstone. [Topsoil]	(0.40)	0.20 - 0.40	141.52	0.20 - 0.40	B-2 D-1										
Yellowish grey gravelly CLAY. Gravel is angular to subangular fine to medium of pelite. (Possible residual). [Macduff Formation]	(0.80)	0.50 - 1.00		0.50 - 1.00	B-4 D-3										
Extremely weak to very weak yellowish brown PELITE. Recovered as soft slightly gravelly clay. [Macduff Formation]	1.20	1.20	140.72	1.20 - 1.65	D-5				S	N=30					
		0.50 - 2.70			RC	9					100 - 100 0 0				
	(1.50)	1.20 - 2.70		1.20 - 2.70	B-2 D-1 RC		82								
Weak locally very weak greenish grey mottled black PELITE. moderately weathered locally highly weathered, recovered as non intact cores of angular to subangular gravel and cobbles of pelite. [Macduff Formation]	2.70	2.70	139.22	2.70 - 3.00	D-6				S	50 / 150					
		2.70 - 4.20			RC	82					100 0 0	[NI]			
		4.20 - 5.70			RC	82					100 0 0	[NI]			
	(7.50)	5.70 - 7.20			RC	82					100 0 0	[NI]			
		7.20 - 8.70			RC	82					100 0 0	[NI]			
	8.70 - 10.20			RC	82						100 0 0	[NI]			

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH14
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381644.46 mE 847186.30 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	141.92 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	07/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	08/09/2023			Print Date:	15/02/2024
				Final Depth:	15.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Weak locally very weak greenish grey mottled black PELITE. moderately weathered locally highly weathered, recovered as non intact cores of angular to subangular gravel and cobbles of pelite. [Macduff Formation]		10.20	131.72											
Weak to moderately weak locally very weak thinly to very thinly foliated greenish grey PELITE. Slightly weathered with frequent reddish brown, orange and grey discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough with infill of yellow clay (<1mm) and occasionally clean. [Macduff Formation]	(1.50)	10.20 - 11.70	130.22	RC	82						93 44 26	[4]		
10.60 - 10.93m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 11.09 - 11.16m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 11.30 - 11.70m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.		11.70 - 13.20		RC	82						73 0 0	[NI]		
Weak to moderately weak greenish grey PELITE. Moderately weak recovered as non intact cores of angular to subangular gravel and cobbles of pelite. [Macduff Formation]	(3.50)	13.20 - 14.70		RC	82						100 0 0	[NI]		
12.80 - 13.20m : Assessed zone of core loss		14.70 - 15.20		RC	82						100 0 0	[NI]		
Borehole Terminated at 15.20m		15.20	126.72											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH14
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381644.46 mE 847186.30 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	141.92 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	07/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	08/09/2023			Final Depth:	15.20m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.50	IP	07/09/2023	07/09/2023	Insulated digging tools			Robert Boomer / Jim McFarlane		
0.50	2.70	SNC	07/09/2023	07/09/2023	Frastr Sonic CRS XL 140	Sw	Hd	Robert Boomer / Jim McFarlane	Lawrence Ahukannah	
2.70	15.20	RC	07/09/2023	07/09/2023	Frastr Sonic CRS XL 140	T2-101	Ok	Robert Boomer / Jim McFarlane	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
07/09/2023	07:30	0.00	0.00		Start of shift	2.70	185		2.70	185	
07/09/2023	17:30	15.20	2.70	8.00	End of shift	15.20	101				
08/09/2023	07:30	15.20	2.70	3.10	Start of shift						
08/09/2023	17:30	15.20	2.70	3.10	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
1.20	15.20		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								1.20	2.70		None	
								2.70	4.20		Water	Yellow
								4.20	5.70		Water	Yellow
								5.70	7.20		Water	Yellow
								7.20	8.70		Water	Yellow
								8.70	10.20		Water	Yellow
								10.20	11.70		Water	Yellow
								11.70	13.20		Water	Yellow
								13.20	14.70		Water	Yellow
								14.70	15.20		Water	Yellow

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
07/09/2023						Drilling with water - no strike recorded								0.00	0.25	905	Arisings
														0.25	15.20	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=30	1.20	Dry	0	5	75	5	75	5	75	5	75	10	75	10	75	T820-799	81
2.70	S	50 / 150	2.70	0.90	0	10	75	10	75	24	75	22	75	4	0			T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH15
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381945.29 mE 847567.61 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	133.89 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	28/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	30/09/2023			Print Date:	15/02/2024
				Final Depth:	15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.30	133.59											
Brown very silty sandy angular to subangular fine to coarse GRAVEL of sandstone and siltstone with a medium cobble and low boulder content. Sand is fine to coarse. Cobbles are angular to subangular of sandstone (<80mm). Boulders are angular to subangular of sandstone (<320mm). [Till]		0.55	133.34	0.50 0.50	B-1 D-2									
Possible completely weathered PELITE. Recovered as brown gravelly sandy clay. [Macduff Formation]		(1.45)		0.70 - 1.70 0.70 - 1.70	L-3 WS		100							
Moderately weak to medium strong, thinly to thickly foliated greenish grey micaceous SEMI-PELITE with occasional lenses of quartz and feldspar. Slightly weathered with reddish brown and brown discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 70 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		2.00	131.89	1.70 - 1.74 1.70 - 1.80	D-4				S	50 / 5				
2.00 - 2.25m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 2.00 - 4.00m : Frequent vertical fractures (80 to 90 degrees)				2.00 - 3.00	RC	86					100 43 25	[10]		
2.52 - 2.84m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 3.27 - 3.46m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 4.00 - 4.15m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				3.00 - 4.00	RC	86					100 75 27	[7]		
5.21 - 5.56m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite.				4.00 - 5.50	RC	86					100 80 52	[10]		
5.70 - 5.85m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				5.21 - 5.56								[N]		
6.45 - 6.54m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				5.50 - 7.00	RC	86					100 89 18	[7]		
8.00 - 8.40m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite.				7.00 - 8.50	RC	86					100 73 30	[5]		
9.65 - 10.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite.				8.50 - 10.00	RC	86					100 90 29	[10]		

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH15
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381945.29 mE 847567.61 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	133.89 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	28/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	30/09/2023			Print Date:	15/02/2024
				Final Depth:	15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Moderately weak to medium strong, thinly to thickly foliated greenish grey micaceous SEMI-PELITE with occasional lenses of quartz and feldspar. Slightly weathered with reddish brown and brown discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 70 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation] 10.26 - 10.38m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 10.86 - 11.08m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 11.77 - 11.87m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 12.49 - 12.68m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 12.80 - 12.91m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 13.56 - 13.76m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 14.00 - 15.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite.		10.00 - 11.50	RC	86							100 80 23	[8]		
		11.50 - 13.00	RC	86							100 45 0	[8]		
		13.00 - 14.50	RC	86							100 22 10	[9]		
		14.50 - 15.00	RC	86							100 0 0	[NI]		
		15.00			118.89									
Borehole Terminated at 15.00m														

Stratum depths measured along borehole axis.
 Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
 Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
 Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH15
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381945.29 mE 847567.61 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	133.89 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	28/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	30/09/2023			Final Depth:	15.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.70	IP	28/09/2023	28/09/2023	Insulated digging tools			David Nayles / C coyle		
0.70	2.00	DS	28/09/2023	28/09/2023	Fraste ML			David Nayles / C coyle	Lawrence Ahukannah	
2.00	15.00	RC	29/09/2023	30/09/2023	Fraste ML			David Nayles / C coyle	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
28/09/2023	14:15	0.00	0.00	Dry	Start of shift	2.00	152		2.00	101	
28/09/2023	17:00	2.00	2.00	Dry	End of shift	15.00	101		2.00	152	
29/09/2023	07:30	2.00	2.00		Start of shift						
29/09/2023	17:00	11.50	2.00	7.70	End of shift						
30/09/2023	07:30	11.50	2.00	10.50	Start of shift						
30/09/2023	11:00	15.00	2.00	11.20	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.00	15.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.00	3.00	100	Water	
								3.00	4.00	100	Water	
								4.00	5.50	100	Water	
								5.50	7.00	100	Water	
								7.00	8.50	100	Water	
								8.50	10.00	100	Water	
								10.00	11.50	100	Water	
								11.50	13.00	100	Water	
								13.00	14.50	100	Water	
								14.50	15.00	100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
30/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	15.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.70	S	50 / 5	0.00	Dry	0	25	30			50	5							T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH16
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381908.07 mE 847469.25 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	137.12 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	01/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	02/10/2023			Print Date:	15/02/2024
				Final Depth:	15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]	(0.60)														
Soft locally firm yellowish brown slightly sandy gravelly SILT. Gravel is angular to subangular fine to coarse of siltstone and sandstone. Sand is fine to coarse. [Till]	0.60 (1.05)		136.52	0.50 1.00 1.20 - 1.65	B-2 D-1 B-4 D-3 D-5				S	N=26					
Possible weathered yellowish brown PELITE. Recovered as clayey gravel. [Macduff Formation]	1.65 (1.05)		135.47	1.20 - 2.70	RC	95					99				
Moderately weak to medium strong thinly to thickly laminated greenish grey mottled orange medium grained PSAMMITE. Slightly weathered with orange and reddish brown staining on fracture surfaces (1-5mm penetration). Discontinuities 1) 60 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]	2.70 (6.00)		134.42	2.70 2.70 - 3.15 2.70 - 4.20	D-6 RC				S	N=32	100 16 6	[NI]			
2.70 - 2.95m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.															
3.15 - 3.43m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.															
3.58 - 4.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone with rare pocket of gravelly sandy clay (>300mm).				4.20 - 5.70	RC	95					100 16 0	[NI]			
5.70 - 6.03m : Recovered as non intact cores of angular to subangular, fine to medium gravels of sandstone.															
6.13 - 6.25m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of sandstone.															
6.44 - 6.78m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of sandstone.				5.70 - 7.20	RC	95					100 33 17	[NI]			
7.00 - 7.20m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of sandstone.												[10]			
				7.20 - 8.70	RC	95					100 0 0	[NI]			
Moderately weak to medium strong light grey mottled orange brown PELITE. Moderately weathered Recovered as angular fine to coarse gravel and cobbles of pelite with dark red staining on fracture surfaces.. [Macduff Formation]	8.70		128.42	8.70 - 10.20	RC	95					100 0 0	[NI]			

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE LOG

Borehole No:
BH16
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381908.07 mE 847469.25 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	137.12 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	01/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	02/10/2023			Print Date:	15/02/2024
				Final Depth:	15.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Moderately weak to medium strong light grey mottled orange brown PELITE. Moderately weathered Recovered as angular fine to coarse gravel and cobbles of pelite with dark red staining on fracture surfaces.. [Macduff Formation]				10.20 - 11.70	RC	95						100 0 0	[N]		
				(4.50)											
Moderately weak to medium strong thinly to thickly foliated greenish grey micaceous PELITE with occasional lenses of quartz and feldspar. Slightly weathered with orange, black and reddish brown discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 70 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 10 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation] <i>13.20 - 14.00m : Recovered as non intact cores of angular to subangular, fine to coarse gravels of pelite.</i> Borehole Terminated at 15.00m			123.92	11.70 - 13.20	RC	95						100 0 0	[N]		
				(1.80)											
				13.20											
			122.12	14.70 - 15.00	RC	95						100 100 100	[7]		
			15.00												

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH16
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381908.07 mE 847469.25 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	137.12 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	01/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	02/10/2023			Final Depth:	15.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.90	IP	01/10/2023	01/10/2023	Insulated digging tools			Robert Boomer / John Adam		
0.90	2.70	SNC	01/10/2023	01/10/2023	Frastrite Sonic CRS XL 140	Sw	HD	Robert Boomer / John Adam	Lawrence Ahukannah	
2.70	15.00	RC	01/10/2023	02/10/2023	Frastrite Sonic CRS XL 140	T2-101	Pad	Robert Boomer / John Adam	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
01/10/2023	07:30	0.00	0.00		Start of shift	2.70	185		2.70	185	
01/10/2023	16:00	8.70	2.70	0.70	End of shift	15.00	101				
02/10/2023	07:30	8.70	2.70	7.50	Start of shift						
02/10/2023	17:00	15.00	2.70	6.35	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.70	15.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic					1.20	2.70		None	
2.70	4.20	Rotary					2.70	4.20		Water	Yellow
4.20	5.70	Rotary					4.20	5.70		Water	Yellow
5.70	7.20	Rotary					5.70	7.20		Water	Yellow
7.20	8.70	Rotary					7.20	8.70		Water	Yellow
8.70	10.20	Rotary					8.70	10.20		Water	Yellow
10.20	11.70	Rotary					10.20	11.70		Water	Yellow
11.70	13.20	Rotary					11.70	13.20		Water	Yellow
13.20	14.70	Rotary					13.20	14.70		Water	Yellow
14.70	15.00	Rotary					14.70	15.00		Water	Yellow

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
02/10/2023						Drilling with water - no strike recorded		1	0.00	1.20	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	1.20	2.70	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	1.20	903	Bentonite
														1.20	2.70	902	Gravel
														2.70	15.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=26	1.20	Dry	0	4	75	5	75	5	75	7	75	6	75	8	75	T820-799	81
2.70	S	N=32	2.70	0.50	0	8	75	7	75	7	75	7	75	8	75	10	75	T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH17
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381841.45 mE 847342.69 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	136.39 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	29/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	01/10/2023			Print Date:	15/02/2024
				Final Depth:	15.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
<p>Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]</p> <p>Soft brown slightly sandy gravelly CLAY with a low cobble content. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Cobbles are angular to subangular of siltstone (<80mm). Sand is fine to coarse. [Till]</p> <p>Greenish grey becoming yellowish brown PELITE. Recovered as gravelly sandy clay. [Macduff Formation]</p> <p>2.70 - 4.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</p> <p>4.20 - 5.70m : Became yellowish brown weathered pelite recovered as sandy gravelly clay</p>		(0.30)	136.09	0.50	B-2										
		0.30		0.50	D-1										
		(0.90)	135.19	1.00	B-4										
		1.00		D-3											
		1.20		D-5											
		1.20 - 1.65		S	N=23										
				1.20 - 2.70	RC	95					99				
				2.70	D-6										
				2.70 - 3.15	S						N=19				
		(4.50)		2.70 - 4.20	RC	82					73	[NI]			
			4.20 - 5.70	RC	95					100					
<p>Moderately weak to medium strong thinly to thickly foliated greenish grey micaceous PELITE with occasional lenses of quartz. Moderately weathered with black, reddish brown and orange staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 60 degrees vertical parallel fractures, extremely closely to very closely spaced planar to undulating rough on a small scale and clean. 2) 0 to 15 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]</p> <p>5.70 - 6.03m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.</p> <p>6.24 - 6.60m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</p> <p>6.77 - 7.04m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</p> <p>7.08 - 7.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</p> <p>7.20 - 8.94m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</p> <p>8.94 - 9.94m : Assessed zone of no recovery</p> <p>9.70 - 10.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</p>		5.70	130.69	5.70 - 7.20	RC	82									
					7.20 - 8.70	RC	82					100	[NI]		
					8.70 - 10.20	RC	82					100	[NI]		
												100	[NI]		
												33	[NR]		
												16	[10]		

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH17
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381841.45 mE 847342.69 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	136.39 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	29/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	01/10/2023			Print Date:	15/02/2024
				Final Depth:	15.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Moderately weak to medium strong thinly to thickly foliated greenish grey micaceous PELITE with occasional lenses of quartz. Moderately weathered with black, reddish brown and orange staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 60 degrees vertical parallel fractures, extremely closely to very closely spaced planar to undulating rough on a small scale and clean. 2) 0 to 15 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation] <i>10.20 - 11.17m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</i> <i>11.36 - 11.57m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</i> <i>11.70 - 13.31m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</i> <i>13.60 - 14.21m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</i> <i>14.40 - 14.48m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.</i> <i>14.70 - 15.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.</i>		(9.50)	121.19	10.20 - 11.70	RC	82						100 21 9	[NI]		
				11.70 - 13.20	RC	82						73 0 0	[NI]		
				13.20 - 14.70	RC	82						93 42 0	[10]		
				14.70 - 15.20	RC	82						100 0 0	[NI]		
				Borehole Terminated at 15.20m											

Stratum depths measured along borehole axis.
 Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
 Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
 Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH17
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381841.45 mE 847342.69 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	136.39 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	29/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	01/10/2023			Final Depth:	15.20m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	29/09/2023	29/09/2023	Insulated digging tools	Sw	HD	Robert Boomer / John Adam	Lawrence Ahukannah	
1.20	2.70	SNC	29/09/2023	29/09/2023	Frastr Sonic CRS XL 140			Robert Boomer / John Adam	Lawrence Ahukannah	
2.70	15.20	RC	29/09/2023	30/09/2023	Frastr Sonic CRS XL 140	T2-101	Impreg	Robert Boomer / John Adam	Lawrence Ahukannah	
15.20	15.20	RC	01/10/2023	01/10/2023	Frastr Sonic CRS XL 140			Robert Boomer / John Adam		

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
29/09/2023	07:30	0.00	0.00		Start of shift	5.70	185		5.70	185	
29/09/2023	17:30	5.70	5.70	0.70	End of shift	15.20	101				
30/09/2023	07:30	5.70	5.70	4.60	Start of shift						
30/09/2023	17:30	15.20	5.70	3.80	End of shift						
01/10/2023	07:30	15.20	5.70	9.70	Start of shift						
01/10/2023	16:00	15.20	5.70	9.70	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.70	15.20		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic					1.20	2.70		None	
2.70	4.20	Rotary					2.70	4.20		Water	Yellow
4.20	5.70	Rotary. No recovery. Try sonic.					4.20	5.70		Water	Yellow
5.70	7.20	Rotary					5.70	7.20		Water	Yellow
7.20	8.70	Rotary					7.20	8.70		Water	Yellow
8.70	10.20	Rotary					8.70	10.20		Water	Yellow
10.20	11.70	Rotary					10.20	11.70		Water	Yellow
11.70	13.20	Rotary					11.70	13.20		Water	Yellow
13.20	14.70	Rotary					13.20	14.70		Water	Yellow
14.70	15.20	Rotary					14.70	15.20		Water	Yellow

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
30/09/2023						Drilling with water - no strike recorded								0.00	0.25	905	Arisings
															15.20	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=23	1.20	Dry	0	5	75	5	75	5	75	6	75	7	75	5	75	T820-799	81
2.70	S	N=19	2.70	0.90	0	4	75	4	75	4	75	5	75	5	75	5	75	T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH18
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381800.59 mE 847236.71 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	132.07 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	08/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	12/09/2023			Print Date:	15/02/2024
				Final Depth:	15.60m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Peaty TOPSOIL. (Drillers Description). [Topsoil]		(0.60)		0.50	B-1										
Firm to stiff brown slightly gravelly sandy SILT Sand is fine to coarse. Gravel is angular to subangular fine to coarse of pelite and psammite. [Till]		0.60	131.47	0.50	D-2										
				1.00	B-3										
				1.00	D-4										
				1.20	EW										
				1.20 - 1.65	D-1				S	N=27					
				1.20 - 1.50	D-5										
Extremely weak to very weak yellowish brown PELITE. Completely weathered, recovered as slightly gravelly sandy clay. [Macduff Formation]		(2.70)		1.50 - 2.00	B-2						86				
				1.20 - 2.70	RC	95					-				
				2.70 - 3.15											
				2.70 - 3.15	D-1				S	N=31					
Moderately weak to medium strong greenish grey PELITE. Moderately weathered. Recovered as gravel and cobbles of pelite. [Macduff Formation]				2.70 - 3.30	B-3										
		3.30	128.77	2.70 - 4.20	RC	95					100				
		(0.90)									0				
Moderately weak to medium strong greenish grey PELITE. Moderately weathered. Recovered as gravel and cobbles of pelite. [Macduff Formation]		4.20	127.87												
				4.20 - 5.70	RC	82					86		[NR]		
				4.20 - 5.70	RC	82					16		[NI]		
Moderately weak to medium strong narrowly foliated greenish grey micaceous PELITE with occasional porphyroblasts of quartz and feldspar (<20mm). Slightly weathered with black, brown and orange staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 70 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough with infill of orange clay (<1mm) or as clean. [Macduff Formation]		(3.00)		5.70	C										
				5.70 - 7.20	RC	82					100		[NI]		
Moderately weak to medium strong narrowly foliated greenish grey micaceous PELITE with occasional porphyroblasts of quartz and feldspar (<20mm). Slightly weathered with black, brown and orange staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 70 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough with infill of orange clay (<1mm) or as clean. [Macduff Formation]				7.20 - 8.70	RC	82					100		[9]		
											34				
											7				
Moderately weak to medium strong narrowly foliated greenish grey micaceous PELITE with occasional porphyroblasts of quartz and feldspar (<20mm). Slightly weathered with black, brown and orange staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 70 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough with infill of orange clay (<1mm) or as clean. [Macduff Formation]		(3.00)		8.70 - 10.20	RC	82					100		[NI]		
											43				
											22				

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH18
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381800.59 mE 847236.71 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	132.07 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	08/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	12/09/2023			Print Date:	15/02/2024
				Final Depth:	15.60m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/ [mins]	Test	Test Result				
<p>Moderately weak to medium strong narrowly foliated greenish grey micaceous PELITE with occasional porphyroblasts of quartz and feldspar (<20mm). Slightly weathered with black, brown and orange staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 70 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough with infill of orange clay (<1mm) or as clean. [Macduff Formation]</p> <p>Weak narrowly foliated greenish grey micaceous PELITE porphyroblasts of feldspar and quartz. Slightly weathered with brown, black and orange discolouration along fracture surfaces (1-5mm) penetration. Discontinuities: 1) 60 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]</p> <p>Weak to medium strong thickly to narrowly foliated greenish grey micaceous PELITE with porphyroblasts of feldspar and quartz. Slightly weathered with orange, brown and black staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 60 to 90 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough on a medium scale and clean. 2) 0 to 30 degrees extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]</p> <p>11.70 - 12.04m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 11.87 - 12.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 13.65 - 14.33m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 15.15 - 15.38m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.</p>		10.20	121.87											
	(1.50)	10.20 - 11.70		C							100			
			10.20 - 11.70		RC	82					75	[14]		
											36			
		11.70	120.37											
		11.70 - 13.20		C							100			
		11.70 - 13.20		RC	82					90	[11]			
										56				
		13.20 - 14.70		RC	82									
										100				
										46	[N]			
										17				
		14.70 - 15.60		C							99			
		14.70 - 15.60		RC	82					68	[10]			
										37				
Borehole Terminated at 15.60m		15.60	116.47											

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH18
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381800.59 mE	Checked By:	SR
Client:	SSEN-T	Ground Level:	847236.71 mN	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	08/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	12/09/2023			Final Depth:	15.60m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	08/09/2023	08/09/2023	Insulated digging tools			James McFarlane / Robert Boomer	Lawrence Ahukannah	
1.20	4.20	SNC	11/09/2023	11/09/2023	Frastr Sonic CRS XL 140			James McFarlane / Robert Boomer	Lawrence Ahukannah	
4.20	15.60	RC	11/09/2023	12/09/2023	Frastr Sonic CRS XL 140	T2-101	PCD	James McFarlane / Robert Boomer	Lawrence Ahukannah	

Boring-Drilling Progress					Hole Diameter by Depth				Casing Diameter by Depth			
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks	
08/09/2023	10:00	0.00	0.00		Start of shift	4.20	185		4.20	101		
08/09/2023	12:00	1.65	1.20	Dry	End of shift	15.60	101		4.20	185		
11/09/2023	10:30	1.65	0.00		Start of shift							
11/09/2023	17:00	10.20	4.20	5.80	End of shift							
12/09/2023	07:30	10.20	4.20	8.70	Start of shift							
12/09/2023	14:30	15.60	4.20	2.10	Hole complete							

Water Added Records				Remarks
From (m)	To (m)	Volume (litres)		
1.20	10.20	3000		Water added
10.20	15.60	3000		

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic					1.20	2.70		None	
2.70	4.20	Sonic					2.70	4.20		None	
4.20	5.70	Rotary					4.20	5.70		Water	Yellow
5.70	7.20	Rotary					5.70	7.20		Water	Yellow
7.20	8.70	Rotary					7.20	8.70		Water	Yellow
8.70	10.20	Rotary					8.70	10.20		Water	Yellow
							10.20	11.70		Water	Yellow
							11.70	13.20		Water	Yellow
							13.20	14.70		Water	Yellow
							14.70	15.60		Water	Yellow

Water Strikes					Monitoring Installation Pipe Work						Backfill Details						
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
11/09/2023						Drilling with water - no strike recorded		1	0.00	1.00	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	1.00	2.50	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	1.00	903	Bentonite
														1.00	2.50	902	Gravel
														2.50	15.60	903	Bentonite

Standard Penetration Test Results																			
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	N=27	1.20	Dry	0	2	75	3	75	5	75	6	75	7	75	9	75	T820799	81
2.70	S	N=31	2.70	0.90	0	3	75	4	75	5	75	5	75	7	75	14	75	T820799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE LOG

Borehole No:
BH19
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381907.74 mE 847110.07 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	129.63 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	12/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	13/09/2023			Print Date:	15/02/2024
				Final Depth:	15.10m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over soft dark brown slightly gravelly clayey SAND. Gravel is angular to subangular fine to coarse of mudstone. [Topsoil.]		0.50	129.13	0.50	B-2 D-1									
Extremely weak to very weak greenish grey PELITE. Highly weathered. Recovered as very silty very sandy angular to subangular fine to medium gravel of pelite. [Macduff Formation]		1.00 1.20 1.20 - 1.44		1.00 1.20 1.20 - 1.44	B-4 D-3 D-5				S	50 / 85				
		1.20 - 2.70		1.20 - 2.70	RC	95					99 -			
		2.70 2.70 - 2.86		2.70 2.70 - 2.86	D-6				S	50 / 75				
		2.70 - 4.20		2.70 - 4.20	RC	95					100 -			
Assessed zone of core loss.		4.20	125.43	4.20 - 4.28					S	50 / 75				
		4.20 - 5.70		4.20 - 5.70	RC	82					0 0 0	[NI]		
Extremely weak to very weak thinly to thickly laminated greenish grey SEMI-PELITE with bands of pelite (<120mm). Slightly weathered with occasional brown staining on fracture surfaces (1-3mm penetration). Discontinuities: 1) 60 to 90 degrees vertical parallel fractures extremely closely spaced planar to undulating rough and clean. [Macduff Formation] 6.45 - 7.20m : Recovered as non intact cores of angular to subanglar fine to medium gravels and cobbles of mudstone		5.70	123.93	5.70					S	50 / 0				
		5.70 - 7.20		5.70 - 7.20	RC	95					100 -			
Moderately weak to medium strong greenish grey PELITE. Recovered as angular to subangular fine to medium gravel of pelite. [Macduff Formation]		7.20	122.43	7.20 7.20 - 7.28	D-1				S	50 / 0			[NI]	
		7.20 - 8.20		7.20 - 8.20	RC	82					60 0 0	[NR]		
Moderately weak to medium strong thinly to thickly foliated greenish grey PELITE with frequent lenses of quartz and feldspar (<3mm). Slightly weathered with reddish brown, orange and black discolouration on fracture surfaces (1-3mm penetration). Discontinuities: 1) 60 to 90 degrees subvertical to vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough on a medium scale and clean. [Macduff Formation] 8.20 - 8.80m : Recovered as non intact cores of angular to subanglar cobbles and gravels of pelite. 8.97 - 9.30m : Recovered as non intact cores of angular to subanglar cobbles and gravels of pelite. 9.50 - 9.70m : Recovered as non intact cores of angular to subanglar, fine to medium gravels of pelite. 9.90 - 10.20m : Recovered as non intact cores of angular to subanglar, fine to medium gravels of pelite.		8.20	121.43	8.20 - 9.70	RC	82					93 18 0	[NI]		
		8.20 - 9.70		8.20 - 9.70	RC	82								

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE LOG

Borehole No:
BH19
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381907.74 mE 847110.07 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	129.63 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	12/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	13/09/2023			Print Date:	15/02/2024
				Final Depth:	15.10m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
<p>Moderately weak to medium strong thinly to thickly foliated greenish grey PELITE with frequent lenses of quartz and feldspar (<3mm). Slightly weathered with reddish brown, orange and black discolouration on fracture surfaces (1-3mm penetration). Discontinuities: 1) 60 to 90 degrees subvertical to vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough on a medium scale and clean. [Macduff Formation]</p> <p>10.29 - 10.50m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.</p> <p>10.77 - 11.04m : Recovered as non intact cores of angular to subangular cobbles and gravels of pelite.</p> <p>Moderately weak to medium strong light grey mottled orange brown and dark red PELITE. Highly fractured Recovered as angular to subangular gravel and cobbles of pelite. Evidence of very closely spaced bedding planar fractures and subvertical fractures all stained [Macduff Formation]</p>			117.93	9.70 - 11.20	RC	82						100 44 0	[NI]	
				11.20 - 12.70	RC	82					100 0 0	[NI]		
				(3.40) 12.70 - 14.20	RC	82					100 0 0	[NI]		
				14.20 - 15.10	RC	82					88 0 0	[NI]		
Borehole Terminated at 15.10m		15.10	114.53											

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH19
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	SNC+RC
Project No:	RGN.330G	Co-ordinates:	381907.74 mE 847110.07 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	129.63 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	12/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	13/09/2023			Final Depth:	15.10m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.50	IP	12/09/2023	12/09/2023	Insulated digging tools			Robert Boomer / Jim McFarlane		
0.50	7.20	SNC	12/09/2023	13/09/2023	Frastr Sonic CRS XL 140	Sw	He	Robert Boomer / Jim McFarlane	Lawrence Ahukannah	
7.20	15.10	RC	13/09/2023	13/09/2023	Frastr Sonic CRS XL 140	T2-101	Pcd	Robert Boomer / Jim McFarlane	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
12/09/2023	07:30	0.00	0.00		Start of shift	7.20	185		5.70	185	
12/09/2023	17:30	5.70	5.70	2.90	End of shift	15.10	101				
13/09/2023	07:30	5.70	5.70	4.00	Start of shift						
13/09/2023	17:30	15.10	7.20	3.10	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
1.20	15.10		Water added: Sonic + Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
1.20	2.70	Sonic					1.20	2.70		None	
2.70	4.20	Sonic					2.70	4.20		None	
4.20	5.70	Rotary: No recovery, attempt recovery with sonic.					4.20	5.70		Water	Yellow / grey
5.70	7.20	Sonic					5.70	7.20		None	
7.20	8.20	Rotary					7.20	8.20		Water	Grey
8.20	9.70	Rotary					8.20	9.70		Water	Grey
9.70	11.20	Rotary					9.70	11.20		Water	Grey
11.20	12.70	Rotary					11.20	12.70		Water	Grey
12.70	14.20	Rotary					12.70	14.20		Water	Grey
14.20	15.10	Rotary					14.20	15.10		Water	Grey

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
13/09/2023						Drilling with water - no strike recorded								0.00	0.25	905	Arisings
														0.25	13.30	903	Bentonite
														13.30	15.10	905	Arisings

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.20	S	50 / 85	1.20	Dry	0	8	75	10	75	31	75	19	10					T820-799	81
2.70	S	50 / 75	2.70	1.80	0	15	75	10	5	42	75	8	0					T820-799	81
4.20	S	50 / 75	4.20	3.20	0	25	0			39	75	11	0					T820-799	81
5.70	S	50 / 0	5.70	0.80	0	25	0			50	0							T820-799	81
7.20	S	50 / 0	7.20	3.10	0	20	75	5	0	50	0							T820-799	81

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH20
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381952.28 mE 847241.32 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	132.45 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	31/08/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	01/09/2023			Print Date:	15/02/2024
				Final Depth:	10.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
TOPSOIL. (Drillers Description).															
SAND and GRAVEL (Drillers Description). [MacDuff Formation]			132.25	0.50 - 0.60 0.50 - 0.60	B-1 D-2										
Greyish brown sandy silty angular to subrounded fine to coarse GRAVEL of siltstone. Sand is fine to coarse. (Possible residual Soil). [Macduff Formation]			131.25	1.00 - 1.10 1.00 - 1.10	B-3 D-4										
Weak to very weak thinly laminated (25 to 50 degrees) dark grey to bluish grey SEMIPELITE Frequent extremely closely spaced laminations and bands of pelite (1-200mm thick). Occasional bands of lower fissility pelite (30-50mm thick). Moderately locally highly weathered with loss of strength and penetrative orangish brown discolouration. Discontinuities are of 2no. sets: 1) 55 to 65 degrees, medium to widely spaced, undulating rough with orangish brown and purplish brown staining on surfaces. 2) 25 to 50 degrees following orientation of laminations, extremely closely to very closely spaced locally closely spaced, planar occasionally undulating smooth with orangish brown and purplish brown staining on surfaces. [Macduff Formation]			130.25	1.20 - 2.00 1.20 - 2.00	L-5 WS	86	100			S	50 / 80				
2.20 - 2.70m : Recovered predominantly non-intact as angular coarse gravel and cobbles.				2.20 - 2.95	RC	86						100 20 0	[NI]		
2.65 - 2.90m : Discontinuity 80-90 degrees, planar smooth with faint orangish brown staining on surface.				2.95 - 3.70	RC	86						100 33 0	[NI]		
3.20 - 3.70m : Recovered predominantly non-intact as angular coarse gravel and cobbles.				3.70 - 5.20	C							90 66 0	[18]		
4.90 - 5.10m : Recovered non-intact as angular gravel and cobbles.				3.70 - 5.20	RC	86							[16]		
5.10 - 5.20m : No recovery.													[NI]		
5.65 - 6.00m : Recovered non-intact as angular medium to coarse gravel and cobbles.													[NR]		
6.00 - 6.20m : No recovery.													[NI]		
8.60 - 8.90m : Medium strong.													[12]		
8.90 - 10.20m : Recovered predominantly non-intact as angular coarse gravel and cobbles.													[12]		
9.50 - 10.00m : Discontinuity 80-90 degrees, undulating rough with purplish brown staining on surface.													[16]		
Weak to very weak brownish grey to mottled purplish brown SEMI-PELITE. Frequent extremely close pelite laminations. Highly weathered with considerable loss of strength and penetrative purplish brown discolouration. Recovered non-intact as slightly sandy angular medium to coarse gravel and cobbles. Sand is fine to coarse. [Macduff Formation]			122.75	9.20 - 10.20	RC	86						100 25 0	[NI]		

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH20
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381952.28 mE 847241.32 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	132.45 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	31/08/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	01/09/2023			Print Date:	15/02/2024
				Final Depth:	10.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing								TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result	Units					
Weak to very weak brownish grey to mottled purplish brown SEMI-PELITE. Frequent extremely close pelite laminations. Highly weathered with considerable loss of strength and penetrative purplish brown discolouration. Recovered non-intact as slightly sandy angular medium to coarse gravel and cobbles. Sand is fine to coarse. [Macduff Formation] Borehole Terminated at 10.20m		10.20	122.25													

Stratum depths measured along borehole axis.
 Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
 Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
 Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH20
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381952.28 mE 847241.32 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	132.45 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	31/08/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	01/09/2023			Final Depth:	10.20m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	31/08/2023	31/08/2023	Insulated digging tools			Chris Coyle / Ian Wilson		
1.20	2.20	DS	31/08/2023	31/08/2023	Commachio 205	U86		Chris Coyle / Ian Wilson	James Donnelly	
2.20	10.20	RC	31/08/2023	01/09/2023	Commachio 205	T2-101	Impreg	Chris Coyle / Ian Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
31/08/2023	11:30	0.00	0.00	Dry	Start of shift	2.20	152		2.20	101	
31/08/2023	17:00	7.70	2.20	Dry	End of shift	10.20	101		2.20	152	
01/09/2023	07:30	7.70	2.20	7.60	Start of shift						
01/09/2023	11:15	10.20	2.20	7.70	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.20	10.20		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.20	2.95		Water	
								2.95	3.70		Water	Greyish
								3.70	5.20		Water	Greyish
								5.20	6.20		Water	
								6.20	7.70		Water	Greyish
								7.70	9.20	100	Water	
								9.20	10.20	100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
01/09/2023						Drilling with water - no strike recorded		1	0.00	0.50	50	PLAIN		0.00	0.20	909	Upstanding cover
								1	0.50	2.30	50	SLOTTED		0.20	0.30	906	Concrete
														0.30	0.50	903	Bentonite
														0.50	2.30	902	Gravel
														2.30	10.20	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.00	S	50 / 80	2.00	Dry	0	10	75	11	75	20	75	30	5					BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH21
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381982.16 mE 847346.99 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	133.80 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	03/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	03/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
TOPSOIL. (Drillers Description).		(0.30)												
Very weak to weak grey mottled orangish brown PELITE. Highly weathered to completely weathered. Recovered non-intact as sandy silty angular to subangular fine to coarse gravel of pelite Occasional cobbles. Sand is fine to coarse. Cobbles are subangular of weathered pelite (<65mm). [Macduff Formation]		0.30	133.50	0.40 - 1.40 0.40 - 1.40	L-1 WS		100							
Very weak to weak orangish brown PELITE Recovered non-intact as sandy silty angular to subangular fine to coarse gravel of pelite. Sand is fine to coarse. [Macduff Formation]		1.40	132.40	1.40 - 1.72 1.40 - 1.75	D-2			S	50 / 165					
Weak locally moderately weak narrowly foliated locally thinly laminated (55 to 70 degrees) grey locally light grey PELITE. Frequently recovered non-intact as angular medium to coarse gravel and cobbles. Occasional pelitic laminations with fainter foliation. Frequent bands of quartz (<1-6mm thick). Highly weathered with considerable loss of strength and penetrative orangish brown and purplish brown discolouration. Discontinuities are of 2no. sets: 1) 55 to 70 degrees generally following foliation occasionally cross-cutting orientations, very closely to closely spaced, planar smooth occasionally undulating rough with orangish brown and purplish brown staining on surfaces, occasional 1-2mm clay infill. 2) 10 to 30 degrees, medium to widely spaced undulating occasionally stepped rough with orangish brown and purplish brown staining on surfaces. [Macduff Formation]		1.80	132.00	2.00 - 3.00	RC	86				100 20 0	[N]			
				3.00 - 4.50	RC	86				100 23 6	[18] [N] [14]			
				4.50 - 6.00	RC	86				100 40 6	[16] [12] [N]			
				6.00 - 7.50	RC	86				100 26 16	[14] [N]			
				7.50 - 9.00	RC	86				100 33 16	[12] [14] [N]			
6.60 - 6.90m : Discontinuity 80-90 degrees, stepped rough with orangish brown and purplish brown staining on surface.		(8.20)		9.00 - 10.00	RC	86				100 40 25	[14]			
7.45 - 8.10m : Discontinuity 75-90 degrees. undulating rough with orangish brown and purplish brown staining on surface.														
9.60 - 10.00m : Discontinuity 80-90 degrees. undulating rough with orangish brown and purplish brown staining on surface.														
Borehole Terminated at 10.00m		10.00	123.80											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH21
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	381982.16 mE 847346.99 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	133.80 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	03/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	03/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.40	IP	03/09/2023	03/09/2023	Insulated digging tools			David Nayles / C coyle		
0.40	1.80	DS	03/09/2023	03/09/2023	Commachio 205			David Nayles / C coyle	James Donnelly	
1.80	10.00	RC	03/09/2023	03/09/2023	Commachio 205	T2-101	Impreg	David Nayles / C coyle	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
03/09/2023	07:30	0.00	0.00		Start of shift	2.00	152		2.00	152	
03/09/2023	16:50	10.00	2.00	5.70	Hole complete	10.00	101				

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.00	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								2.00	3.00	100	Water
								3.00	4.50	100	Water
								4.50	6.00	100	Water
								6.00	7.50	100	Water
								7.50	9.00	100	Water
								9.00	10.00	100	Water

Chiselling / Hard Boring Details

Drilling Flush Details

Water Strikes

Monitoring Installation Pipe Work

Backfill Details

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
03/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.40	S	50 / 165	0.00	Dry	0	6	75	8	75	10	75	24	75	16	15			BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH22
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382026.76 mE 847482.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	130.94 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	12/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	13/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Dark brown gravelly clayey fine to coarse SAND. Gravel is angular to subangular fine to medium of psammite and pelite. [Topsoil]		0.25	130.69	0.50 0.50	B-1 D-2									
Yellowish brown very silty SAND and GRAVEL. With many cobbles. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of psammite and pelite. Cobbles are subangular to subrounded of psammite (<100mm). Driller records boulders. [Macduff Formation]		(1.25)		1.00 1.00	B-3 D-4									
Possibly weak yellowish grey mottled orangish brown PSAMMITE and PELITE. Highly weathered with considerable loss of strength and penetrative orangish brown discolouration. Recovered non-intact as sandy silty angular to subangular fine to coarse gravel and cobble of weathered psammite and pelite. Sand is fine to medium. [Macduff Formation]		1.50	129.44	1.20 - 2.00 1.20 - 2.00	L-5 WS		100		S	50 / 115				
Weak locally moderately weak thinly interlaminated (80 to 90 degrees) yellowish grey mottled orangish brown PELITE with frequent zones of psammite. Rare laminations of phyllite. Moderately to highly weathered with considerable loss of strength and penetrative orangish brown discolouration. Discontinuities are of 2no. apparent sets: 1) 55 to 75 degrees, closely to medium spaced, undulating rough with dark grey staining on surfaces. 2) 20 to 45 degrees, very closely to closely spaced, planar occasionally stepped rough with dark grey staining on surfaces. [Macduff Formation]		2.60	128.34	2.40 - 2.60 2.40 - 2.60	L-7 WS		100							
				2.60 - 3.35	RC		86				100 13 0	[NI]		
				3.35 - 4.10	RC		86				100 40 20	[8]		
				4.10	C									
				4.10 - 5.60	RC		86				100 30 16	[NI]		
2.70 - 3.30m : Recovered predominantly non-intact as angular medium to coarse gravel with cobbles. 3.00 - 4.00m : 2no. discontinuities: 80-90 degrees, very closely spaced, planar rough with dark grey staining on surfaces. 4.20 - 5.95m : Discontinuity 80-90 degrees, planar rough with dark grey staining on surfaces. 4.45 - 5.20m : Recovered predominantly non-intact as angular medium to coarse gravel with cobbles. 5.60 - 5.85m : Recovered non-intact as angular coarse gravel with cobbles.		(7.10)		5.60 - 7.10	RC		86				100 53 16	[10]		
6.30 - 6.85m : 2no. discontinuities: 70-80 degrees very closely spaced, planar rough with dark grey staining on surfaces.												[10]		
7.35 - 7.50m : Discontinuity: 80-90 degrees, planar rough with local dark grey and orangish brown staining on surfaces. 7.50 - 7.60m : No recovery.				7.10 - 8.60 7.10 - 8.60	C RC		86				86 26 6	[14]		
8.50 - 8.60m : No recovery.												[NR]		
8.85 - 9.40m : Discontinuity: 80-90 degrees, planar smooth locally rough with dark grey locally orangish brown staining on surface.												[10]		
8.90 - 9.70m : Recovered predominantly non-intact as slightly sandy angular fine to coarse gravel with cobbles. Sand is fine to coarse.				8.60 - 10.00	RC		86				78 17 10	[NI]		
Weathered PSAMMITE. (Drillers Description) (No recovery).		9.70	121.24									[NR]		
		(0.30)												
Borehole Terminated at 10.00m		10.00	120.94											

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH22
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382026.76 mE 847482.74 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	130.94 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	12/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	13/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	12/09/2023	12/09/2023	Insulated digging tools			David Nayles / J Wilson		
1.20	2.60	DS	12/09/2023	12/09/2023	Commachio 205	T2-101	Pad	David Nayles / J Wilson	James Donnelly	
2.60	10.00	RC	13/09/2023	13/09/2023	Commachio 205			David Nayles / J Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
12/09/2023	10:45	0.00	0.00	Dry	Start of shift						
12/09/2023	17:00	2.60	2.40	Dry	End of shift						
13/09/2023	07:30	2.60	2.40		Start of shift						
13/09/2023	17:00	10.00	2.40	6.70	End of shift						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.60	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								2.60	3.35	100	Water
								3.35	4.10	100	Water
								4.10	5.60	70	Water
								5.60	7.10	20	Water
								7.10	8.60	0	Water
								8.60	10.00	0	Water

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
13/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.00	S	50 / 115	0.00	Dry	0	12	75	10	75	27	75	23	40					BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH23
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382091.33 mE 847562.65 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	123.13 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Scale:	1:50
Date Started:	11/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	12/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing								TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [FI]	Water	Well/ Backfill	D	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result	Units						
Dark brown gravelly slightly silty fine to medium SAND. Gravel is angular to subrounded fine to coarse of psammite and pelite. [Topsoil]		(0.60)		0.50	B-1												
SAND and GRAVEL with cobbles. (Drillers Description) (No recovery).		0.60	122.53	0.50	D-2												
Possible weak to moderately weak yellowish grey PSAMMITE. Occasional pelitic bands. Moderately to highly weathered with considerable loss of strength. Recovered non-intact as sandy silty angular fine to coarse gravel of psammite and pelite. Frequent cobbles. Sand is fine to coarse. Cobbles are angular of weathered psammite and pelite (avg.70x40x25mm). [Macduff Formation]		0.75	122.38	0.90 - 1.90	L-3												
				0.90 - 1.90	WS		90			S	N=34						
				1.90 - 2.35	D-4												
				1.90 - 2.35	D-4												
Moderately weak to medium strong yellowish grey mottled orangish brown medium to coarse grained PSAMMITE. Moderately to highly weathered with considerable loss of strength and penetrative orangish brown discolouration. Recovered non-intact as slightly sandy angular medium to coarse gravel and cobbles. Sand is medium to coarse. Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation]		3.20	119.93														
		(0.30)															
		3.50	119.63	3.20 - 4.00	RC	86						37 0 0	[NI]				
Weathered PSAMMITE. (Drillers Description) (No recovery).				4.00 - 5.00	RC	86						0 0 0	[NR]				
		(1.50)															
Weak locally moderately weak thinly laminated (45 to 60 degrees) fine to medium grained PSAMMITE. Occasional bands and frequent laminations of pelite. Occasional laminations of medium to coarse grained psammite. Recovered predominantly non-intact as silty sandy gravel with cobbles. Sand is fine to coarse. Highly locally completely weathered with considerable local loss of strength, occasional bands weathered to clay and penetrative orangish brown and purplish brown discolouration. Discontinuities are of 1no. apparent set: 45 to 60 degrees following lamination orientation, planar occasionally undulating smooth. [Macduff Formation]		5.00	118.13	5.00	D-5												
				5.00	WS		0			S	50 / 90						
				5.00 - 5.24	RC	86											
				5.00 - 6.00	RC	86							80 20 0	[NI]			
				6.00 - 7.00	RC	86							90 35 10	[16]			
5.55 - 5.80m : Recovered as soft slightly sandy gravelly clay. Gravel is angular fine to coarse of weathered psammite. Sand is fine to coarse. 5.80 - 6.00m : No recovery. 6.85 - 7.00m : No recovery.																	
8.00 - 8.10m : Recovered as soft slightly sandy gravelly clay. Gravel is angular fine to coarse of weathered psammite. Sand is fine to coarse. 8.50 - 9.00m : No recovery.																	
9.70 - 9.85m : Recovered as gravelly clayey fine to coarse sand. Gravel is angular fine to coarse of weathered psammite.																	
Weathered PSAMMITE. (Drillers Description) (No recovery).		9.85	113.28														
Borehole Terminated at 10.00m		10.00	113.13														

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH23
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382091.33 mE 847562.65 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	123.13 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	11/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	12/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.90	IP	11/09/2023	11/09/2023	Insulated digging tools			David Nayles / J Wilson		
0.90	3.20	DS	11/09/2023	11/09/2023	Commachio 205			David Nayles / J Wilson	James Donnelly	
3.20	10.00	RC	11/09/2023	12/09/2023	Commachio 205	T2-101	Pad	David Nayles / J Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
11/09/2023	10:00	0.00	0.00		Start of shift	5.00	152		5.00	101	
11/09/2023	17:00	6.00	5.00	4.20	End of shift						
12/09/2023	07:30	6.00	5.00	5.70	Start of shift						
12/09/2023	10:45	10.00	5.00	6.20	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
3.20	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								3.20	4.00	100	Water	
								4.00	5.00	100	Water	
								5.00	6.00	100	Water	
								6.00	7.00	100	Water	
								7.00	8.50	100	Water	
								8.50	10.00	100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
12/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.90	S	N=34	2.35	Dry	0	5	75	8	75	7	75	9	75	7	75	11	75	BRK7	65
5.00	S	50 / 90	5.00	Dry	0	11	75	12	75	27	75	23	15					BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH24
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382228.16 mE 847612.76 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	124.47 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	20/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	27/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone siltstone. Sand is fine to medium. [Topsoil]		0.30	124.17											
Orangish brown PSAMMITE. Completely weathered, recovered as very silty very gravelly fine to medium sand. [Macduff Formation]		0.40 - 1.40		L-1 WS			100							
		1.40 - 1.85		D-2				S	N=29					
		2.00 - 3.00		L-3 WS			100							
		3.00 - 3.35		D-4				S	50 / 200					
		3.00 - 4.00		L-5 WS			100							
		4.00 - 4.30		D-6				S	50 / 155					
		4.00 - 5.00		L-7 WS			100							
		4.66 - 5.00		EW										
		5.00 - 5.12		D-1				S	50 / 30					
		5.20 - 5.60		L-2 WS			100							
Assessed zone of no recovery.		5.60 - 6.60	118.87	RC			86				0 0 0	[NR]		
Extremely weak to very weak highly weathered PSAMMITE. Recovered as greenish grey gravelly fine to coarse sand with a low cobble content. [Macduff Formation]		6.60 - 7.60	117.87	L-1 WS			86	100						
		7.60 - 7.84		D-2				S	50 / 85					
		8.00 - 8.20		L-3 WS			86	100						
		8.20 - 9.70		RC			86				53 0 0			
Assessed zone of no recovery.		9.70 - 10.00	114.77	RC			86				0 0 0	[NR]		
Borehole Terminated at 10.00m		10.00	114.47											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH24
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382228.16 mE 847612.76 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	124.47 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	20/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	27/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.40	IP	20/09/2023	20/09/2023	Insulated digging tools			David Nayles / J Wilson		
0.40	5.60	DS	20/09/2023	22/09/2023	Fraste ML		Pcd	David Nayles / J Wilson	Lawrence Ahukannah	
5.60	6.60	RC	22/09/2023	22/09/2023	Fraste ML	T2-101		David Nayles / J Wilson	Lawrence Ahukannah	
6.60	8.20	DS	26/09/2023	26/09/2023	Fraste ML			Chris Coyle / Chris Jess	Lawrence Ahukannah	
8.20	10.00	RC	26/09/2023	26/09/2023	Fraste ML	T2-101	Pad	Chris Coyle / Chris Jess	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
20/09/2023	14:00	0.00	0.00	Dry	Start of shift	10.00	152		8.00	152	
20/09/2023	17:00	5.00	4.00	Dry	End of shift						
21/09/2023	07:30	5.00	4.00		Start of shift						
21/09/2023	12:00	6.60	5.00	4.70	End of shift						
26/09/2023	13:30	6.60	6.60	Dry	Start of shift						
26/09/2023	17:00	10.00	8.00	Dry	Hole complete						
27/09/2023	07:30	10.00	8.00	Dry	Start of shift						
27/09/2023	10:00	10.00	8.00	Dry	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
5.60	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								5.60	6.60	100	Water	
								8.20	9.70	100 - 100	Water	Brownish
								9.70	10.00	100 - 100	Water	Brownish

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
26/09/2023						Drilling with water - no strike recorded		1	0.00	4.00	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	4.00	8.00	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	4.00	903	Bentonite
														4.00	8.00	902	Gravel
														8.00	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.40	S	N=29	0.00	Dry	0	5	75	6	75	8	75	7	75	7	75	7	75	T820-792	70
3.00	S	50 / 200	2.00	Dry	0	7	75	9	75	10	75	12	75	28	50			T820-792	70
4.00	S	50 / 155	4.00	Dry	0	7	75	12	75	18	75	22	75	10	5			T820-792	70
5.00	S	50 / 30	4.00	Dry	0	19	75	6	10	50	30							T820-792	70
7.60	S	50 / 85	7.00	Dry	0	10	75	11	75	28	75	22	10					T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH25
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 07/09/2023
Date Completed: 08/09/2023

Survey Grid System: OSGB
Co-ordinates: 382175.29 mE
847480.83 mN
Ground Level: 120.93 mOD
Orientation: - - deg.
Inclination: 90 deg.

Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of sandstone.		(0.50)													
[Topsoil]		0.50	120.43	0.50	B-1										
Yellowish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of psammite. (Possibly residual).		(0.40)		0.50	D-2										
[Macduff Formation]		0.90	120.03												
Possibly very weak to extremely weak light brown fine to coarse grained PSAMMITE. Occasional bands of Semi-Pelite. Highly to completely weathered with considerable loss of strength and penetrative orangish brown and light grey discolouration. Recovered non-intact as very gravelly clayey fine to coarse sand.				0.90 - 1.90	L-3		100								
[Macduff Formation]				0.90 - 1.90	WS		100								
1.90m : Possible medium strong semi-pelite band (approx. 50mm thickness). Recovered as angular coarse gravel.				1.90	D-4				S	50 / 235					
				1.90 - 2.28											
				3.40 - 4.40	L-5		100								
				3.40 - 4.40	WS		49								
				4.40 - 5.00	L-6		100								
		(7.60)		4.40 - 5.00	WS		100								
				5.00 - 5.38					S	50 / 230					
				5.00 - 5.45	D-7										
				5.50 - 6.10	L-8		100								
				5.50 - 6.10	WS		100								
				7.00 - 7.40	L-9		100								
				7.00 - 7.40	WS		100								
				7.40 - 8.40	RC	86						0 0 0	[NR]		
Very weak to weak yellowish light grey medium to coarse grained PSAMMITE. Frequent randomly oriented dark brownish grey annealed discontinuities. Highly weathered with considerable loss of strength and penetrative orangish brown and dark grey discolouration. Recovered predominantly non-intact as sandy angular fine to coarse gravel. Frequent cobbles. Sand is fine to coarse. Discontinuity sets not discernible due to non-intact recovery.		(0.75)	112.43	8.50	L-10								[NI]		
[Macduff Formation]				8.40 - 10.00	RC	86						66 0 0	[NR]		
8.50 - 8.65m : Discontinuity: 85 degrees undulating rough with dark grey staining on surface.		(0.75)	111.68												
Weathered PSAMMITE. (No recovery).															
Borehole Terminated at 10.00m			110.93												

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH25
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382175.29 mE 847480.83 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	120.93 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	07/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	08/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.90	IP	07/09/2023	07/09/2023	Insulated digging tools			Chris Coyle / John Wilson		
0.90	7.40	DS	07/09/2023	07/09/2023	Commachio 205			Chris Coyle / John Wilson	James Donnelly	
7.40	10.00	RC	07/09/2023	08/09/2023	Commachio 205	T2-101	PCD	Chris Coyle / John Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
07/09/2023	10:15	0.00	0.00	Dry	Start of shift	7.40	152		8.50	152	
07/09/2023	16:30	8.50	8.50	Dry	End of shift	10.00	101				
08/09/2023	07:30	8.50	8.50	Dry	Start of shift						
08/09/2023	13:00	10.00	8.50	Dry	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.40	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.40	3.40		Water	Brown
								6.10	7.10		Water	
								7.40	8.40		Water	Brown
								8.50	10.00		Water	
								8.40	10.00		Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
08/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Monitoring Installation Pipe Work

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.90	S	50 / 235	1.90	Dry	0	8	75	13	75	15	75	15	75	14	75	6	10	BRK7	65
5.00	S	50 / 230	5.00	Dry	0	7	75	9	75	14	75	15	75	12	75	9	5	BRK7	65

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.90	S	50 / 235	1.90	Dry	0	8	75	13	75	15	75	15	75	14	75	6	10	BRK7	65
5.00	S	50 / 230	5.00	Dry	0	7	75	9	75	14	75	15	75	12	75	9	5	BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH26
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382103.10 mE 847375.40 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	127.59 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	05/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	06/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Dark brown gravelly clayey fine SAND. Gravel is angular to subangular fine to medium of psammite. [Topsoil]		(0.30) 0.30	127.29											
Yellowish brown very silty very sandy angular to subangular fine to coarse GRAVEL of weathered psammite and pelite. Locally sandy clay. Rare very fine to fine roots and occasional dark brown organic content. Sand is fine to coarse. (Possibly residual). [Macduff Formation]		(0.40) 0.70	126.89	0.50 0.50	B-1 D-2									
Possibly very weak to weak brownish grey mottled orangish brown fine grained PSAMMITE. Highly weathered with considerable loss of strength and penetrative orangish brown discoloration. Recovered non-intact as sandy silty fine to coarse gravel of weathered psammite. Occasional cobbles. Sand is fine. Cobbles are angular to subangular of weathered psammite (avg. 65x55x20mm). [Macduff Formation]		(0.90) 1.60	125.99	0.90 - 1.60 0.90 - 1.60	L-3 WS		100							
Weathered PSAMMITE. (Drillers Description) (No recovery). [Macduff Formation]				1.60 1.60 - 1.73	D-4				S	50 / 15				
3.10m : Recovered non-intact as yellowish grey sandy angular fine to coarse gravel of weathered psammite. Sand is fine to medium. [Macduff Formation]		(3.10) 3.10		2.00 - 3.00 3.00 - 3.10	RC WS D-5		86				0 0 0			
Possibly very weak to weak orangish brown mottled yellowish grey fine to coarse grained PSAMMITE. Highly weathered with considerable loss of strength and penetrative orangish brown discoloration. Recovered non-intact as silty very gravelly fine to coarse sand of weathered psammite. Gravel is angular fine to coarse of psammite. [Macduff Formation]				3.10 - 3.22 3.20 - 4.00	D-5 RC		0		S	50 / 25	0 0 0			
Weathered PSAMMITE. (Drillers description) (No recovery). [Macduff Formation]				4.00 - 4.70	RC		86				0 0 0			
5.00m : Recovered non-intact as light grey mottled orangish brown sandy silty angular fine to coarse gravel of weathered phyllite. Sand is fine to medium. [Macduff Formation]		(4.70) 4.85	122.89 122.74	4.70 - 4.85 4.70 - 4.85	L-6 WS		100		S	50 / 20				
Weak locally very weak thinly laminated (40 to 60 degrees) yellowish grey fine grained PSAMMITE. Frequent pelitic laminations and occasional bands of phyllite (20-200mm thick). recovered predominantly non-intact as sandy silty angular to subangular fine to coarse gravel with cobbles. Moderately to highly weathered with considerable local loss of strength and locally penetrative orangish brown discoloration. Discontinuities are of 2no. apparent sets: 1) 65 to 75 degrees, closely to medium spaced, planar occasionally undulating rough with orangish brown and purplish brown staining on surfaces. 2) 40 to 60 degrees, very closely to closely spaced, planar occasionally stepped smooth with orangish brown and purplish brown staining on surfaces. [Macduff Formation]		(0.95) 5.80	121.79	5.00 - 5.45 5.00 - 5.80	D-7 RC		86				0 0 0			
6.20 - 6.80m : No recovery. 7.20 - 7.35m : Discontinuity ~80 degrees undulating rough with purplish brown staining on surface. 7.35 - 7.80m : No recovery. 7.80 - 8.00m : Moderately weak yellowish brown mottled orangish brown medium to coarse grained psammite. Dark grey mineralisation with cubic habit on discontinuity surfaces. 8.00 - 8.25m : Medium strong light grey micaceous fine to medium grained psammite. 8.50 - 8.70m : Discontinuity 70-80 degrees undulating rough with purplish brown discoloration on surface. 8.70 - 8.80m : No recovery. 8.95 - 9.00m : Cross bedding. 9.40 - 9.60m : Recovered as brownish grey sandy clayey angular fine to coarse gravel with cobbles. Sand is fine to coarse. 9.60 - 9.80m : No recovery.		(4.20) 5.80		5.80 - 6.80 6.80	RC C		86				40 0 0	[NI] [NR]		
				6.80 - 7.80	RC		86				55 5 0	[NI] [NR]		
				7.80 - 9.00 7.80 - 9.00	C RC		86				91 29 0	[16] [NR]		
				9.00 - 10.00	RC		86				80 20 0	[NI] [NR] [20]		
Borehole Terminated at 10.00m		10.00	117.59											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH26
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382103.10 mE 847375.40 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	127.59 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	05/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	06/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.90	IP	05/09/2023	05/09/2023	Insulated digging tools			David Nayles / J Wilson		
0.90	2.00	DS	05/09/2023	05/09/2023	Commachio 205			David Nayles / J Wilson	James Donnelly	
2.00	10.00	RC	05/09/2023	06/09/2023	Commachio 205	T2-101	Pad	David Nayles / J Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
05/09/2023	11:00	0.00	0.00		Start of shift	5.00	152		5.00	152	
05/09/2023	16:55	5.80	5.00	3.80	End of shift	10.00	101		5.00	101	
06/09/2023	07:30	5.80	5.00	5.70	Start of shift						
06/09/2023	11:00	10.00	5.00	5.80	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.00	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.00	3.00	100	Water	
								3.20	4.00	100	Water	
								4.00	4.70	100	Water	
								5.00	5.80	100	Water	
								5.80	6.80	100	Water	
								6.80	7.80	100	Water	
								7.80	9.00	100	Water	
								9.00	10.00	100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
06/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.60	S	50 / 15	0.00	Dry	0	10	75	15	40	50	15							BRK7	65
3.10	S	50 / 25	3.00	2.60	0	16	75	9	15	50	25							BRK7	65
5.00	S	50 / 20	5.00	3.60	0	9	75	16	25	50	20							BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH27
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382112.84 mE 847236.71 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	125.33 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	01/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	02/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	D	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result						Units
Grass over dark brown gravelly clayey fine to medium SAND. Gravel is subangular to angular of psammite and pelite. [Topsoil]		0.30	125.03													
Recovered non-intact as grey mottled orangish brown sandy silty angular to subangular fine to coarse GRAVEL of weathered phyllite. Sand is fine to coarse. (Possibly residual). [Macduff Formation]		0.30 - 1.30		L-1 WS		100										
		1.30 - 1.75		D-2				S	N=38							
2.10 - 2.20m : Recovered as light orangish brown mottled light grey very sandy angular fine to coarse gravel of weathered phyllite and psammite. Sand is fine to coarse.		1.80 - 2.20	123.13	L-3 WS		100										
Possibly bands of fine to medium grained PSAMMITE, PHYLLITE AND PELITE. Highly weathered with considerable loss of strength and penetrative orangish brown and purplish brown discolouration. Recovered non intact as greenish grey mottled brownish grey slightly sandy slightly silty slightly clayey angular to subangular fine to coarse GRAVEL of weathered psammite, phyllite and pelite. Frequent cobbles. Sand is fine to coarse. Cobbles are angular to subangular of weathered psammite and phyllite (<95mm). Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation]		2.20 - 3.20		RC		86				100 0 0	[NI]					
		3.20 - 4.70		RC		86				100 0 0	[NI]					
		4.70 - 6.20		RC		86				100 10 6	[NI]					
5.90 - 6.10m : Medium strong to moderately weak narrowly foliated and thinly laminated (~80 degrees) fine to medium grained psammite with frequent phyllitic laminations.		6.20 - 7.70		RC		86				100 6 6	[NI]					
6.85 - 7.20m : Discontinuity 75-90 degrees, undulating rough with purplish brown staining on surface. medium strong to moderately weak thinly to thickly laminated (70-80 degrees) fine to medium grained psammite.		7.70 - 9.20		RC		86				100 6 0	[NI]					
9.20 - 9.35m : No recovery.		9.20 - 10.00		RC		86				74 0 0	[NI]					
Borehole Terminated at 10.00m		10.00	115.33													

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH27
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382112.84 mE 847236.71 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	125.33 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	01/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	02/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	01/09/2023	01/09/2023	Insulated digging tools			David Nayles / J Wilson		
1.20	2.20	DS	01/09/2023	01/09/2023	Commachio 205			David Nayles / J Wilson	James Donnelly	
2.20	10.00	RC	01/09/2023	02/09/2023	Commachio 205			David Nayles / J Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
01/09/2023	11:15	0.00	0.00		Start of shift	2.20	152		2.20	152	
01/09/2023	17:00	7.70	2.20	7.40	End of shift	10.00	101		2.20	101	
02/09/2023	07:30	7.70	2.20	6.80	Start of shift						
02/09/2023	09:00	10.00	2.20	7.10	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.20	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.20	3.20	100	Water	
								3.20	4.70	100	Water	
								4.70	6.20	100	Water	
								6.20	7.70	100	Water	
								7.70	9.20	100	Water	
								9.20	10.00	100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
02/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Monitoring Installation Pipe Work

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.30	S	N=38	1.75	Dry	0	5	75	5	75	7	75	9	75	10	75	12	75	BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH28
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 28/08/2023
Date Completed: 29/08/2023

Survey Grid System: OSGB
Co-ordinates: 382046.00 mE
847136.23 mN
Ground Level: 124.16 mOD
Orientation: - - deg.
Inclination: 90 deg.
Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over dark brown gravelly clayey fine to medium SAND. Gravel is subangular to angular of siltstone. [Topsoil]		0.25	123.91											
Yellowish brown very silty very sandy angular to subrounded fine to coarse GRAVEL of weathered siltstone Frequent cobbles. Locally sandy silt. Sand is fine to coarse. Cobbles are angular to subangular of weathered siltstone (avg. 70x50x20mm). Possible Residual Soil. [Macduff Formation]		(1.25)		0.50 0.50	B-1 D-2									
Recovered as dense yellowish brown and yellowish grey sandy silty angular to subangular fine to coarse GRAVEL of weathered siltstone. Frequent cobbles. Locally sandy silt. Cobbles are angular to subangular of weathered siltstone (avg. 70x60x35mm). [Macduff Formation] 2.50 - 3.20m : No recovery.		1.50	122.66	1.20 - 2.00 1.20 - 2.00	L-5 WS		100							
				2.00 - 2.45 2.00 - 2.45	D-6			S	N=48					
		(3.10)		2.50 - 3.20	RC	86				0 0 0				
				3.57 3.20 - 4.20 3.20 - 4.20	EW L-7 WS		100							
				4.20 4.20 - 4.43 4.20 - 4.60 4.20 - 4.60	D-1 L-2 WS		100		S	50 / 85				
Very weak locally extremely weak yellowish brown mottled greenish grey SEMI-PELITE (dipping 40 to 60 degrees). Frequently recovered non-intact as angular fine to coarse gravel and cobbles and occasionally recovered as soft to firm sandy clayey silt. Sand is fine. Completely weathered with considerable loss of strength, penetrative orangish brown discolouration and local clayey silt recovery with loss of structure. Discontinuities are of 3no. sets: 1) 65 to 75 degrees, closely to medium spaced, planar rough with purplish brown and orangish brown staining on surfaces. 2) 30 to 45 degrees, very closely to closely spaced, planar smooth occasionally rough with purplish brown and orangish brown staining on surfaces. 3) 0 to 20 degrees, closely to medium spaced, planar occasionally undulating smooth with purplish brown staining on surfaces. [Macduff Formation] 5.60 - 5.70m : Discontinuity 85-90 degrees, undulating smooth with purplish brown staining on surface. 5.70 - 6.10m : No recovery. 6.75 - 7.00m : No recovery. 7.70 - 8.50m : No recovery. 8.80 - 9.25m : Discontinuity 80-90 degrees, planar locally stepped smooth with purplish brown staining on surface. 9.65 - 10.00m : No recovery.		4.60	119.56	4.60 - 6.10	RC	86				73 36 13	[NI] [12] [NI] [1] [NR]			
		(5.40)		6.10 - 7.00	RC	86				77 16 0	[NI] [NR]			
				7.00 - 8.50	RC	86				46 3 0	[NI] [NR]			
				8.50 - 10.00	RC	86				80 16 0	[NI] [12] [NI] [NR]			
		10.00	114.16											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.
Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH28
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382046.00 mE 847136.23 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	124.16 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	28/08/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	29/08/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	28/08/2023	28/08/2023	Commachio 205			David Nayles / C Doyle		
1.20	4.60	DS	28/08/2023	29/08/2023	Commachio 205			David Nayles / C Doyle	James Donnelly	
4.60	10.00	RC	29/08/2023	29/08/2023	Commachio 205	T2-101	Pad	David Nayles / C Doyle	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
28/08/2023	10:00	0.00	0.00		Start of shift	2.50	152		2.50	152	
28/08/2023	16:50	4.20	2.50	0.70	End of shift	10.00	101		2.50	101	
29/08/2023	07:30	4.20	2.50	3.90	Start of shift						
29/08/2023	12:10	10.00	2.50	3.70	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.50	3.50		Water added: Rotary Coring. No volume recorded.
4.50	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
2.50	3.20	Weathered bedrock. Rotary core recovered 0%. Reverting to dynamic sampling					2.50	3.50	100	Water	
							4.60	6.10	100	Water	
							6.10	7.00	100	Water	
							7.00	8.50	100	Water	
							8.50	10.00	100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
29/08/2023						Drilling with water - no strike recorded		1	0.00	1.00	50	PLAIN		0.00	0.20	909	Upstanding cover
								1	1.00	5.00	50	SLOTTED		0.20	0.50	906	Concrete
														0.50	1.00	903	Bentonite
														1.00	5.00	902	Gravel
														5.00	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.00	S	N=48	0.00	Dry	0	6	75	8	75	10	75	11	75	14	75	13	75	BRK11	56
4.20	S	50 / 85	2.50	3.30	0	7	75	10	75	33	75	17	10					BRK11	56

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH29
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 29/08/2023
Date Completed: 31/08/2023

Survey Grid System: OSGB
Co-ordinates: 382153.04 mE
847159.08 mN
Ground Level: 121.07 mOD
Orientation: - - deg.
Inclination: 90 deg.
Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over dark brown gravelly clayey fine to medium SAND. Gravel is subangular to angular of psammite and pelite. [Topsoil]		0.20	120.87											
Yellowish brown very silty very sandy angular to subrounded fine to coarse GRAVEL of weathered semi-pelite. Frequent cobbles. Locally very silty sand. Sand is fine to coarse. Cobbles are angular to subangular of weathered siltstone (avg. 80x50x15mm). (Possibly residual). [Macduff Formation]		0.50 - 0.60	(2.10)	B-1										
		0.50 - 0.60		D-2										
		1.00 - 1.10		B-3										
		1.00 - 1.10		D-4										
Possibly weak locally medium strong thinly to thickly laminated (60 to 70 degrees) locally light greenish grey and brownish grey PELITE. Frequent psammitic and pelitic laminations. Recovered non-intact as slightly silty slightly sandy angular to subangular fine to coarse gravel and cobbles. Sand is fine to medium. Moderately to highly weathered with considerable loss of strength and penetrative orangish brown/ reddish brown discolouration. Discontinuity sets not discernible due to non-intact recovery. Observable discontinuities frequently following orientation of laminations with orangish brown staining on surface. [Macduff Formation] <i>2.70m : Cross-bedding in pelitic and psammitic laminations.</i> <i>4.50 - 5.00m : No recovery.</i>		1.20 - 2.00	118.77	L-5	86	100								
		1.20 - 2.00		WS										
		2.00 - 2.33						S	50 / 180					
		2.00 - 2.33		D-6										
		2.30		WS	86	0								
		2.30 - 3.00		RC	86					99	[NI]			
										14	[8]			
										14				
		3.00 - 4.00		RC	86					100	[NI]			
										0				
							0							
							0							
							50	[NR]						
							0							
							0							
							100							
							10							
							0							
							100	[NI]						
							3							
							0							
							100							
							10							
							0							
							100							
							10							
							0							
Borehole Terminated at 10.00m		10.00	111.07											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH29
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382153.04 mE 847159.08 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	121.07 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	29/08/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	31/08/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	29/08/2023	29/08/2023	Insulated digging tools			Chris Coyle / Ian Wilson		
1.20	2.30	DS	29/08/2023	30/08/2023	Commachio 205			Chris Coyle / Ian Wilson	James Donnelly	
2.30	10.00	RC	30/08/2023	31/08/2023	Commachio 205	T2-101	PCD	Chris Coyle / Ian Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
29/08/2023	13:10	0.00	0.00		Start of shift	2.30	152		2.30		
29/08/2023	15:30	2.30	2.30	Dry	End of shift	10.00			2.30	152	
30/08/2023	07:30	2.30	2.30		Start of shift						
30/08/2023	17:00	6.50	2.30	2.80	End of shift						
31/08/2023	07:30	6.50	2.30	Dry	Start of shift						
31/08/2023	10:30	10.00	2.30	Dry	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.30	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.30	3.00		Water	Brown
								3.00	4.00		Water	
								4.00	5.00		Water	
								5.00	6.50		Water	Brown
								6.50	8.00		Water	Brownish
								8.00	9.50		Water	Brownish
								9.50	10.00		Water	Brownish

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
31/08/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.00	S	50 / 180	2.00	Dry	0	7	75	9	75	12	75	15	75	23	30			BRK11	56

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH30
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 02/09/2023
Date Completed: 02/09/2023

Survey Grid System: OSGB
Co-ordinates: 382212.16 mE
847268.13 mN
Ground Level: 120.94 mOD
Orientation: - - deg.
Inclination: 90 deg.

Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over dark brown gravelly clayey fine to medium SAND. Gravel is subangular to angular of psammite and pelite. [Topsoil]		(0.40) 0.40	120.54											
Possibly extremely weak to weak greyish brown mottled light grey PSAMMITE AND PELITE. Completely weathered indicated by considerable loss of strength and partial to complete disintegration. Recovered as very sandy very silty angular to subangular fine to coarse gravel of weathered fine grained psammite and pelite. Occasional cobbles. Sand is fine to coarse. Cobbles are angular to subangular of weathered fine grained psammite and pelite (avg. 70x35x20mm). [Macduff Formation]		(1.90)		0.40 - 1.40 0.40 - 1.49	WS L-1		100 100							
		(1.90)		1.40 - 1.85 1.40 - 1.85				S	N=38					
		2.30	118.64	2.00 - 2.30 2.00 - 2.30	L-3 WS		100							
Very weak locally medium strong thinly to thickly laminated (~70 degrees) yellowish light grey mottled orangish brown fine grained PSAMMITE. Frequent bands of fine grained sandy pelite and occasional bands of narrowly foliated pelite. Highly to completely weathered with considerable loss of strength and penetrative orangish brown discoloration. Recovered non-intact as sandy silty angular to subangular fine to coarse gravel. Frequent cobbles. Sand is fine to coarse. Cobbles are angular to subangular of predominantly fine grained psammite and occasionally sandy pelite. Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation]		(4.40)		2.30 - 3.05	RC	86				100 13 0	[NI] [16]			
		(4.40)		3.05 - 3.80	RC	86				100 6 0				
		(4.40)		3.80 - 5.30	RC	86				100 13 10	[NI]			
		(4.40)		5.30 - 6.80	RC	86				100 13 6				
Medium strong locally weak thinly laminated (70 to 75 degrees) fine grained PSAMMITE. Occasional micaceous laminations. Moderately weathered locally highly weathered with considerable local loss of strength and penetrative orangish brown discoloration. Frequently recovered non-intact as sandy silty angular gravel. Frequent cobbles. Discontinuities are of 1no. apparent set: 30 to 45 degrees, very closely to closely spaced, undulating occasionally stepped rough with orangish brown and purplish brown staining on surfaces. [Macduff Formation]		(3.30)	114.24	6.80 - 8.30	RC	86				100 29 6	[12] [NI] [14]			
		(3.30)		8.30 - 9.80	RC	86				100 20 0	[NI] [12] [NI]			
		(3.30)		9.80 - 10.00	RC	86				100 50 0				
Borehole Terminated at 10.00m														

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH30
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382212.16 mE 847268.13 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	120.94 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	02/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	02/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.40	IP	02/09/2023	02/09/2023	Insulated digging tools			Chris Coyle / Ian Wilson		
0.40	2.30	DS	02/09/2023	02/09/2023	Commachio 205			Chris Coyle / Ian Wilson	James Donnelly	
2.30	10.00	RC	02/09/2023	02/09/2023	Commachio 205	T2-101	PCD	Chris Coyle / Ian Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
02/09/2023	07:30	0.00	0.00	Dry	Start of shift	10.00	152		2.00	152	
02/09/2023	16:30	10.00	2.00	Dry	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.30	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								2.30	3.05	Water	Brown
								3.05	3.80	Water	Brown
								3.80	5.30	Water	Brown
								5.30	6.80	Water	Brown
								6.80	8.30	Water	Brown
								8.30	9.80	Water	Brown
								9.80	10.00	Water	Brown

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
02/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.40	S	N=38	0.00	Dry	0	8	75	9	75	9	75	9	75	11	75	9	75	BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH31
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 04/09/2023
Date Completed: 05/09/2023

Survey Grid System: OSGB
Co-ordinates: 382246.62 mE
847348.11 mN
Ground Level: 120.45 MOD
Orientation: - - deg.
Inclination: 90 deg.
Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over dark brown gravelly clayey fine SAND. Gravel is angular to subangular fine to medium of sandstone. [Topsoil]		(0.30)	120.15												
Yellowish brown gravelly very silty fine to coarse SAND. Many cobbles and rare very fine to medium roots. Gravel is angular to subrounded fine to coarse of sandstone and quartz. Cobbles are subangular to subrounded of quartz (avg 180x100x45mm). Possible residual soil [Macduff Formation]		(0.90)	119.25	0.50 - 0.60 0.50 - 0.60	B-1 D-2										
Dense yellowish brown mottled orangish brown gravelly very silty fine to medium SAND. Occasional bands of sandy silt and coarse sand. Gravel is angular to subrounded fine to coarse of sandstone and quartz. Driller records quartz boulders. Possible residual soil. [Macduff Formation]				1.00 - 1.10 1.00 - 1.10	B-3 D-4										
				1.20 - 1.70	WS		100								
				1.70	L-5				S	42 / 160					
				1.70 - 2.01 1.70 - 2.10	D-6										
				2.10 - 2.60	RC	86					20 0 0				
				2.60 - 3.00 2.60 - 3.00	L-7 WS		100								
				3.20	EW										
				3.00 - 4.00	RC	86					0 0 0				
4.00 - 5.00m : Very sandy gravel with many cobbles				4.00 - 4.30 4.00 - 4.30 4.30 - 4.33	L-8 WS		100		S	50 / 20					
		(6.80)		4.30 - 4.90	RC	86					0 0 0				
				4.90 - 5.00 5.00 - 5.45 5.00 - 5.45	WS D-9		0		S	N=32					
				5.45 - 6.20 5.45 - 6.20	L-10 WS		0								
				6.50 - 6.80 6.50 - 6.80 6.80 - 7.04 6.80 - 7.00	L-11 WS D-12		100		S	50 / 85					
				7.00 - 8.00	RC	86					0 0 0				
Very weak locally extremely weak medium to coarse grained PSAMMITE. Locally fractured (randomly oriented) and annealed appearance. Highly to completely weathered with considerable loss of strength and penetrative orangish brown and yellowish brown discolouration. Recovered non-intact as silty sandy angular to subangular fine to coarse gravel of weathered sandstone. Frequent cobbles. Sand is fine to coarse. Cobbles are angular to subangular of weathered sandstone. Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation]			8.00	8.00 8.00 - 8.09	D-13				S	50 / 5					
		(1.50)		8.00 - 9.00	RC	86					85 5 0	[NI]			
												[NR]			
												[16]			
			9.50	9.00 - 10.00	RC	86					50 15 0	[NI]			
Weathered PSAMMITE. (Drillers Description) (No recovery). 8.85 - 9.00m : No recovery.		(0.50)	110.95									[NR]			
Borehole Terminated at 10.00m			110.45												

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH31
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382246.62 mE	Checked By:	SR
Client:	SSEN-T	Ground Level:	847348.11 mN	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	120.45 MOD	Log Status:	FINAL
Date Started:	04/09/2023	Inclination:	- - deg.	Print Date:	15/02/2024
Date Completed:	05/09/2023		90 deg.	Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	04/09/2023	04/09/2023	Insulated digging tools			Chris Coyle / Ian Wilson		
1.20	2.10	DS	04/09/2023	04/09/2023	Commachio 205			Chris Coyle / Ian Wilson		
2.10	2.60	RC	04/09/2023	04/09/2023	Commachio 205	T2-101	PCD	Chris Coyle / Ian Wilson	James Donnelly	
2.60	3.00	DS	04/09/2023	04/09/2023	Commachio 205			Chris Coyle / Ian Wilson	James Donnelly	
3.00	4.00	RC	04/09/2023	04/09/2023	Commachio 205	T2-101	PCD	Chris Coyle / Ian Wilson	James Donnelly	
4.00	4.30	DS	04/09/2023	04/09/2023	Commachio 205			Chris Coyle / Ian Wilson	James Donnelly	
4.30	4.90	RC	04/09/2023	04/09/2023	Commachio 205	T2-101	PCD	Chris Coyle / Ian Wilson	James Donnelly	
4.90	7.00	DS	04/09/2023	04/09/2023	Commachio 205			Chris Coyle / Ian Wilson	James Donnelly	
7.00	10.00	RC	04/09/2023	05/09/2023	Commachio 205	T2-101	PCD	Chris Coyle / Ian Wilson	James Donnelly	Refusal

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
04/09/2023	07:30	0.00	0.00	Dry	Start of shift	8.00	152		8.00	152	
04/09/2023	16:30	8.00	8.00	Dry	End of shift						
05/09/2023	07:30	8.00	8.00	5.30	Start of shift						
05/09/2023	11:00	10.00	8.00	Dry	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.10	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.10	2.60		Water	Brownish
								3.00	4.00		Water	Brownish
								4.30	4.90		Water	Brownish
								7.00	8.00		Water	Brownish
								8.00	9.00		Water	Brownish
								9.00	10.00		Water	Brownish

Chiselling / Hard Boring Details

Drilling Flush Details

Water Strikes

Monitoring Installation Pipe Work

Backfill Details

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
04/09/2023						Drilling with water - no strike recorded		1	0.00	1.00	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	1.00	4.00	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	1.00	903	Bentonite
														1.00	4.00	902	Gravel
														4.00	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.70	S	42 / 160	1.70	Dry	0	10	75	12	75	15	75	15	75	12	10			BRK7	65
4.30	S	50 / 20	4.00	Dry	0	25	10			50	20							BRK7	65
5.00	S	N=32	5.00	Dry	0	7	75	8	75	7	75	8	75	8	75	9	75	BRK7	65
6.80	S	50 / 85	6.80	Dry	0	7	75	9	75	15	75	35	10					BRK7	65
8.00	S	50 / 5	8.00	Dry	0	9	75	16	10	50	5							BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH32
Sheet 1 of 3

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 06/09/2023
Date Completed: 07/09/2023

Survey Grid System: OSGB
Co-ordinates: 382280.61 mE
847482.23 mN
Ground Level: 118.33 mOD
Orientation: - - deg.
Inclination: 90 deg.
Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:25
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [FI]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/ [mins]	Test	Test Result				
Grass over dark brown gravelly clayey fine SAND. Gravel is angular to subangular fine to medium of psammite. [Topsoil]		(0.40)												
Brownish grey mottled brown slightly gravelly sandy SILT. Occasional cobbles and pockets of sandy clay (50x50x30mm). Frequent very fine to medium roots. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of psammite and quartz. Cobbles are subangular of psammite and quartz (<75mm) (Possibly residual). [Till]		0.40 (0.50)	117.93	0.50 - 0.60 0.50 - 0.60	B-1 D-2									
Possibly weak greyish brown and grey mottled orangish brown PSAMMITE with frequent bands of pelite. Moderately to highly weathered with considerable loss of strength. Recovered as very silty very gravelly sand. Gravel is angular fine to coarse of psammite and pelite. Frequent cobbles. Sand is fine to coarse. Cobbles are angular of weathered psammite and pelite. (avg.65x60x20mm). [Macduff Formation]		0.90 (1.90)	117.43	0.90 - 1.90 0.90 - 1.90	L-3 WS		90							
				1.90 - 2.35				S	N=33					
				1.90 - 2.34	D-4									
				2.35 - 2.75 2.35 - 2.75	L-5 WS		100							
Weak to very weak yellowish grey mottled orangish brown fine grained PSAMMITE. Frequent bands and laminations of semi-pelite. Highly weathered with considerable loss of strength and penetrative orangish brown discolouration. Recovered non-intact as slightly sandy angular fine to coarse gravel and cobbles. Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation]		2.80 (1.70)	115.53	2.80 - 3.55	RC	86				100 13 0				
				3.55 - 4.30	RC	86				100 20 0	[NI]			
Very weak narrowly foliated (40 to 60 degrees) light grey mottled orangish brown PELITE. Occasional bands of medium strong fine to coarse grained psammite (approx. 100mm thick). Highly weathered with considerable loss of strength and penetrative orangish brown discolouration. Recovered predominantly non-intact as angular fine to coarse gravel and cobbles. Discontinuities are of one apparent set: 40 to 60 degrees, very closely to closely spaced, planar smooth occasionally rough with orangish brown staining on surfaces. [Macduff Formation]		4.50	113.83								[NR]			
											[NI]			
4.65 - 4.80m : No recovery.														

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH32
Sheet 2 of 3

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382280.61 mE 847482.23 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	118.33 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:25
Date Started:	06/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	07/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill		
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units	
Very weak narrowly foliated (40 to 60 degrees) light grey mottled orangish brown PELITE. Occasional bands of medium strong fine to coarse grained psammite (approx. 100mm thick). Highly weathered with considerable loss of strength and penetrative orangish brown discolouration. Recovered predominantly non-intact as angular fine to coarse gravel and cobbles. Discontinuities are of one apparent set: 40 to 60 degrees, very closely to closely spaced, planar smooth occasionally rough with orangish brown staining on surfaces. [Macduff Formation] <i>5.60 - 5.80m : No recovery.</i>		(1.30)	112.53	4.30 - 5.80	RC	86							73 13 0	[NI]		
																[NR]
Weak locally moderately weak thinly laminated (40 to 50 degrees) grey mottled purplish brown fine grained PSAMMITE. Frequent bands and laminations of siltstone and phyllite. Frequent coarse coasts of possible quartz (1-2mm). Moderately to highly weathered with considerable loss of strength and penetrative purplish brown and orangish brown discolouration. Recovered predominantly non-intact as slightly sandy angular fine to coarse gravel and cobbles. [Macduff Formation] <i>6.60 - 6.80m : No recovery.</i>		(1.00)	111.53	5.80 - 7.30	RC	86							86 23 0	[NI]		
																[NR]
Weak locally medium strong light grey mottled orangish brown medium to coarse grained PSAMMITE. Frequent porphyroblasts (1-8mm) and fine gravel sized quartz clasts. Highly weathered with considerable loss of strength and penetrative orangish brown and dark grey discolouration. Recovered predominantly non-intact as sandy angular fine to coarse gravel and cobbles. Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation]		(0.45)	111.08	6.80 - 7.25										[NI]		
																[NR]
Weak narrowly foliated grey mottled orangish brown PELITE. Frequent laminations of fine sand. Moderately to highly weathered with considerable loss of strength and penetrative orangish brown and purplish brown discolouration. Recovered as angular medium to coarse gravel and cobbles. Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation] <i>7.70 - 7.80m : No recovery.</i>		(0.85)	110.23	7.30 - 8.10	RC	86							66 3 0	[NI]		
																[NR]
Extremely weak to very weak narrowly foliated (50 to 60 degrees) light grey PELITE. Completely weathered / residual soil with considerable to complete loss of strength and local loss of structure. Locally recovered as soft slightly sandy gravelly clay. Sand is fine to coarse. Gravel is angular fine to coarse of weathered phyllite. [Macduff Formation]		(0.80)	110.03	8.10 - 8.30										[NI]		
																[NR]
Weak locally moderately weak orangish brown mottled dark grey medium to coarse grained PSAMMITE. Frequent vugs (1-12mm) and fine gravel sized quartz clasts. Highly weathered with considerable loss of strength and penetrative orangish dark brown and dark grey discolouration. Recovered predominantly non-intact as sandy angular fine to coarse gravel and cobbles. Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation] <i>8.40 - 8.80m : No recovery.</i>		(0.80)	109.23	8.30 - 9.10										[NI]		
																[NR]
Weak narrowly foliated (60 to 70 degrees) light grey mottled yellowish brown PELITE. Frequent randomly oriented dark brownish grey incipient discontinuities throughout (<1-2mm thick) Highly weathered with considerable loss of strength and penetrative yellowish brown discolouration. Recovered non-intact as angular coarse gravel and cobbles. Discontinuity sets not discernible due to non-intact recovery.		(0.55)	108.68	8.80 - 9.65	RC	86							75 8 0	[NI]		
																[NR]
		(0.35)	108.33	9.65 - 10.00												

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH32
Sheet 3 of 3

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382280.61 mE 847482.23 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	118.33 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:25
Date Started:	06/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	07/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing								TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F1]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result	Units				
Weak narrowly foliated (60 to 70 degrees) light grey mottled yellowish brown PELITE. Frequent randomly oriented dark brownish grey incipient discontinuities throughout (<1-2mm thick) Highly weathered with considerable loss of strength and penetrative yellowish brown discolouration. Recovered non-intact as angular coarse gravel and cobbles. Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation] No recovery. Borehole Terminated at 10.00m															

Stratum depths measured along borehole axis. Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant. Explanation of symbols and abbreviations given in 'Key to Exploratory Holes' Further details given on appended 'Borehole Information Sheet'.	Remarks
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BOREHOLE INFORMATION SHEET

Borehole No
BH32
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382280.61 mE 847482.23 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	118.33 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	06/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	07/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.90	IP	06/09/2023	06/09/2023	Insulated digging tools			Chris Coyle / Ian Wilson		
0.90	2.80	DS	06/09/2023	06/09/2023	Commachio 205			Chris Coyle / Ian Wilson	James Donnelly	
2.80	10.00	RC	06/09/2023	07/09/2023	Commachio 205	T2-101	PCD	Chris Coyle / Ian Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
06/09/2023	11:00	0.00	0.00		Start of shift	8.80	152		5.00	152	
06/09/2023	16:30	8.80	5.00	2.30	End of shift	10.00			5.00		
07/09/2023	08:15	8.80	5.00	2.40	Start of shift						
07/09/2023	09:15	10.00	5.00	2.40	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.60	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.80	3.55		Water	Brown
								3.55	4.30		Water	Brown
								4.30	5.80		Water	Brown
								5.80	7.30		Water	Brown
								7.30	8.80		Water	Brown
								8.80	10.00		Water	Brown

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
06/09/2023	2.40	2.00	5	2.40										0.00	0.50	905	Arisings
06/09/2023	2.40	2.00	10	2.40										0.50	10.00	903	Bentonite
06/09/2023	2.40	2.00	15	2.30													
06/09/2023	2.40	2.00	20	2.35													

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.90	S	N=33	1.90	Dry	0	5	75	7	75	7	75	8	75	8	75	10	75	BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH33
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 18/09/2023
Date Completed: 18/09/2023

Survey Grid System: OSGB
Co-ordinates: 382362.99 mE
847352.32 mN
Ground Level: 114.91 mOD
Orientation: - - deg.
Inclination: 90 deg.

Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.10 (0.40)	114.81											
Brown sandy angular to subangular fine to coarse GRAVEL with a low cobble content. Sand is fine to coarse. Gravel is angular to subangular, fine to coarse of siltstone and sandstone. Cobbles are angular to subangular of siltstone (<80mm). [Till]		0.50 (1.00)	114.41	0.50 - 1.50 0.50 - 1.50	L-1 WS		90							
Possible weathered PELITE. Recovered as brown very silty very sandy angular to subangular fine to coarse gravel and cobbles. [Macduff Formation]		1.50 (0.50)	113.41	1.50 1.50 - 1.81	D-2			S	50 / 160					
Assessed zone of core loss. Moderately weak to medium strong greenish grey PELITE. Recovered as non intact of clayey angular to subangular fine to medium gravel and cobbles of pelite. [Macduff Formation]		2.00 (1.50)	112.91	2.00 - 2.75	RC	86				100 0 0	[NI]			
				2.75 - 3.50	RC	86				100 0 0				
Moderately weak to medium strong thinly to thickly foliated greenish grey PELITE with occasional porphyroblasts of quartz and feldspar (<3mm). Slightly weathered with red, black and orange staining on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 60 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 15 degrees cross core fractures, extremely closely to very closely spaced planar to undulating rough on a small scale and clean. [Macduff Formation]		3.50 (4.50)	111.41	3.50 - 5.00	RC	86				100 42 0	[8]			
3.50 - 3.77m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.											[NI]			
4.22 - 4.42m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.											[12]			
4.60 - 5.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.										100 26 0				
5.00 - 6.10m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.											[NI]			
6.50 - 6.91m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.											[NI]			
7.05 - 7.10m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.											[10]			
7.22 - 7.26m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.										100 32 0				
7.39 - 7.47m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.											[NI]			
7.67 - 8.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.		8.00 (2.00)	106.91	8.00 - 9.50	RC	86				100 0 0	[NI]			
Moderately weak to medium strong greenish grey PELITE. Recovered as angular to subangular fine to medium gravel and cobbles of pelite. [Macduff Formation]				9.50 - 10.00	RC	86				100 0 0	[NI]			
Borehole Terminated at 10.00m		10.00	104.91											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH33
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382362.99 mE 847352.32 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	114.91 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	18/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	18/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.50	IP	18/09/2023	18/09/2023	Insulated digging tools			Chris Coyle		
0.50	2.00	DS	18/09/2023	18/09/2023	Fraste ML			Chris Coyle	Lawrence Ahukannah	
2.00	10.00	RC	18/09/2023	18/09/2023	Fraste ML	T2-101	Impreg	Chris Coyle	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
18/09/2023	07:30	0.00		Dry	Start of shift	10.00	101		2.00	152	
18/09/2023	17:00	10.00	2.00	Dry	Hole complete	10.00	152		2.00	101	

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.00	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.00	2.75	100 - 100	Water	Brownish
								2.75	3.50	100 - 100	Water	
								3.50	5.00	100 - 100	Water	Brownish
								5.00	6.50	100 - 100	Water	Brownish
								6.50	8.00	100 - 100	Water	Brownish
								8.00	9.50	100 - 100	Water	
								9.50	10.00	100 - 100	Water	Brownish

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
18/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.50	S	50 / 160	1.50	Dry	0	12	75	12	75	20	75	25	75	5	10			T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH34
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 17/09/2023
Date Completed: 18/09/2023

Survey Grid System: OSGB
Co-ordinates: 382313.34 mE
847282.57 mN
Ground Level: 116.95 mOD
Orientation: - - deg.
Inclination: 90 deg.

Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		(0.40)	116.55												
Soft orangish brown silty sandy angular to subangular fine to coarse GRAVEL of siltstone and sandstone. Sand is fine to medium. [Till]		(0.70)	115.85	0.40 - 1.40 0.40 - 1.40	L-1 RC	86					100 0 0				
Possible weathered PELITE. Recovered as clayey angular to subangular fine to coarse gravel of pelite. [Macduff Formation]		(0.90)	114.95	1.40 - 1.50 1.40 - 1.50	D-2			S	50 / 10						
Moderately weak to medium strong light grey mottled orange brown PELITE. Recovered as angular to subangular fine to medium gravel and cobbles of pelite. [Macduff Formation]		(1.00)	113.95	2.00 - 3.00	RC	86					100 0 0	[NI]			
Moderately weak to medium strong thinly to thickly foliated greenish grey fine grained PSAMMITE with occasional porphyroblasts of feldspar and quartz (<1mm). Slightly weathered with orange, black, grey and reddish brown discolouration along fracture surfaces (1-3mm) penetration. Discontinuities: 1) 45 to 60 degrees, extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. 2) 0 to 15 degrees, extremely closely to very closely spaced, planar to undulating rough and clean. 3) 65 to 80 degrees, very closely spaced, planar to undulating rough and clean. [Macduff Formation]		3.00	113.95	3.00 - 4.00	RC	86					100 0 0	[18]			
5.00 - 5.07m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				4.00 - 5.50	RC	86					100 68 0	[20]			
5.17 - 5.50m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.															
5.50 - 6.03m : Recovered as non intact cores of angular to subangular, fine to medium gravel of pelite.															
6.40 - 7.00m : Recovered as non intact cores of angular to subangular, fine to medium gravel and cobbles of pelite.		(7.00)		5.50 - 7.00	RC	86					100 19 0	[NI]			
7.34 - 7.79m : Recovered as non intact cores of angular to subangular, fine to medium gravel and cobbles of pelite.												[NI]			
8.04 - 8.19m : Recovered as non intact cores of angular to subangular, fine to medium gravel and cobbles of pelite.				7.00 - 8.50	RC	86					100 45 0	[18]			
9.08 - 9.17m : Recovered as non intact cores of angular to subangular, fine to medium gravel and cobbles of pelite.															
9.52 - 9.55m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.															
9.72 - 10.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.		10.00	106.95	8.50 - 10.00	RC	86					100 72 10	[16]			
Borehole Terminated at 10.00m															

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH34
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382313.34 mE 847282.57 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	116.95 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	17/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	18/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.40	IP	17/09/2023	17/09/2023	Insulated digging tools			David Nayles / J Wilson		
0.40	1.50	DS	17/09/2023	17/09/2023	Fraste ML			David Nayles / J Wilson	Lawrence Ahukannah	
2.00	10.00	RC	17/09/2023	17/09/2023	Fraste ML	T2-101	92	David Nayles / J Wilson	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
17/09/2023	09:00	0.00	0.00		Start of shift	2.00	152		2.00	152	
17/09/2023	16:45	10.00	2.00	8.20	End of shift	10.00	101		2.00	101	
18/09/2023	07:30	10.00	2.00	6.60	Start of shift						
18/09/2023	08:30	10.00	2.00	6.60	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
0.40	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								0.40	1.40	100	Water	
								2.00	3.00	100	Water	
								3.00	4.00	100	Water	
								4.00	5.50	100	Water	
								5.50	7.00	100	Water	
								7.00	8.50	100	Water	
								8.50	10.00	100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
17/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.40	S	50 / 10	0.00	Dry	0	12	75	13	15	50	10							T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH35
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382282.96 mE 847159.00 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	117.24 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	14/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	14/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown sandy CLAY. [Topsoil]		0.25	116.99												
Possibly weak to very weak grey mottled brownish grey PELITE. Highly weathered with considerable loss of strength and penetrative orangish brown discolouration. Recovered non-intact as silty sandy angular to subangular fine to coarse gravel of weathered pelite. Sand is fine to coarse. [Macduff Formation]		(0.75) 1.00	116.24	0.40 - 0.90 0.40 - 0.90 0.90 - 1.09	L-1 WS D-2		100		S	51 / 40					
Weak locally very weak narrowly foliated weak grey mottled purplish brown PELITE. Frequent more fissile bands. Highly weathered with considerable loss of strength and penetrative purplish brown discolouration. Recovered predominantly non-intact as sandy slightly silty angular to subangular fine to coarse gravel with cobbles. Discontinuity sets not discernible due to non-intact recovery. [Macduff Formation]				1.00 - 2.00	RC	86					100 5 0	[NI]			
<i>2.80 - 3.00m : No recovery.</i>				2.00 - 3.50	RC	86					86 30 0	[NR]			
<i>3.00 - 3.45m : Intact core with discontinuities, 30-50 degrees extremely close, planar occasionally undulating rough with purplish brown staining on surfaces.</i>												[30]			
<i>3.05 - 3.25m : Indication of possible discontinuity 70-90 degrees, undulating rough with purplish brown staining on surface.</i>		(4.60)													
				3.50 - 5.00	RC	86					100 16 0	[NI]			
												[22]			
												[NI]			
Moderately weak locally medium strong narrowly foliated (45 to 60 degrees) grey mottled orangish brown PELITE. Occasional laminations of fine grained psammite. Moderately weathered with loss of strength and penetrative orangish brown and purplish brown discolouration. Discontinuities are of 1no. set: 50 to 60 degrees, very closely locally extremely closely spaced, planar occasionally undulating rough with orangish brown and purplish grey staining on surfaces. [Macduff Formation]		5.60	111.64	5.00 - 6.50	RC	86					100 20 0	[18]			
				6.50 - 8.00 6.50 - 8.00	C RC	86					100 46 0	[18]			
												[24]			
<i>8.00 - 8.20m : Recovered partially non-intact as angular medium to coarse gravel.</i>		(4.40)		8.00	C							[NI]			
				8.00 - 9.50	RC	86					100 43 6	[18]			
												[NI]			
<i>9.15 - 9.60m : Recovered partially non-intact as angular coarse gravel with cobbles.</i>				9.50 - 10.00	RC	86					100 70 0	[16]			
Borehole Terminated at 10.00m		10.00	107.24												

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH35
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382282.96 mE 847159.00 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	117.24 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	14/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	14/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.40	IP	14/09/2023	14/09/2023	Insulated digging tools			David Nayles / J Wilson		
0.40	1.00	DS	14/09/2023	14/09/2023	Fraste ML			David Nayles / J Wilson	James Donnelly	
1.00	10.00	RC	14/09/2023	14/09/2023	Fraste ML	T2-101	Pad	David Nayles / J Wilson	James Donnelly	

Boring-Drilling Progress					Hole Diameter by Depth				Casing Diameter by Depth			
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks	
14/09/2023	07:30	0.00	0.00		Start of shift	1.00	152		1.00	101		
14/09/2023	17:00	10.00	1.00	8.20	Hole complete	10.00	101		1.00	152		

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks
1.00	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								1.00	2.00	100	Water
								2.00	3.50	100	Water
								3.50	5.00	100	Water
								5.00	6.50	100	Water
								6.50	8.00	100	Water
								8.00	9.50	100	Water
								9.50	10.00	100	Water

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
14/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results																			
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
0.90	S	51 / 40	0.00	Dry	0	10	75	14	75	51	40							T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

BAM Ritchies, Glasgow Road, Kilsyth, Glasgow G65 9BL BAM R Info 13/07/2020



BOREHOLE LOG

Borehole No:
BH36
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382428.29 mE 847092.59 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	110.77 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	15/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	15/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over dark brown clayey SAND. [Topsoil]		0.30	110.47											
Brownish grey mottled orangish brown silty very sandy angular to subangular fine to coarse GRAVEL of weathered pelite and quartz. Occasional cobbles. Sand is fine to coarse. Cobbles are subangular of pelite (<65mm). (Possibly residual). [Till]		0.90		0.70	EW									
				0.40 - 1.40	L-1									
				0.40 - 1.40	WS		100							
Possibly weak to extremely weak greenish grey mottled brownish grey PELITE. Occasional bands of pelite. Highly weathered to completely weathered with considerable loss of strength. Recovered as silty very sandy angular fine to coarse gravel. Occasional cobbles. Sand is fine to coarse. Cobbles are angular of weathered pelite (<70mm). [Macduff Formation]		1.20	109.57	1.40 - 1.85					S	N=34				
				1.40 - 1.85	D-2									
				1.85 - 2.30	L-3									
				1.85 - 2.30	WS		100							
Weak locally very weak thinly laminated (~35 degrees) greenish grey mottled orangish brown PELITE. Frequent pelitic bands (20-150mm) and laminations and occasional more fissile bands. Highly weathered with considerable loss of strength and penetrative orangish brown and purplish brown discolouration. Recovered predominantly non-intact as angular fine to coarse gravel with cobbles. Discontinuities are of 1no. apparent set: 35 to 60 degrees, very closely to closely spaced, planar smooth occasionally undulating rough with orangish brown staining on surfaces. [Macduff Formation]		2.30	108.47	2.30 - 3.30	RC	86					100 35 0	[NI]		
3.30 - 3.90m : Discontinuity 70-80 degrees, undulating rough with orangish brown and purplish brown staining on surface.				3.30 - 4.80	RC	86					100 26 0	[18]		
4.20 - 4.70m : 2no. discontinuities 80-90 degrees very closely spaced undulating rough with orangish brown and purplish brown staining on surfaces.				4.80 - 6.30	RC	86					100 10 0	[NI]		
				6.30 - 7.80	RC	86					100 13 0	[NI]		
				7.80 - 9.30	RC	86					99 26 6	[NI]		
				9.30 - 10.00	RC	86					100 14 0	[NI]		
Borehole Terminated at 10.00m		10.00	100.77											

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH36
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382428.29 mE 847092.59 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	110.77 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	15/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	15/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.40	IP	15/09/2023	15/09/2023	Insulated digging tools			David Nayles / J Wilson		
0.40	2.30	DS	15/09/2023	15/09/2023	Fraste ML			David Nayles / J Wilson	James Donnelly	
2.30	10.00	RC	15/09/2023	15/09/2023	Fraste ML	T2-101	Hard rock	David Nayles / J Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
15/09/2023	07:30	0.00	0.00		Start of shift	1.90	152		1.90	101	
15/09/2023	17:00	10.00	1.90	6.30	Hole complete	10.00	101		1.90	152	

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.30	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								2.30	3.30	100	Water
								3.30	4.80	100	Water
								4.80	6.30	100	Water
								6.30	7.80	100	Water
								7.80	9.30	100	Water
								9.30	10.00	100	Water

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
15/09/2023						Drilling with water - no strike recorded		1	0.00	0.50	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	0.50	2.30	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	0.50	903	Bentonite
														0.50	2.30	902	Gravel
														2.30	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.40	S	N=34	0.00	Dry	0	5	75	7	75	7	75	9	75	8	75	10	75	T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH37
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382466.78 mE 847255.47 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	110.97 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	16/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	17/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over dark brown clayey fine to medium SAND. [Topsoil]		0.25	110.72											
Grey mottled brownish grey very silty very sandy subangular to subrounded fine to coarse GRAVEL of weathered Pelite and psammite. (Possibly residual). [Macduff Formation]		0.70	110.27											
Possibly very weak to weak dark grey mottled brown PELITE. Highly weathered / residual soil with considerable local complete loss of strength. Recovered non-intact as sandy clayey angular to subangular fine to coarse gravel of weathered pelite and rare psammite. Sand is fine to coarse. [Macduff Formation]		1.30		0.50 - 1.50 0.50 - 1.50	B-1 WS		90							
		1.50		1.50 - 1.62	D-2			S	50 / 15					
Weak to very weak thinly laminated (approx. 35 to 45 degrees) dark grey PELITE. Occasional fine grained psammite bands and laminations. Frequent rounded to subrounded porphyroblasts of possible cordierite (2-4mm diameter). Highly weathered with consider loss of strength. Recovered predominantly non-intact as sandy clayey angular fine to coarse gravel. Frequent cobbles. Sand is fine to coarse. [Macduff Formation]		2.00	108.97											
		1.85		2.00 - 3.00	RC	86				100 25 0	[NI]			
		3.85	107.12							50 15 15	[NR]			
		3.85		3.00 - 4.00	RC	86					[NI]			
		3.85									[6]			
Medium strong locally strong light yellowish grey and grey thinly to thickly laminated fine to medium grained PSAMMITE. Frequent laminations of slate, pelite and occasional bands of medium to coarse psammite (20 to 100mm thick). Frequent rounded to subrounded porphyroblasts of possible cordierite (2 to 4mm diameter). Laminations are frequently rippled and occasionally cross-laminated. Moderately weathered with loss of strength and penetrative orangish brown discolouration. Discontinuities are of 2no. apparent sets: 1) 55 to 70 degrees, medium to widely spaced, undulating rough with orangish brown staining on surfaces. 2) 20 to 30 degrees, closely to medium spaced, planar smooth occasionally undulating rough with orangish brown staining on surface. [Macduff Formation]		2.50		4.00 - 5.00 4.00 - 5.00	C RC	86				65 10 0	[NI]			
		2.50		5.00	C						[6]			
		2.50		5.00 - 6.00	RC	86				95 55 30	[8]			
3.85 - 4.00m : Frequent ramomly oriented bluish grey fibres (<1-3mm length). Possibly fibrolitic silliminite. 4.60 - 5.10m : Discontinuity: 70-90 degrees, undulating rough with dark grey staining on surface. 5.60m : Dewatering - flame structure (30mm thick). [Macduff Formation]		0.95	104.62							86 26 10	[NI]			
Moderately weak to weak light yellowish grey and grey medium to coarse grained PSAMMITE. Highly weathered with considerable loss of strength and penetrative orangish brown discolouration. Recovered predominantly non-intact as angular fine to coarse gravel with cobbles. [Macduff Formation]		7.30	103.67								[NR]			
6.65 - 6.80m : Occasional angular to subangular fine gravel size clasts of quartz. 7.05 - 7.20m : Medium strong thinly interlaminated (20-30 degrees) medium to coarse grained psammite and pelite. [Macduff Formation]		2.70		6.00 - 7.50	RC	86				100 6 0	[NI]			
Medium strong locally moderately weak light grey mottled orangish grey fine to coarse grained PSAMMITE. Occasional randomly oriented veins of quartz (5 to 30mm). Recovered predominantly non-intact as slightly sandy angular coarse gravel with cobbles. Sand is fine to coarse. [Macduff Formation]		9.50		7.50 - 9.00	RC	86				50 35 10	[10]			
9.50 - 10.00m : Medium strong with frequent randomly oriented annealed discontinuities. Discontinuity: ~75 degrees, undulating rough with quartz mineralisation. [Macduff Formation]		10.00	100.97											
Borehole Terminated at 10.00m														

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH37
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382466.78 mE 847255.47 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	110.97 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	16/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	17/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.50	IP	16/09/2023	16/09/2023	Insulated digging tools			David Nayles / J Wilson		
0.50	2.00	DS	16/09/2023	16/09/2023	Fraste ML			David Nayles / J Wilson	James Donnelly	
2.00	10.00	RC	16/09/2023	17/09/2023	Fraste ML	T2-101	Pod and hard formation	David Nayles / J Wilson	James Donnelly	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
16/09/2023	07:30	0.00	0.00		Start of shift	2.00	152		2.00	152	
16/09/2023	17:00	9.00	2.00	4.80	End of shift	10.00	101		2.00	101	
17/09/2023	07:30	9.00	2.00	7.10	Start of shift						
17/09/2023	09:00	10.00	2.00	7.30	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.00	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.00	3.00	100	Water	
								3.00	4.00	100	Water	
								4.00	5.00	100	Water	
								5.00	6.00	100	Water	
								6.00	7.50	100	Water	
								7.50	9.00	100	Water	
								9.00	10.00	100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
17/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.50	S	50 / 15	0.00	Dry	0	8	75	17	30	50	15							T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH38
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382501.57 mE 847360.05 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	114.26 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	19/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	20/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/ [mins]	Test	Test Result				
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.30	113.96											
Brown silty very sandy angular to subangular fine to coarse GRAVEL of sandstone and siltstone. Occasional cobbles. Sand is fine to coarse. Cobbles are angular to subangular of siltstone (<80mm). [Till]		0.50 - 0.60 0.50 - 0.60		B-1 D-2										
		1.00 1.00		B-3 D-4										
Possible weathered PSAMMITE bedrock. Recovered as brown silty very sandy angular fine to coarse gravel and cobbles. [Macduff Formation]		1.50 (0.70)	112.76	L-5										
		2.00 - 2.31 2.00 - 2.20		D-6				S	50 / 160					
Moderately weak to medium strong light grey and orange fine grained PSAMMITE Moderately weathered with penetrative orange staining through out core. Recovered non intact cores of angular to subangular fine to coarse gravel and cobbles of psammite. Where evident fractures are 20 to 30 degrees very closely spaced planar, rough with dark red staining. [Macduff Formation]		2.20	112.06											
		2.20 - 3.20		RC	86						40 0 0	[NI]		
		3.20 - 4.20		RC	86							[NR]		
		3.20 - 4.20		RC	86						70 0 0	[NI]		
		4.20 - 5.20		RC	86						70 0 0	[NI]		
		5.20 - 6.70		RC	86						100 0 0	[NI]		
6.70 - 7.23m : Recovered as non intact cores of angular to subangular, fine to medium gravel of pelite.		6.90	107.36											
Medium strong light grey mottled orange brown fine grained PSAMMITE. Slightly weathered with penetrative orange staining on fracture surfaces in places up to 5mm into core. Discontinuities are 1. 20 to 30 degrees, very closely spaced, planar rough, tight and stained. 2. 40 to 50 degrees, medium spaced, planar, rough with dark red and orange staining. [Macduff Formation]		6.70 - 8.20		RC	86						93 51 20	[11]		
7.76 - 7.93m : Recovered as non intact cores of angular to subangular, fine to medium gravel of pelite.		(3.10)												
		8.20 - 9.70		RC	86						100 86 0	[20]		
		8.20 - 9.70		RC	86							[20]		
		9.70 - 10.00		RC	86						100 0 0	[NI]		
Borehole Terminated at 10.00m		10.00	104.26											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH38
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382501.57 mE 847360.05 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	114.26 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	19/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	20/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	19/09/2023	19/09/2023	Insulated digging tools			Chris Coyle		
1.20	2.20	DS	19/09/2023	19/09/2023	Fraste ML			Chris Coyle	Lawrence Ahukannah	
2.20	10.00	RC	20/09/2023	20/09/2023	Fraste ML	T2-101	Impreg	Chris Coyle	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
19/09/2023	15:00	0.00	0.00	Dry	Start of shift	2.20	152		2.20	101	
19/09/2023	17:00	2.20	2.20	Dry	End of shift	10.00	101		2.20	152	
20/09/2023	02:20	2.20	2.20	Dry	Start of shift						
20/09/2023	14:00	10.00	2.20	Dry	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.20	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.20	3.20	100 - 100	Water	
								3.20	4.20	100 - 100	Water	
								4.20	5.20	100 - 100	Water	
								5.20	6.70	100 - 100	Water	
								6.70	8.20	100 - 100	Water	
								8.20	9.70	100 - 100	Water	
								9.70	10.00	100 - 100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
20/09/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.00	S	50 / 160	2.00	Dry	0	11	75	12	75	18	75	28	75	4	10			T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH39
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382429.43 mE 847443.23 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	117.37 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	19/09/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	19/09/2023			Print Date:	15/02/2024
				Final Depth:	10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular, fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.30	117.07											
Possible completely weathered PELITE. Recovered as brown gravelly sandy clay. Sand is fine to medium. Gravel is subangular fine to medium of pelite. [Macduff Formation]		0.30 - 1.70		0.40 - 1.40 0.40 - 1.40	L-1 WS		100		S	50 / 25				
Moderately weak to medium strong light grey mottled orange fine grained PSAMMITE. Recovered as non intact cores of angular to subangular fine to coarse gravel and cobbles of psammite. Fracture surface are stained orange. [Macduff Formation]		2.00 - 2.00	115.37	2.00 - 3.00	RC	86					60 0 0	[NI]		
				3.00 - 4.00	RC	86					100 0 0	[NI]		
Moderately weak to medium strong thinly to thickly foliated grey fine grained PSAMMITE Slightly weathered with reddish brown and orange discolouration on fracture surfaces (1 to 3mm penetration). Discontinuities: 1) 45 to 60 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. [Macduff Formation]		4.00 - 4.00	113.37	4.00 - 5.50	RC	86					100 24 13	[12]		
4.00 - 5.13m : Recovered as non intact cores of angular to subangular, fine to medium gravel and cobbles of pelite.														
Moderately weak to medium strong thinly to thickly foliated grey fine grained PSAMMITE with porphyroblasts of feldspar. Slightly weathered with reddish brown and orange discolouration on fracture surfaces (1-3mm penetration). Discontinuities: 1) 60 to 80 degrees vertical parallel fractures extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. 2) 0 to 15 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		5.50 - 5.50	111.87	5.50 - 7.00	RC	86					100 20 9	[NI]		
5.50 - 5.75m : Recovered as non intact cores of angular to subangular, fine to medium gravel of pelite.														
5.95 - 6.60m : Recovered as non intact cores of angular to subangular, fine to medium gravel of pelite.														
7.00 - 7.76m : Recovered as non intact cores of angular to subangular, fine to medium gravel and cobbles of pelite.		4.50		7.00 - 8.50	RC	86					100 46 28	[12]		
8.23 - 8.38m : Recovered as non intact cores of angular to subangular, fine to medium gravel and cobbles of pelite.														
8.73 - 9.15m : Recovered as non intact cores of angular to subangular, fine to medium gravels and cobbles of pelite.														
9.73 - 9.87m : Recovered as non intact cores of angular to subangular, fine to medium gravel and cobbles of pelite.				8.50 - 10.00	RC	86					100 44 16	[13]		
Borehole Terminated at 10.00m		10.00	107.37											

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH39
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382429.43 mE 847443.23 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	117.37 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	19/09/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	19/09/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	0.40	IP	19/09/2023	19/09/2023	Insulated digging tools			David Nayles / J Wilson		
0.40	2.00	DS	19/09/2023	19/09/2023	Fraste ML			David Nayles / J Wilson	Lawrence Ahukannah	
2.00	10.00	RC	19/09/2023	19/09/2023	Fraste ML	T2-101	92	David Nayles / J Wilson	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
19/09/2023	07:30	0.00	0.00		Start of shift	2.00	152		2.00	152	
19/09/2023	15:00	10.00	2.00	7.80	Hole complete	10.00	101		2.00	101	

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.00	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								2.00	3.00	100	Water
								3.00	4.00	100	Water
								4.00	5.50	100	Water
								5.50	7.00	100	Water
								7.00	8.50	100	Water
								8.50	10.00	100	Water

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
19/09/2023						Drilling with water - no strike recorded		1	0.00	0.50	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	0.50	3.50	50	SLOTTED		0.10	0.20	906	Concrete
														0.20	0.50	903	Bentonite
														0.50	3.50	902	Gravel
														3.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
1.40	S	50 / 25	0.00	Dry	0	17	75	8	10	50	25							T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH40
Sheet 1 of 2

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 16/10/2023
Date Completed: 16/10/2023

Survey Grid System: OSGB
Co-ordinates: 382628.09 mE
847436.56 mN
Ground Level: 110.45 mOD
Orientation: - - deg.
Inclination: 90 deg.
Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 15.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil] Very dense orangish brown silty fine to medium SAND. Possible residual soil [Macduff Formation]		(0.30)	110.15											
		0.30		0.50	B-1									
				0.50	D-2									
				1.00	B-3									
				1.00	D-4									
		(2.90)		1.10 - 2.10	WS L-5	87	100							
Weak to moderately weak weathered PSAMMITE. Recovered as non intact cores of angular to subangular fine to medium gravel and cobbles of siltstone with occasional pockets of brown sandy silt (<40mm). [Macduff Formation]			107.25											
				2.20	D-6				S	49 / 200				
				2.20 - 2.55										
				2.10 - 3.10	WS L-7	87	100							
				2.20 - 3.20		86								
		(2.00)		3.20	D-8					S	50 / 185			
Weak to moderately weak greenish grey fine grained PSAMMITE. Moderately weathered. Recovered as non intact of angular to subangular fine to medium gravel and cobbles of psammite. [Macduff Formation]			105.25											
				3.20 - 3.54										
				3.20 - 4.20	RC	82					100			
		(2.00)										[NI]		
				4.20 - 5.70	RC	82					100			
												[NI]		
Assessed zone of no recovery.			100.75											
				5.70 - 7.20	RC	82					40			
												[NI]		
												[NR]		
		(4.50)		7.20 - 8.70	RC	82					66			
												[NI]		
		8.70 - 9.70	RC	82					90					
										[NI]				
		9.70								0				
	(0.50)	9.70 - 10.20	RC	82						0				
										0				
											[NR]			

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH40
Sheet 2 of 2

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 16/10/2023
Date Completed: 16/10/2023

Survey Grid System: OSGB
Co-ordinates: 382628.09 mE
847436.56 mN
Ground Level: 110.45 mOD
Orientation: - - deg.
Inclination: 90 deg.

Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 15.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing								TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result	Units					
Assessed zone of no recovery.																
Weak to moderately weak weathered PELITE. Recovered as non intact cores of angular to subangular fine to medium gravel and cobbles of pelite with occasional pockets of greyish brown sandy silt (<70mm). [Macduff Formation]		10.20	100.25													
				10.20 - 11.70	RC	82						8600	[NI]			
													[NI]			
				11.70 - 13.20	RC	82						5200	[NI]			
			(5.00)										[NR]			
13.20 - 14.00m : Assessed zone of no recovery				13.20 - 14.20	RC	82						2000	[NR]			
14.20 - 14.70m : Assessed zone of no recovery													[NI]			
				14.20 - 15.20	RC	82						5000	[NR]			
													[NI]			
Borehole Terminated at 15.20m		15.20	95.25													

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH40
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382628.09 mE 847436.56 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	110.45 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	16/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	16/10/2023			Final Depth:	15.20m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	16/10/2023	16/10/2023	Insulated Hand Tools			Mark Bolton / S.K		
1.20	3.20	DS	16/10/2023	16/10/2023	Fraste ML	87		Mark Bolton / S.K	Lawrence Ahukannah	
3.20	15.20	RC	16/10/2023	16/10/2023	Fraste ML	T2-101	Pad	Mark Bolton / S.K	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
16/10/2023	07:30	0.00	0.00		Start of shift	15.20	150		3.20	150	
16/10/2023	17:00	15.20	3.20	3.10	Hole complete	15.20	101		3.20	101	

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
3.30	15.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								0.00	3.20	100 - 100	Air	Brown
								3.20	4.20	100 - 100	Water	Brown
								4.20	5.70	100 - 100	Water	Brown
								5.70	7.20	100 - 100	Water	Brown
								7.20	8.70	100 - 100	Water	Brown
								8.70	9.70	100 - 100	Water	Brown
								9.70	10.20	100 - 100	Water	Brown
								10.20	11.70	100 - 100	Water	Brown
								11.70	13.20	100 - 100	Water	Brown
								13.20	14.20	100 - 100	Water	Brown

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
16/10/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	15.20	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.20	S	49 / 200	2.20	0.00	0	9	75	14	75	14	75	21	75	14	50			BRK9	61
3.20	S	50 / 185	3.20	Dry	0	7	75	17	75	17	75	21	75	12	35			BRK9	61

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH40
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382628.09 mE 847436.56 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	110.45 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	16/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	16/10/2023			Final Depth:	15.20m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress						Hole Diameter by Depth			Casing Diameter by Depth		
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						15.20	150		3.20	150	
						15.20	101		3.20	101	

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details					
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								14.20	15.20	100 - 100	Water	Brown

Water Strikes							Monitoring Installation Pipe Work						Backfill Details				
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
16/10/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																				
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%	

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH41
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382792.47 mE 847367.40 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	104.75 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	18/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	19/10/2023			Print Date:	15/02/2024
				Final Depth:	14.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.50	104.25	0.50	B-1									
Soft brown gravelly slightly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to coarse. [Till]		0.70		0.50	D-2									
		1.20	103.55	1.00	B-3 D-4									
Orangish brown silty very sandy angular to subangular fine to coarse GRAVEL of siltstone and sandstone. Possible Residual soil. [Macduff Formation]		2.00		1.20 - 2.20	L-5	86	100							
				1.20 - 2.20	WS	86	100							
		2.20		2.20 - 2.65	D-6			S	N=27					
		2.20		2.20 - 3.20	L-7	86	100							
				2.20 - 3.20	WS	86	100							
Assessed zone of no recovery.		3.20	101.55											
		4.20		3.20 - 4.20	RC	82					0 0 0			
Possible greenish grey PSAMMITE. Highly weathered, recovered as non intact cores of angular to subangular fine to medium gravel of psammite. [Macduff Formation]		4.20	100.55											
		5.20		4.20 - 5.20	RC	82					40 0 0	[N]		
		6.20		5.20 - 6.20	RC	82					60 0 0	[N]		
Assessed zone of no recovery		6.20	98.55											
		7.20		6.20 - 7.70	RC	82					0 0 0	[NR]		
7.70 - 8.00m : No recovery - Driller advancing casing to 8.0m because of loose material falling in while coring.		8.00	96.75											
Moderately weak to medium strong thinly to thickly foliated greenish grey micaceous fine to medium grained PSAMMITE with occasional black reduction spots along surfaces and porphyroblasts of feldspar. Slightly weathered with reddish brown, black and orange discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. 2) 0 to 30 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		8.00		8.00 - 9.50	C						100 77 33	[8]		
				8.00 - 9.50	RC	82						[7]		

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH41
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382792.47 mE 847367.40 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	104.75 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	18/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	19/10/2023			Print Date:	15/02/2024
				Final Depth:	14.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	D	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result						Units
Moderately weak to medium strong thinly to thickly foliated greenish grey micaceous fine to medium grained PSAMMITE with occasional black reduction spots along surfaces and porphyroblasts of feldspar. Slightly weathered with reddish brown, black and orange discolouration on fracture surfaces (1-5mm penetration). Discontinuities: 1) 45 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough on a small scale and clean. 2) 0 to 30 degrees cross core fractures extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation] 11.80 - 12.55m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. 12.96 - 13.12m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 13.35 - 13.50m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. 13.88 - 14.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite. Borehole Terminated at 14.00m		9.50 - 11.00	90.75	9.50 - 11.00	C RC	82						40 20 6	[NR]			
		11.00 - 12.50		11.00 - 12.50	RC	82						100 53 10	[10]			
		12.50 - 14.00		12.50 - 14.00	RC	82						100 61 28	[NI]			
		14.00		14.00												

Stratum depths measured along borehole axis.
 Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
 Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
 Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH41
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382792.47 mE 847367.40 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	104.75 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	18/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	19/10/2023			Final Depth:	14.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	18/10/2023	18/10/2023	Insulated Hand Tools			Mark Bolton / S.K.		
1.20	3.20	DS	18/10/2023	18/10/2023	Fraste ML	86		Mark Bolton / S.K.	Lawrence Ahukannah	
3.20	14.00	RC	18/10/2023	19/10/2023	Fraste ML	T2-101	Pcd	Mark Bolton / S.K.	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
18/10/2023	07:30	0.00	0.00		Start of shift	11.50	150		8.00	150	
18/10/2023	17:00	11.50	8.00	0.30	End of shift	14.00	101		8.00	101	
19/10/2023	07:30	11.00	8.00	0.30	Start of shift						
19/10/2023	17:00	14.00	8.00	0.30	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
3.20	14.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								3.20	4.20	100 - 100	Water	Brown
								4.20	5.20	100 - 100	Water	Brown
								5.20	6.20	100 - 100	Water	Brown
								6.20	7.70	100 - 100	Water	Brown
								8.00	8.00	100 - 100	Air	Brown
								8.00	9.50	100 - 100	Water	Brown
								9.50	11.00	100 - 100	Water	Brown
								11.00	12.50	100 - 100	Water	Brown
								12.50	14.00	100 - 100	Water	Brown

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
19/10/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	14.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.20	S	N=27	0.00	Dry	0	3	75	6	75	7	75	7	75	6	75	7	75	BRK9	61

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH42
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382666.21 mE 847297.57 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	107.53 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	13/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	15/10/2023			Print Date:	15/02/2024
				Final Depth:	16.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of siltstone and sandstone. Sand is fine to medium. [Topsoil]	[Symbol]	0.30	107.23	0.29	EW										
		0.30		0.50 - 0.60 0.50 - 0.60	B-1 D-2										
Soft brown slightly gravelly sandy SILT. Gravel is angular to subangular fine to coarse of siltstone and sandstone. Sand is fine to medium. [Till?]	[Symbol]	1.20	106.33	1.00 - 1.10 1.00 - 1.10	B-3 D-4										
		1.20		1.20 - 2.00 2.00 - 2.45 2.00 - 2.45	L-5 L-6		S	N=7							
Soft becoming firm brown slightly gravelly slightly sandy SILT. Gravel is fine to coarse. Driller notes weathered rock.	[Symbol]	5.60	106.33	2.50 - 3.50 3.50 - 3.95 3.50 - 3.95	L-7 D-8										
		5.60		4.00 - 5.00 5.00 - 5.45 5.00 - 5.45	L-9 D-10		S	N=20							
		5.60		5.50 - 5.80 5.80 - 5.82	L-11		S	50 / 10							
		5.60		5.80 - 6.80	RC	86						50 0 0	[NI]		
		5.60		6.80									[NR]		
		5.60		7.00 7.00 - 7.08	L-12		S	50 / 0							
		5.60		7.00 - 8.00	RC	86						0 0 0			
		5.60		8.00 8.00 - 8.02	L-13		S	50 / 5							
		5.60		8.00 - 9.00	RC	86						0 0 0			
		5.60		9.00											
Moderately weak to medium strong grey mottled black and dark red PELITE. Moderately weathered, recovered as angular fine to coarse gravel and cobbles of pelite. Where evident bedding planar fractures as very closely spaced, planar and stained. [Macduff Formation]	[Symbol]	9.50	98.53	9.00 - 9.50	RC	86									
		9.50		9.50 - 9.51				S	50 / 10			100 0 0	[NI]		
		9.50		9.50 - 10.50	RC	86									
No recovery. Driller notes weathered rock	[Symbol]	6.80	100.73												

Stratum depths measured along borehole axis.

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'

Further details given on appended 'Borehole Information Sheet'.



BOREHOLE LOG

Borehole No:
BH42
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382666.21 mE 847297.57 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	107.53 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	13/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	15/10/2023			Print Date:	15/02/2024
				Final Depth:	16.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Assessed zone of no recovery.		(1.50)									0 0 0	[NR]		
Moderately weak to medium strong thinly to thickly foliated greyish white micaceous fine grained PSAMMITE with occasional bands of pelite up to (<70mm). Slightly weathered with reddish brown and orange discolouration on fracture surfaces (1 to 3mm penetration). Discontinuities: 1) 45 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough with infill of brown sandy clay (<1mm). [Macduff Formation] 11.19 - 11.80m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite & psammite with occasional pockets (>20mm) of sandy clay. 12.00 - 13.50m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite & psammite. 13.80 - 14.28m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.		11.00	96.53	10.50 - 11.00	RC	86					0 0 0	[NR]		
				11.00 - 12.00	RC	86					100 24 0	[NI]		
				12.00 - 13.00	RC	86					100 0 0	[NI]		
			(4.00)		13.00 - 13.50	RC	86				100 0 0	[NI]		
					13.50 - 15.00	RC	86				46 17 11	[NI]		
												[NR]		
Assessed zone of core loss.		(1.00)	15.00	15.00 - 16.00	RC	86					0 0 0	[NR]		
Borehole Terminated at 16.00m		16.00	91.53											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH42
Sheet 1 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382666.21 mE 847297.57 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	107.53 MOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	13/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	15/10/2023			Final Depth:	16.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	13/10/2023	13/10/2023	Insulated digging tools			Chris Coyle		
1.20	5.80	DS	13/10/2023	14/10/2023	Fraste ML	T2-101	Pad	Chris Coyle	Lawrence Ahukannah	
5.80	16.00	RC	14/10/2023	15/10/2023	Fraste ML			Chris Coyle	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
13/10/2023	07:30	0.00	0.00	Dry	Start of shift	5.80	152		4.00	152	
13/10/2023	16:30	4.00	4.00	Dry	End of shift	16.00	152		10.00	152	
14/10/2023	08:30	4.00	4.00	1.00	Start of shift						
14/10/2023	17:00	11.00	10.00	1.00	End of shift						
15/10/2023	07:30	11.00	10.00	1.00	Start of shift						
15/10/2023	14:00	16.00	10.00	1.00	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
5.80	15.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								5.80	6.80	100 - 100	Water	
								7.00	8.00	100 - 100	Water	
								8.00	9.00	100 - 100	Water	
								9.00	9.50	100 - 100	Water	
								9.50	10.50	100 - 100	Water	
								10.50	11.00	100 - 100	Water	
								11.00	12.00	100 - 100	Water	Brownish
								12.00	13.00	100 - 100	Water	Brownish
								13.00	13.50	100 - 100	Water	Brownish
								13.50	15.00	100 - 100	Water	Brownish

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
15/10/2023						Drilling with water - no strike recorded		1	0.00	1.20	50	PLAIN		0.00	0.20	909	Upstanding cover
								1	1.20	5.00	50	SLOTTED		0.20	0.30	906	Concrete
														0.30	1.20	903	Bentonite
														1.20	5.00	902	Gravel
														5.00	16.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.00	S	N=7	2.00	Dry	0	1	75	1	75	2	75	1	75	2	75	2	75	BRK9	61
3.50	S	N=21	3.50	Dry	0	3	75	3	75	5	75	5	75	6	75	5	75	BRK9	61
5.00	S	N=20	5.00	Dry	0	4	75	4	75	4	75	5	75	5	75	6	75	BRK9	61
5.80	S	50 / 10	5.50	Dry	0	25	5			50	10			5	75	6	75	BRK9	61
7.00	S	50 / 0	7.00	Dry	0	22	75	4	0	50	0							BRK9	61
8.00	S	50 / 5	7.00	Dry	0	25	10			50	5							BRK9	61
9.50	S	50 / 10	8.50	Dry	0	25	0			50	10							BRK9	61

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE INFORMATION SHEET

Borehole No
BH42
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382666.21 mE 847297.57 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	107.53 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	13/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	15/10/2023			Final Depth:	16.00m

Depth Related Exploratory Hole Information										
From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks

Boring-Drilling Progress					Hole Diameter by Depth			Casing Diameter by Depth			
Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
						5.80	152		4.00	152	
						16.00	152		10.00	152	

Water Added Records			
From (m)	To (m)	Volume (litres)	Remarks

Depth Related Remarks			Chiselling / Hard Boring Details				Drilling Flush Details				
From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour
								15.00	16.00	100 - 100	Water

Water Strikes						Monitoring Installation Pipe Work						Backfill Details					
Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
15/10/2023						Drilling with water - no strike recorded											

Standard Penetration Test Results																			
Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH43
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382781.96 mE 847170.88 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	103.37 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	17/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	17/10/2023			Print Date:	15/02/2024
				Final Depth:	8.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill	
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units
Grass over soft dark brown sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.50	102.87	0.50	B-1 D-2										
Dense grey very silty very sandy angular to subangular fine to coarse GRAVEL of sandstone and siltstone. Sand is fine to coarse. Possible residual soil [Macduff Formation]		1.00		1.00	B-3 D-4										
		2.00		1.20 - 2.20 1.20 - 2.20	L-6 WS	86 86	100 100								
		2.50	100.87	2.20 - 2.65	D-5				S	N=38					
Moderately weak to medium strong, thinly to thickly foliated greenish grey micaceous PELITE. Slightly weathered with black and orange discolouration on fracture surfaces (1 to 5mm penetration). Discontinuities: 1) 60 to 90 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough and clean. 2) 0 to 30 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		2.50		2.50 - 3.50	RC	86					100 0 0	[NI]			
2.50 - 3.50m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				3.50 - 5.00	RC	86					100 25 0	[NI]			
3.50 - 3.70m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				4.20 - 4.57m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.											
4.20 - 4.57m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				4.75 - 5.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite with rare pocket (<20mm) of grey sandy silt.											
4.75 - 5.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite with rare pocket (<20mm) of grey sandy silt.				5.00 - 5.70m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.											
5.00 - 5.70m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				5.75 - 6.40m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.											
5.75 - 6.40m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.				6.50 - 7.30m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite.											
6.50 - 7.30m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite.				6.50 - 8.00	RC	86					100 6 0	[NI]			
Borehole Terminated at 8.00m		8.00	95.37												

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.



BOREHOLE INFORMATION SHEET

Borehole No
BH43
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382781.96 mE 847170.88 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	103.37 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	17/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	17/10/2023			Final Depth:	8.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	17/10/2023	17/10/2023	Insulated digging tools			Mark Bolton / S.K.		
1.20	2.50	DS	17/10/2023	17/10/2023	Fraste ML	86		Mark Bolton / S.K.	Lawrence Ahukannah	
2.50	8.00	RC	17/10/2023	17/10/2023	Fraste ML	T2-101	Pcd	Mark Bolton / S.K.	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
17/10/2023	07:30	0.00	0.00		Start of shift	8.00	101		2.50	150	
17/10/2023	17:00	8.00	2.50	0.55	Hole complete	8.00	150		2.50	101	

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.50	6.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								0.00	2.50	100 - 100	Air	Brown
								2.50	3.50	100 - 100	Water	Brown
								3.50	5.00	100 - 100	Water	Brown
								5.00	6.50	100 - 100	Water	Brown
								6.50	8.00	100 - 100	Water	Brown

Chiselling / Hard Boring Details

Drilling Flush Details

Water Strikes

Monitoring Installation Pipe Work

Backfill Details

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
						Drilling with water - no strike recorded								0.00	8.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.20	S	N=38	0.00	1.00	0	4	75	4	75	6	75	6	75	11	75	15	75	BRK9	61

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH44
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 12/10/2023
Date Completed: 13/10/2023

Survey Grid System: OSGB
Co-ordinates: 382627.73 mE
847171.92 mN
Ground Level: 106.16 MOD
Orientation: - - deg.
Inclination: 90 deg.
Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.00m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [FI]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Grass over soft dark brown gravelly sandy CLAY. Gravel is angular to subangular, fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.30	105.86											
Medium dense brown very silty very gravelly fine to coarse SAND with some cobble. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Cobbles are angular to subangular of siltstone (<80mm). Possible weathered soil. [Macduff Formation]		0.50 - 0.60		B-1										
		0.50 - 0.60		D-2										
		1.00 - 1.10		B-3										
		1.00 - 1.10		D-4										
		(2.10)		L-5										
Dense grey very silty very gravelly fine and medium SAND. Gravel is angular to subangular fine to coarse of Semi-pelite. Driller notes weathered rock [Macduff Formation]		2.00 - 2.45						S	N=28					
		2.00 - 2.45		D-6										
		2.40	103.76											
Assessed zone of no recovery. 4.20 - 5.30m : Recovered as non intact cores of angular to subangular, fine to medium gravels of siltstone. & pelite.		2.50 - 3.50		L-7										
		(1.60)												
		3.50 - 3.95		D-8				S	N=37					
Medium strong, thinly to thickly foliated greenish grey micaceous fine to SEMI-PELITE with occasional thin beds of grey psammite with occasional black reduction spots along surfaces and occasional lenses of quartz. Slightly weathered with reddish brown, black and orange discolouration on fracture surfaces (1 to 5mm penetration). Discontinuities: 1) 60 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough on a medium scale and clean. 2) 0 to 30 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		4.00	102.16											
		(0.80)		4.00 - 5.00	RC	86					20 0 0	[NR]		
6.40 - 6.55m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.		5.00 - 6.20		RC	86						100 64 20	[16]		
		(5.20)										[16]		
		6.20 - 7.70		RC	86						100 44 8	[17]		
7.15 - 7.37m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite.		7.70 - 9.20		RC	86						100 13 0	[NI]		
7.96 - 9.20m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite.		9.20 - 10.00		RC	86						100 31 0	[14]		
9.76 - 10.00m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite. Borehole Terminated at 10.00m		10.00	96.16											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH44
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382627.73 mE 847171.92 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	106.16 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Log Status:	FINAL
Date Started:	12/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	13/10/2023			Final Depth:	10.00m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	12/10/2023	12/10/2023	Insulated digging tools			Chris Coyle		
1.20	4.00	DS	12/10/2023	12/10/2023	Fraste ML			Chris Coyle	Lawrence Ahukannah	
4.00	10.00	RC	12/10/2023	13/10/2023	Fraste ML	T2-101	PCD	Chris Coyle	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
12/10/2023	13:30	0.00	0.00		Start of shift	5.00	152		4.00	152	
12/10/2023	17:00	5.00	4.00	3.80	End of shift	10.00	152		5.00	152	
13/10/2023	07:30	5.00	4.00	0.00	Start of shift						
13/10/2023	12:00	10.00	5.00	0.00	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
4.00	10.00		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								4.00	5.00	100 - 100	Water	Blueish
								5.00	6.20	100 - 100	Water	
								6.20	7.70	100 - 100	Water	Blueish
								7.70	9.20	100 - 100	Water	
								9.20	10.00	100 - 100	Water	

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
13/10/2023						Drilling with water - no strike recorded								0.00	0.50	905	Arisings
														0.50	10.00	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.00	S	N=28	2.00	Dry	0	7	75	8	75	6	75	7	75	7	75	8	75	T820-792	70
3.50	S	N=37	3.50	Dry	0	3	75	3	75	9	75	9	75	10	75	9	75	T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH45
Sheet 1 of 2

Project Name: ASTI Substation Site - LT379
New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 11/10/2023
Date Completed: 12/10/2023

Survey Grid System: OSGB
Co-ordinates: 382692.71 mE
847045.67 mN
Ground Level: 103.57 mOD
Orientation: - - deg.
Inclination: 90 deg.
Hole Type: DS+RC
Checked By: SR
Approved By: PMCG
Scale: 1:50
Log Status: FINAL
Print Date: 15/02/2024
Final Depth: 10.30m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFave mm IFmax mm or [F]	Water	Well/ Backfill		
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units	
Grass over soft dark brown gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.20	103.37													
Brown very sandy very silty angular to subrounded fine to coarse GRAVEL with a some cobbles and occasional boulder. Sand is fine to medium. Cobbles are angular to subangular of siltstone and sandstone (<80mm). Boulder is angular to subangular of siltstone (<280mm). [Till]		0.50 - 0.60		B-1												
		0.50 - 0.60		D-2												
		1.00 - 1.10		B-3												
		1.00 - 1.10		D-4												
Possible completely weathered SEMI-PELITE Recovered as grey very sandy very silty fine to coarse gravel. [Macduff Formation]		1.20 - 2.00		L-5												
		2.00 - 2.31		D-6				S	50 / 155							
		2.00 - 2.30														
		2.50 - 3.50		L-7												
		3.50 - 3.74		D-8				S	50 / 85							
		3.50 - 3.70														
Medium strong to strong thinly to thickly foliated bluish grey micaceous PELITE with frequent black reduction spots on surfaces and occasional lenses of quartz. Slightly weathered with reddish brown, orange and grey discolouration on fracture surfaces (1 to 5mm penetration). Discontinuities: 1) 45 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough on a medium scale and clean. 2) 0 to 30 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation]		4.00 - 5.00		L-9												
		5.00 - 5.30		D-10				S	50 / 155							
		5.00 - 5.30														
		5.30 - 6.30		RC	86						100 17 0	[3]				
		6.30 - 6.80		RC	86						100 0 0					
		6.80 - 8.30		RC	86						100 61 26	[9]				
		8.30 - 8.50m : Recovered as non intact cores of angular to subangular, fine to medium gravels of pelite														
		8.92 - 9.40m : Recovered as non intact cores of angular to subangular, fine to medium gravels & cobbles of pelite														

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE LOG

Borehole No:
BH45
Sheet 2 of 2

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382692.71 mE 847045.67 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	103.57 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	11/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	12/10/2023			Print Date:	15/02/2024
				Final Depth:	10.30m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill			
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result					Units		
Medium strong to strong thinly to thickly foliated bluish grey micaceous PELITE with frequent black reduction spots on surfaces and occasional lenses of quartz. Slightly weathered with reddish brown, orange and grey discolouration on fracture surfaces (1 to 5mm penetration). Discontinuities: 1) 45 to 80 degrees vertical parallel fractures, extremely closely to very closely spaced, planar to undulating rough on a medium scale and clean. 2) 0 to 30 degrees cross core fractures, extremely closely to very closely spaced, planar to undulating rough and clean. [Macduff Formation] <i>10.12 - 10.30m : Recovered as non intact cores of angular to subangular, fine to coarse gravels & cobbles of pelite</i> Borehole Terminated at 10.30m		10.30	93.27	9.80 - 10.30	RC	86											

Stratum depths measured along borehole axis. Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant. Explanation of symbols and abbreviations given in 'Key to Exploratory Holes' Further details given on appended 'Borehole Information Sheet'.	Remarks
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BOREHOLE INFORMATION SHEET

Borehole No
BH45
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382692.71 mE 847045.67 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	103.57 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	11/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	12/10/2023			Final Depth:	10.30m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	11/10/2023	11/10/2023	Insulated digging tools			Chris Coyle		
1.20	5.00	DS	11/10/2023	11/10/2023	Fraste ML			Chris Coyle	Lawrence Ahukannah	
5.30	10.30	RC	12/10/2023	12/10/2023	Fraste ML	T2-101	PCD	Chris Coyle	Lawrence Ahukannah	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
11/10/2023	07:30	0.00	0.00		Start of shift	5.30	152		5.30	152	
11/10/2023	17:00	5.00	5.00	Dry	End of shift						
12/10/2023	07:30	5.30	5.30	0.50	Start of shift	10.30			5.30		
12/10/2023	13:30	10.30	5.30	0.50	Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
5.30	10.30		Water added: Rotary Coring. No volume recorded.

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								5.30	6.30	100 - 100	Water	Blueish
								6.30	6.80	100 - 100	Water	Blueish
								6.80	8.30	100 - 100	Water	Blueish
								8.30	9.80	100 - 100	Water	Blueish
								9.80	10.30	100 - 100	Water	Blueish

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
11/10/2023	1.20	0.00	5	1.20										0.00	0.50	905	Arisings
11/10/2023	1.20	0.00	10	1.20										0.50	10.30	903	Bentonite
11/10/2023	1.20	0.00	15	1.00													
11/10/2023	1.20	0.00	20	1.00													

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.00	S	50 / 155	2.00	Dry	0	10	75	10	75	11	75	12	75	27	5			T820-792	70
3.50	S	50 / 85	3.50	Dry	0	13	75	10	75	20	75	30	10					T820-792	70
5.00	S	50 / 155	5.00	Dry	0	12	75	12	75	15	75	15	75	20	5			T820-792	70

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.



BOREHOLE LOG

Borehole No:
BH46
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382735.13 mE 846906.09 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	104.01 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	-- deg.	Scale:	1:50
Date Started:	23/10/2023	Inclination:	90 deg.	Log Status:	FINAL
Date Completed:	24/10/2023			Print Date:	15/02/2024
				Final Depth:	7.20m

Stratum Description	Leg.	Depth (Thickness) (m)	Level (m)	Sampling, Coring and In Situ Testing							TCR SCR RQD %	IFmin mm IFmax mm or [F]	Water	Well/ Backfill
				Depth (m)	Type	Dia (mm)	Rec %	Blows/[mins]	Test	Test Result				
Soft dark brown gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.40	103.61	0.50 0.50	B-1 D-2									
Firm brown slightly gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to angular fine to coarse of pelite. Cobbles are subangular to angular of pelite (<70mm). [Till]		1.10	102.51	1.00 1.00	B-3 D-4									
Brown clayey SAND AND GRAVEL with low cobble content. Gravel is subangular to angular fine to coarse of pelite. Cobbles are subangular to angular of pelite (<70mm). Driller notes highly weathered Psammite [Macduff Formation]		0.70	102.51	1.20 - 2.10 1.74	L-5 EW		100							
Extremely weak greyish brown PELITE. Recovered non-intact; as angular gravel and cobbles of pelite. Completely to highly weathered indicated by high degree of disintegration and complete loss of strength. [Macduff Formation]		0.20	101.81	2.10 - 2.20 2.10 - 2.20	D-6				S	50 / 30				
2.20 - 3.70m : Recovered as non-intact.		1.50	101.81	2.20 - 3.70	RC	84					100 0 0	[NI]		
Weak locally very weak thinly laminated greyish brown stained black PELITE. Recovered non-intact. Highly weathered indicated by partial to complete disintegration in parts, loss of strength and black surface staining along fracture planes. Where evident fractures are inclined 50 to 60 degrees, very closely spaced, planar and smooth. [Macduff Formation]		0.30	100.31	3.70 - 5.20	RC	84					66 0 0	[NI]		
3.70 - 7.20m : Recovered as non-intact.		3.50	100.31	5.20 - 6.70	RC	84					100 0 0	[NI]		
		0.50	96.81	6.70 - 7.20	RC	84					100 0 0	[NI]		
Borehole Terminated at 7.20m		7.20	96.81											

Stratum depths measured along borehole axis.
Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.
Explanation of symbols and abbreviations given in 'Key to Exploratory Holes'
Further details given on appended 'Borehole Information Sheet'.

Remarks



BOREHOLE INFORMATION SHEET

Borehole No
BH46
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	DS+RC
Project No:	RGN.330G	Co-ordinates:	382735.13 mE 846906.09 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	104.01 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation:	- - deg.	Log Status:	FINAL
Date Started:	23/10/2023	Inclination:	90 deg.	Print Date:	15/02/2024
Date Completed:	24/10/2023			Final Depth:	7.20m

Depth Related Exploratory Hole Information

From (m)	To (m)	Type	Start	End	Plant	Barrel	Drill Bit	Rig Crew	Logger	Remarks
0.00	1.20	IP	24/10/2023	24/10/2023	Insulated digging tools			James McFarlane / Ian Wilson		
1.20	2.20	DS	24/10/2023	24/10/2023	Fraste ML	U86		James McFarlane / Ian Wilson	Sven Richter	
2.20	7.20	RC	24/10/2023	24/10/2023	Fraste ML	T2-101	PCD	James McFarlane / Ian Wilson	Sven Richter	

Boring-Drilling Progress

Date	Time	Depth (m)	Casing (m)	Depth Water (m)	Remarks	Depth (m)	Dia. (mm)	Remarks	Depth (m)	Dia. (mm)	Remarks
23/10/2023	11:00	0.00	0.00		Start of shift	2.20	125		2.20	101	
23/10/2023	16:00	7.20	2.20	4.90	End of shift	7.20	101		2.20	125	
24/10/2023	07:30	7.20	2.20	5.30	Start of shift						
24/10/2023	17:00	7.20	2.20	5.90	Hole complete						
26/10/2023					Start of shift						
27/10/2023					Hole complete						

Water Added Records

From (m)	To (m)	Volume (litres)	Remarks
2.20	7.20	2000	

Depth Related Remarks

From (m)	To (m)	Remarks	From (m)	To (m)	Duration (hh:mm)	Tool	From (m)	To (m)	Returns (%)	Flush	Colour	
								2.20	3.70		Water	Brown
								3.70	5.20		Water	Brown
								5.20	6.70		Water	Brown
								6.70	7.20		Water	Brown

Water Strikes

Date	Strike (m)	Casing (m)	Time (mins)	Depth (m)	Sealed (m)	Remarks	Type	Pipe ID	From (m)	To (m)	Dia(mm)	Pipe Type	Remarks	From (m)	To (m)	Legend	Description
23/10/2023						Drilling with water - no strike recorded		1	0.00	0.50	50	PLAIN		0.00	0.10	909	Upstanding cover
								1	0.50	2.00	50	SLOTTED		0.10	0.30	906	Concrete
														0.30	0.50	903	Bentonite
														0.50	2.00	902	Gravel
														2.00	7.20	903	Bentonite

Standard Penetration Test Results

Depth (m)	Type	N Value	Casing (m)	Water (m)	SWPen(mm)	Blows1	Pen1(mm)	Blows2	Pen2(mm)	Blows3	Pen3(mm)	Blows4	Pen4(mm)	Blows5	Pen5(mm)	Blows6	Pen6(mm)	Hammer	E. Ratio%
2.10	S	50 / 30	0.00	Dry	0	25	70			50	30							BRK7	65

Reason for Hole Termination: Reached scheduled depth

Groundwater levels can be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref: BRK07.
Test Date: 15/09/2022
Report Date:
File Name: BRK07..spt
Test Operator: PH

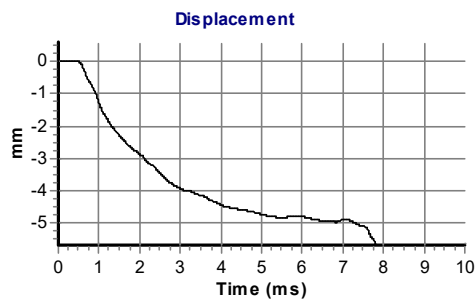
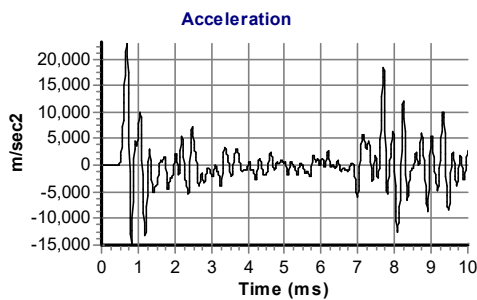
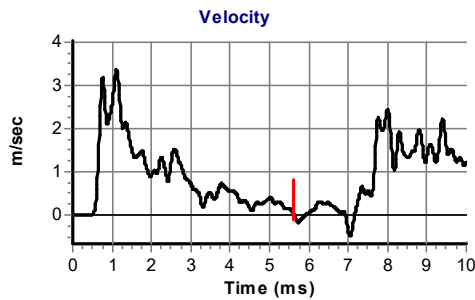
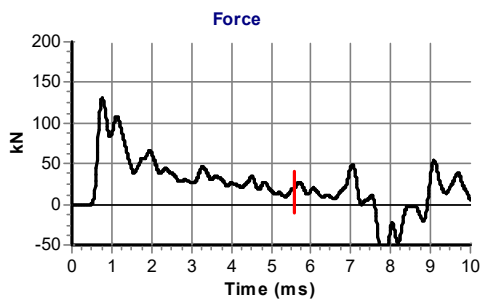
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.5
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 69556
Accelerometer No.2: 69558

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 16.7

Comments / Location



Calculations

Area of Rod A (mm^2): 970
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 308

Energy Ratio E_r (%): **65**

Signed:

Title:

DICHIARAZIONE DI CONFORMITA' SPT
SPT CONFORMITY DECLARATION

Il sottoscritto, in qualità di Fabbricante:
We undersigned, as Manufacturer:

FRASTE S.P.A.
via Molino di Sopra, 71
37054 Nogara (VR) - Italia
Partita IVA CE IT 02248120236

dichiara sotto la propria responsabilità che il componente di seguito descritto:
hereby declare, under our own responsibility that the component described below:

Categoria <i>Category</i>	SPT (Prova Penetrometrica Dinamica) <i>SPT (Standard Penetration Test)</i>
Marca <i>Brand</i>	FRASTE
Tipo <i>Type</i>	SPT
Installato su perforatrice matricola numero <i>Assembled on drilling rig serial number</i>	X2301389
Massa del martello <i>Mass of the hammer</i>	63,5 ± 0.5 kg
Altezza di caduta <i>Falling height</i>	760 ± 10 mm
Energia teorica <i>Energy theoretical</i>	473 J
Energia misurata <i>Energy measured</i>	385 J

è stato costruito e testato in conformità alla seguente normativa:
has been manufactured and tested in accordance with the following normative:

1. Norma EN ISO 22476-3:2012 che specifica i requisiti per le indagini indirette dei terreni mediante prova di penetrazione dinamica SPT.
Normative EN ISO 22476-3:2012 that specifies requirements for indirect investigations of soil by dynamic penetration test SPT

(*) Il valore di energia misurato, è stato ottenuto testando l'SPT nuovo e in condizioni di pulizia e lubrificazione ottimali, in modo da ridurre al minimo gli attriti che si generano durante il funzionamento.

(*) *The value of measured energy, was obtained by testing the SPT new and in clean conditions and optimal lubrication, so as to minimize the friction generated during the operation.*

Il detentore della documentazione tecnica è individuato nella figura del Sig. Fracca Vittorio presso la sede della FRASTE SPA.

The holder of the technical documentation is identified in the figure of Mr. Vittorio Fracca at the Fraste SPA headquarters.

Nogara, 15/06/2023


FRASTE SPA
Fracca Vittorio
General Manager/Technical Director

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref: T820-792

Test Date: 22/09/2022

Report Date:

File Name: T820-792.spt

Test Operator: PH

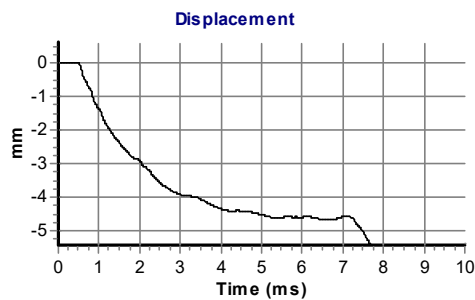
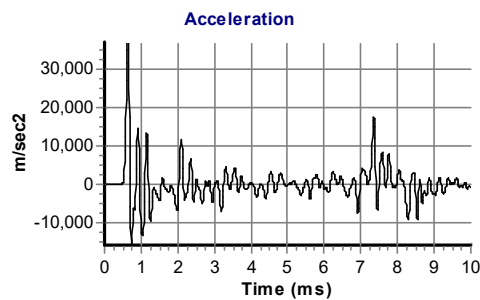
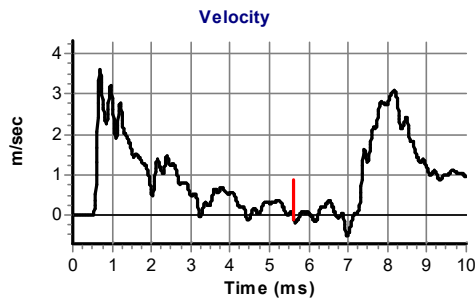
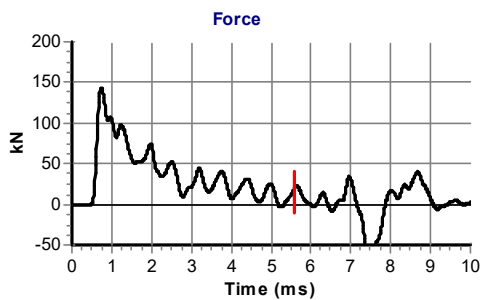
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.5
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 69556
Accelerometer No.2: 69558

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 16.7

Comments / Location



Calculations

Area of Rod A (mm²): 970
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 330

Energy Ratio E_r (%): **70**

Signed:

Title:

**APPENDIX 3.2
TRIAL PIT LOGS**



TRIAL PIT LOG

Trial Pit No.
TP01
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381576.75 mE 847744.97 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	150.20 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	045 deg.	Status:	FINAL
Date Started:	14/09/2023			Print Date:	15/02/2024
Date Completed:	14/09/2023			Final Depth:	2.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is angular to subangular fine to coarse of psammite and quartz. [Topsoil]		[0.40]	150.20							
Orangish brown silty sandy angular to subangular fine to coarse GRAVEL of psammite, semipelite and quartz. Cobbles are angular to subangular of psammite. Sand is fine to coarse. [Till]		0.40	149.80	0.50	B-2					
				0.50	D-1					
		[1.20]		1.00	B-4					
Possible weathered PSAMMITE. Recovered as a light brown sandy gravel with a high cobble content. Sand is fine to coarse. Gravel is angular to subangular medium to coarse. Cobbles are subangular to angular of psammite (<150mm). [Macduff Formation]		1.60	148.60	1.50	LB-5					
				1.50	LB-6					
				1.50	LB-7					
		[0.40]		1.50	LB-8					
		2.00	148.20	1.50	LB-9					
2.00m : Refusal. Presumed bedrock.										
Trial Pit Terminated at 2.00m										

Reason for Hole Termination: Refusal. Excavator bucket scraping base of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	2.00	3.30	1.40	Stable	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Description
							Not encountered		Arisings
							Depth Top	Depth Base	
							0.00	2.00	

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP02
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381549.22 mE 847679.89 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	152.44 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	045 deg.	Status:	FINAL
Date Started:	14/09/2023			Print Date:	15/02/2024
Date Completed:	14/09/2023			Final Depth:	3.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over soft dark brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of quartz and psammite. [Topsoil]		0.30	152.44							
Soft orangish brown slightly sandy gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of pelite, psammite and quartz. [Till]		0.30 [0.40]	152.14	0.50 0.50	B-2 D-1					
Orangish brown silty very sandy angular to subangular fine to coarse GRAVEL of psammite, pelite and quartz. With medium cobble content. Sand is fine to coarse. Possible residual soil. [Macduff Formation]		0.70 [1.80]	151.74	1.00 1.00 1.50 1.50 1.50 1.50 2.00 2.00	B-4 D-3 LB-10 LB-11 LB-12 LB-13 LB-9 B-6 D-5					
Possible weathered PSAMMITE. Recovered as brown sandy gravel with cobbles. Sand is medium to coarse. Gravel is angular to subangular fine to coarse. Cobbles are angular to subangular of psammite (<160mm). [Macduff Formation]		2.50 [0.50]	149.94							
3.00m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.00m		3.00	149.44	3.00 3.00	B-8 D-7					

Reason for Hole Termination: Refusal. Excavator bucket scraping base of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.00	3.30	1.40	Stable	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	3.00	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP03
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381503.06 mE	Checked By:	SR
Client:	SSEN-T		847582.20 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	150.81 mOD	Scale:	1:33
Date Started:	14/09/2023	Orientation of Logged Face:	045 deg.	Status:	FINAL
Date Completed:	14/09/2023			Print Date:	15/02/2024
				Final Depth:	3.30m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over dark brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of quartz and psammite. [Topsoil]		[0.30]	150.81							
Brown very silty very sandy angular to subangular fine to coarse GRAVEL of psammite and quartz. With medium cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite (<140mm). [Till]		[0.40]	150.51	0.50	B-2 D-1					
Greenish grey very gravelly silty fine to coarse SAND with low cobble content. Gravel is angular to subangular fine to coarse of psammite. Cobbles are subangular to angular of psammite (<160mm). Possible completely weathered Psammite. [Macduff Formation]		[1.30]	150.11	1.00	B-4 D-3					
Possible completely weathered PSAMMITE. Recovered as a greenish grey mottled white gravelly very silty fine to coarse sand. Gravel is angular to subangular fine to coarse of psammite. [Macduff Formation]		[1.30]	148.81	2.00	B-6 D-5					
		[1.30]		3.00	B-8 D-7					
3.30m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.30m				3.30	147.51					

Reason for Hole Termination: Refusal. Excavator bucket scraping base of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.30	1.40	3.30	Stable	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes			Backfill Details			
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	3.30	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP04
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381451.57 mE 847463.15 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	148.71 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	045 deg.	Status:	FINAL
Date Started:	14/09/2023			Print Date:	15/02/2024
Date Completed:	14/09/2023			Final Depth:	4.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over soft dark brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of quartz and psammite. [Topsoil]		[0.40]	148.71							
Brown very sandy silty angular to subangular fine to coarse GRAVEL of quartz and psammite. Possible residual soil. [Macduff Formation]		0.40	148.31	0.50	B-2					
				0.50	D-1					
				1.00	B-4					
				1.00	D-3					
				[2.20]						
				1.50	LB-5					
				1.50	LB-6					
				1.50	LB-7					
				1.50	LB-8					
				1.50	LB-9					
Brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of psammite. Possible residual soil / completely weathered psammite. [Macduff Formation] <i>2.80m : Field drain encountered. Dimensions not discernible due to depth.</i>		2.60	146.11							
				3.00	B-13					
				3.00	D-12					
				[1.40]						
Trial Pit Terminated at 4.00m		4.00	144.71	4.00	B-15					
				4.00	D-14					

Reason for Hole Termination: Continual sidewall collapse.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	4.00	3.20	1.40	Unstable. Sidewall collapse.	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base	
				2.80	5	2.80	0.00	4.00	Arisings
				2.80	10	2.70			
				2.80	15	2.65			
				2.80	20	2.60			

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP05
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381410.31 mE 847363.44 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	153.17 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	045 deg.	Status:	FINAL
Date Started:	14/09/2023			Print Date:	15/02/2024
Date Completed:	14/09/2023			Final Depth:	1.20m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over soft dark brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of psammite and semipelite. [Tospoil]		[0.30]	153.17							
Yellowish brown PSAMMITE. Completely weathered, recovered as a very gravelly very silty fine to coarse sand with a high cobble. Gravel is angular to subangular fine to coarse of psammite. Cobbles are angular to subangular of psammite. [Macduff Formation]		0.30	152.87	0.50 0.50	B-2 D-1					
		[0.90]		1.00 1.00	B-4 D-3					
<i>1.20m : Refusal. Presumed bedrock.</i>		1.20	151.97	1.20 1.20 1.20 1.20 1.20	LB-5 LB-6 LB-7 LB-8 LB-9					
Trial Pit Terminated at 1.20m										

Reason for Hole Termination: Refusal. Excavator bucket scraping base of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	1.20	3.30	1.40	Partially stable	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	1.20	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP06
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 15/09/2023
Date Completed: 15/09/2023

Survey Grid System: OSGB
Co-ordinates: 381535.24 mE
Ground Level: 147.20 mOD
Orientation of Logged Face: 045 deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over soft dark brown sandy gravelly CLAY with a low cobble content. Gravel is angular to subrounded, fine to coarse of psammite and quartz. Cobbles are angular to subrounded of psammite and quartz. [Topsoil]		0.30	147.20							
Orangish brown very sandy very silty angular to subrounded fine to coarse GRAVEL of quartz and psammite. Sand is fine to coarse. Cobbles are angular to subrounded of quartz and psammite. Possible residual soil. [Macduff Formation]		0.70	146.90	0.50 0.50	B-2 D-1					
Yellowish brown slightly gravelly fine to coarse SAND with a low cobble content. Gravel is angular to subrounded fine to coarse of psammite and quartz. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		1.00	146.20	1.00 1.00	B-4 D-3					
Possible weathered PSAMMITE. Recovered as yellowish brown silty sandy gravel with a high cobble and low boulder content. Sand is medium to coarse. Gravel is angular to subangular of psammite. Cobbles are subangular to angular of psammite (<200mm). Boulders are subangular of weathered psammite (<350mm). [Macduff Formation]		1.70	145.50	1.50 1.50 1.50 1.50 1.50	LB-5 LB-6 LB-7 LB-8 LB-9					
		[1.30]		2.00 2.00	B-11 D-10					
3.00m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.00m			144.20	3.00 3.00	B-13 D-12					

Reason for Hole Termination: Refusal. Excavator bucket scraping base of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.00	3.20	1.40	Stable	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes			Backfill Details			
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	3.00	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP07
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381579.05 mE 847463.66 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	143.49 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	045 deg.	Status:	FINAL
Date Started:	15/09/2023			Print Date:	15/02/2024
Date Completed:	15/09/2023			Final Depth:	3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well	
				Depth (m)	Type	Test	Test Result	Units			
Grass over soft dark brown becoming brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse of quartz and psammite. Sand is fine to coarse. [Topsoil]		[0.50]	143.49								
Bluish grey very gravelly very silty fine to coarse SAND with a low cobble and boulder content. Gravel is angular to subrounded, fine to coarse of quartz, pelite and psammite. Cobbles are angular to subrounded of quartz, siltstone and psammite. Boulders are angular to subangular of psammite (<500mm). Possible residual soil. [Macduff Formation] <i>2.00m : Becoming very sandy very silty GRAVEL</i>		0.50	142.99	0.50	B-2						
				0.50	D-1						
				1.00	B-4						
				1.00	D-3						
				[1.80]							
				1.50	LB-5						
				1.50	LB-6						
				1.50	LB-7						
				1.50	LB-8						
				1.50	LB-9						
	2.00	B-11									
	2.00	D-10									
Brown very gravelly very silty fine to coarse SAND with a low cobble content. Gravel is angular to subangular, fine to coarse of pelite, psammite and quartz. Cobbles are angular to subangular of psammite and quartz. Possible residual soil. [Macduff Formation]		2.30	141.19								
		[0.90]									
Possible completely weathered PELITE. Recovered as yellowish brown gravelly sandy clay. Sand is fine to medium. Gravel is subangular to angular of pelite and psammite. [Macduff Formation] <i>3.60m : Refusal. Presumed bedrock.</i>		3.20	140.29								
		[0.40]									
Trial Pit Terminated at 3.60m		3.60	139.89								

Reason for Hole Termination: Refusal. Excavator bucket scraping base of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.60	3.30	1.40	Stable	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes			Backfill Details			
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	3.60	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP08
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381672.11 mE 847548.09 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	146.08 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	045 deg.	Status:	FINAL
Date Started:	15/09/2023			Print Date:	15/02/2024
Date Completed:	15/09/2023			Final Depth:	3.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over soft dark brown gravelly sandy CLAY. Gravel is angular to subrounded of psammite and quartz. Sand is fine to coarse. [Topsoil]		[0.30]	146.08							
Yellowish brown very gravelly very silty fine to coarse SAND with medium cobble content. Gravel is angular to subrounded fine to coarse of quartz, psammite and pelite. Cobbles are angular to subangular of psammite (<120mm). Possible residual soil. [Macduff Formation]		0.30	145.78	0.50	B-2 D-1					
		[1.70]		1.00	B-4 D-3					
				1.50	LB-5					
				1.50	LB-6					
				1.50	LB-7					
Yellowish brown very sandy very silty angular fine to coarse GRAVEL of psammite with a low cobble and boulder content. Sand is fine to coarse. Cobbles are angular of psammite (<200mm). Boulders are angular of psammite (<400mm). Completely weathered Psammite. [Macduff Formation]		2.00	144.08	2.00	B-11 D-10					
		[1.00]		2.00						
3.00m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.00m			143.08	3.00	B-13 D-12					

Reason for Hole Termination: Refusal. Excavator bucket scraping base of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.00	3.30	1.40	Stable	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	3.00	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP09
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381643.04 mE 847684.64 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	149.47 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	045 deg.	Status:	FINAL
Date Started:	15/09/2023			Print Date:	15/02/2024
Date Completed:	15/09/2023			Final Depth:	2.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over soft dark brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of pelite and psammite. [Topsoil]		[0.30]	149.47							
Yellowish brown very sandy silty angular to subangular fine to coarse GRAVEL of pelite and psammite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of pelite. [Till]		0.30	149.17	0.50	B-2 D-1					
		[1.30]		1.00	B-4 D-3					
Light brown silty very sandy angular to subangular fine to coarse GRAVEL of pelite. With a high cobble and medium boulder content. Sand is fine to coarse. Cobbles are subangular to angular of pelite. Boulders are subangular to angular of pelite (<350mm). Weathered Pelite. [Macduff Formation]		1.60	147.87	1.50	LB-5 LB-6					
		[0.40]		1.50	LB-7 LB-8 LB-9					
2.00m : Refusal. Presumed bedrock. Trial Pit Terminated at 2.00m			147.47							

Reason for Hole Termination: Refusal. Excavator bucket scraping base of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	2.00	3.30	1.40	Stable	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	2.00	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP10
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381744.42 mE 847687.12 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	144.11 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	045 deg.	Status:	1:33 FINAL
Date Started:	15/09/2023			Print Date:	15/02/2024
Date Completed:	15/09/2023			Final Depth:	1.70m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular, fine to coarse of psammite and pelite. Sand is fine to coarse. [Topsoil]		[0.30]	144.11							
Yellowish brown sandy very silty angular to subangular fine to coarse GRAVEL of psammite and pelite. Sand is fine to coarse. [Till]		[0.50]	143.81	0.50 0.50	B-2 D-1					
Yellowish brown silty sandy angular to subangular medium to coarse GRAVEL of pelite. With a high cobble content. Sand is fine. Cobbles are angular to subangular of pelite (<180mm). Weathered Pelite. [Macduff Formation]		[0.90]	143.31	0.80 0.80	B-4 D-3					
<i>1.70m : Refusal. Presumed bedrock</i>			1.70							
Trial Pit Terminated at 1.70m										

Reason for Hole Termination: Refusal. Excavator bucket scraping base of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	1.70	3.30	1.40	Stable	None	Lawrence Ahukannah	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	1.70	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP11
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 04/09/2023
Date Completed: 04/09/2023

Survey Grid System: OSGB
Co-ordinates: 381781.79 mE
847632.95 mN
Ground Level: 142.16 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.40m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	142.16 141.96							
Brown to light brown very sandy silty subangular to subrounded fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded of psammite. (possible residual soil). [Macduff Formation] 0.30 - 0.40m : Occasional orangish brown staining (potential weathering). 0.30 - 3.20m : Material occasionally being recovered as quartzite in a matrix of sand (<300x250x200mm). 0.60 - 1.50m : Occasional pockets of light grey sandy silt (<20x10x10mm). Sand is fine.		[1.40]		0.50 0.50	B-2 D-1					
Light brown locally light greyish brown very sandy very silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. with a medium cobble content and a low boulder content. Sand is fine to coarse. Cobbles are angular to subangular of psammite (<200mm). Boulders are subangular to subrounded of psammite (<350mm). Possible weathered psammite. [Macduff Formation] 1.60 - 3.00m : Occasional orangish brown staining (potential weathering).		[1.80]	1.60 140.56	1.00 1.00 1.00	B-4 D-3 LB-5					
3.00 - 3.40m : Presumed to be densely packed, excavator having difficulty getting through strata. Possible bedrock.				2.00 2.00	B-7 D-6					
3.40m : Refusal. Excavator bucket scraping base of pit. Possible bedrock. Trial Pit Terminated at 3.40m			3.40 138.76	3.00 3.00	B-9 D-8					

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.40	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	3.40	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP12
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 02/09/2023
Date Completed: 02/09/2023

Survey Grid System: OSGB
Co-ordinates: 381744.93 mE
847515.38 mN
Ground Level: 142.63 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 2.90m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	142.63 142.43							
Brown sandy silty angular to subrounded fine to coarse GRAVEL of psammite and quartzite. with a high cobble content and a low boulder content. Sand is medium to coarse. Cobbles are angular to subangular of psammite. Boulders are subangular of psammite. Possible residual soil. [Macduff Formation]		[2.70]		0.50 0.50	B-2 D-1					
				1.00 1.00	B-4 D-3					
				1.00 1.00	LB-9					
				2.00 2.00	B-6 D-5					
2.90m : Refusal. Excavator scraping base of pit. Presumed bedrock. Trial Pit Terminated at 2.90m		2.90	139.73	2.90 2.90	B-8 D-7					

Reason for Hole Termination: Refusal. Scraping entire length of pit

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	2.90	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not encountered		0.00	2.90	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP13
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381687.70 mE 847452.69 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	143.03 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	04/09/2023			Print Date:	15/02/2024
Date Completed:	04/09/2023			Final Depth:	3.20m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with a low content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of sandstone and quartzite. Cobbles are angular to subrounded of quartzite (<180mm). [Topsoil]		0.20	143.03 142.83							
Brown very sandy angular to subangular fine to coarse GRAVEL of psammite and quartzite with a medium cobble content and a low boulder content. Sand is fine to coarse. Cobbles are angular to subangular of psammite and quartzite (<200mm). Boulders are subangular to subrounded of psammite (<550mm) Possible residual soil. [Macduff Formation] 0.30 - 0.50m : Occasional orangish brown staining (potential weathering). 0.30 - 1.00m : Frequent pockets of soft light brown sandy clay (<20x15x10mm).				0.50 0.50	B-2 D-1					
1.50 - 2.50m : Occasional dark purplish brown staining on surface of gravels.		[2.50]		1.00 1.00 1.00	B-4 D-3 LB-5					
Brown clayey gravelly fine to coarse SAND and angular to subangular fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is medium to coarse. Cobbles are angular to subangular of psammite. Possible weathered bedrock. [Macduff Formation]		2.70	140.33	2.00 2.00	B-7 D-6					
3.20m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.20m		[0.50] 3.20	139.83	3.00 3.00	B-9 D-8					

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.20	2.50	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Description
							Not Encountered		Arisings
							Depth Top	Depth Base	
							0.00	3.20	

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP14
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 28/08/2023
Date Completed: 28/08/2023

Survey Grid System: OSGB
Co-ordinates: 381645.70 mE
Ground Level: 141.60 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.80m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to medium SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	141.60 141.40							
Brown very gravelly silty fine to coarse SAND with a low cobble content. Gravel is angular to subrounded fine to coarse of psammite and quartzite. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		[1.20]		0.50 0.50	B-2 D-1					
Brown sandy very silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With high cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite (presumed weathered bedrock). [Macduff Formation]		[2.40]	140.20	1.00 - 2.00	LB-9					
				2.00 2.00	B-6 D-5					
				3.00 3.00	B-8 D-7					
3.80m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.80m		3.80	137.80							

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.80	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	3.80	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP16
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 02/09/2023
Date Completed: 02/09/2023

Survey Grid System: OSGB
Co-ordinates: 381797.08 mE
847363.00 mN
Ground Level: 136.39 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.50m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to medium SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of semipelite and quartzite. [Topsoil]		0.10	136.39							
Brown very silty fine to coarse SAND and angular to subangular fine to coarse GRAVEL of semipelite and quartzite. With low cobble content. Cobbles are angular to subangular of semipelite and quartzite. Possible residual soil. [Macduff Formation]		0.50 0.50	136.29	0.50 0.50	B-2 D-1					
1.00m : Thermal resistivity test completed.		[1.90]		1.00 1.00 1.00	B-4 D-3 LB-5					
Brown very sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite with a low cobble content and a low boulder content. Sand is fine to coarse. Cobbles are subangular of semipelite and quartzite (<200mm). Boulders are subangular of semipelite. Possible weathered bedrock. [Macduff Formation]		2.00	134.39	2.00 2.00	B-7 D-6					
		[1.50]								
		3.00 3.00		3.00 3.00	B-9 D-8					
3.50m : Refusal. Excavator scraping against base of pit. Presumed bedrock. Trial Pit Terminated at 3.50m		3.50	132.89							

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.50	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes			Backfill Details			
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	3.50	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP17
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381818.64 mE 847475.40 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	138.79 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	02/09/2023			Print Date:	15/02/2024
Date Completed:	02/09/2023			Final Depth:	3.30m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to medium SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.15	138.79 138.64							
Brown very sandy very silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. Medium cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		[1.45]		0.50 0.50	B-2 D-1					
Greyish brown very gravelly silty fine to coarse SAND with a medium cobble content and a low boulder content. Gravel is angular to subangular fine to coarse of psammite and quartzite. Cobbles are angular to subangular of psammite. Boulders are subangular of psammite. Possible weathered bedrock. [Macduff Formation]		1.60	137.19	1.00 1.00 1.00	B-4 D-3 LB-9					
		[1.70]		2.00 2.00	B-6 D-5					
		3.30	135.49	3.00 3.00	B-8 D-7					
3.30m : Refusal. Excavator bucket scraping base of pit. Presumed bedrock. Trial Pit Terminated at 3.30m										

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.30	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes				Backfill Details		Description
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base		
			3.30	5	3.30	0.00	3.30	Arisings	
			3.30	10	3.25				
			3.30	15	3.25				
			3.30	20	3.20				

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP18
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381882.64 mE	Checked By:	SR
Client:	SSEN-T		847635.99 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	135.34 mOD	Scale:	1:33
Date Started:	04/09/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	04/09/2023			Print Date:	15/02/2024
				Final Depth:	3.40m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite.	[Hatched]	[0.30]	135.34							
[Topsoil] Brown very sandy angular to subangular fine to coarse GRAVEL of psammite and quartzite. Low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil.	[Dotted]	0.30	135.04	0.50	B-2 D-1					
[Macduff Formation] <i>0.30 - 1.00m : Frequent pockets of soft light brown sandy clay (<40x35x20mm).</i> <i>0.40 - 0.70m : Frequent orangish brown staining (potential weathering).</i>	[Dotted]	[0.70]		0.50						
Brown sandy angular fine to coarse GRAVEL of psammite with a high cobble content and a low boulder content. Sand is medium to coarse. Cobbles are angular and subangular of psammite. Boulders are angular and subangular of psammite (<500mm). (Weathered Psammite).	[Dotted]	1.00	134.34	1.00	B-4 D-3 LB-5					
[Macduff Formation] <i>1.00 - 3.40m : Frequent dark purplish brown staining on surface of gravels and cobbles.</i>	[Dotted]			1.00						
		[2.40]		2.00	B-7 D-6					
				2.00						
				3.00	B-9 D-8					
				3.00						
3.40m : Refusal. Presumed bedrock.		3.40	131.94							
Trial Pit Terminated at 3.40m										

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.40	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	
						Not Encountered	0.00	3.40	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP19
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381981.67 mE 847671.35 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	131.01 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	06/09/2023			Print Date:	15/02/2024
Date Completed:	06/09/2023			Final Depth:	3.30m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to medium SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite (<160mm). [Topsoil]		0.10	131.01 130.91							
Brown very sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]				0.50 0.50	B-2 D-1					
0.20 - 0.40m : Frequent orangish brown staining (potential weathering).										
1.00m : Thermal resistivity test completed.		[2.00]		1.00 1.00	B-4 D-3					
1.00 - 3.30m : Dark purplish brown staining on surface of gravels and cobbles (potential weathering).										
Brown sandy silty angular to subangular fine to coarse GRAVEL of pelite with a high cobble content. Gravel is angular to subangular fine to coarse of pelite. Cobbles are angular to subangular of pelite. Possible weathered bedrock. [Macduff Formation]		2.10	128.91	2.00 2.00	B-6 D-5					
		[1.20]								
				3.00 3.00	B-8 D-7					
3.30m : Refusal. Presumed bedrock.		3.30	127.71							
Trial Pit Terminated at 3.30m										

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.30	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	
						Not Encountered	0.00	3.30	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP20
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 04/09/2023
Date Completed: 04/09/2023

Survey Grid System: OSGB
Co-ordinates: 382009.29 mE
847542.03 mN
Ground Level: 129.95 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite. [Topsoil]		0.20	129.95 129.75							
Brown silty fine to coarse SAND and angular to subangular fine to coarse GRAVEL of psammite and quartzite. Low cobble content. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		[2.30]		0.50 0.50	B-2 D-1					
2.00 - 3.60m : Frequent dark purplish brown staining on surface of gravels and cobbles.				1.00 1.00	B-4 D-3					
				2.00 2.00	B-6 D-5					
Brown sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. with a medium cobble content and a low boulder content. Sand is fine to coarse. Cobbles are angular and subangular of psammite. Boulders are angular and subangular of psammite (<500mm). Possible weathered bedrock. [Macduff Formation]		[1.10]	2.50 127.45	3.00 3.00	B-8 D-7					
3.60m : Refusal. Presumed bedrock.			3.60 126.35							
Trial Pit Terminated at 3.60m										

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.60	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	3.60	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP21
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 01/09/2023
Date Completed: 01/09/2023

Survey Grid System: OSGB
Co-ordinates: 381964.33 mE
847424.46 mN
Ground Level: 134.25 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.20m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	134.25 134.05							
Brown sandy very silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite Possible residual soil. [Macduff Formation]		[0.70]		0.50 0.50	B-2 D-1					
Brown sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is coarse. Cobbles are angular to subangular of psammite (possible weathered bedrock). [Macduff Formation]		0.90	133.35	1.00 1.00	B-4 D-3					
<i>1.00m : Thermal resistivity test completed.</i>										
		[2.30]		2.00 2.00	B-6 D-5					
<i>3.20m : Refusal. Excavator scraping on base of pit. Possible bedrock. Trial Pit Terminated at 3.20m</i>		3.20	131.05	3.00 3.00	B-8 D-7					

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.20	3.00	1.00	Locally unstable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	3.20	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP22
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 01/09/2023
Date Completed: 01/09/2023

Survey Grid System: OSGB
Co-ordinates: 381917.13 mE
847323.29 mN
Ground Level: 135.71 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 2.90m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.15	135.71 135.56							
Brown silty sandy angular to subrounded fine to coarse GRAVEL of psammite and quartzite. With medium cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite Possible residual soil. [Macduff Formation]		[0.85]		0.50 0.50	B-2 D-1					
Brown sandy angular to subangular fine to coarse GRAVEL of psammite and quartzite. High cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible weathered bedrock. [Macduff Formation]		1.00	134.71	1.00 1.00	B-4 D-3					
		[1.90]		2.00 2.00	B-6 D-5					
2.90m : Refusal. Excavator scraping base of pit. Possible bedrock. Trial Pit Terminated at 2.90m		2.90	132.81							

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	2.90	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	2.90	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP23
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 28/08/2023
Date Completed: 28/08/2023

Survey Grid System: OSGB
Co-ordinates: 381792.21 mE
847131.01 mN
Ground Level: 135.83 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 2.30m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite [Topsoil]		0.20	135.83 135.63							
Brown very sandy very silty angular to subrounded fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		[0.80]		0.50 0.50	B-2 D-1					
Brown sandy angular to subangular fine to coarse GRAVEL of psammite and quartzite. With high cobble content. Sand is medium to coarse. Cobbles are angular to subangular of psammite. Presumed weathered bedrock. [Macduff Formation]		1.00 [1.30]	134.83	1.00 1.00	B-4 D-3					
2.30m : Refusal. Presumed bedrock. Trial Pit Terminated at 2.30m		2.30	133.53	2.00 2.00	B-6 D-5					

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	2.30	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	2.30	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP24
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 29/08/2023
Date Completed: 29/08/2023

Survey Grid System: OSGB
Co-ordinates: 381824.50 mE
847011.61 mN
Ground Level: 134.19 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.30m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	134.19 133.99							
Brown very sandy silty angular to subrounded fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular to psammite. Possible residual soil. [Macduff Formation]		[0.90]		0.50 0.50	B-2 D-1					
Brown very sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. High cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite Presumed weathered bedrock. [Macduff Formation]		1.10 [2.20]	133.09	1.00 2.00 2.00	B-4 D-3 B-5 D-6					
3.30m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.30m		3.30	130.89	3.00 3.00	B-8 D-7					

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.30	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	3.30	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP25
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381955.81 mE	Checked By:	SR
Client:	SSEN-T		846982.12 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	129.36 mOD	Scale:	1:33
Date Started:	28/08/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	28/08/2023			Print Date:	15/02/2024
				Final Depth:	3.50m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	129.36 129.16							
Brown very sandy silty angular to subrounded fine to coarse GRAVEL of psammite. With medium cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. (Residual Soil)? [Macduff Formation]		[2.30]		0.50 0.50	B-2 D-1					
				1.00 1.00	B-4 D-3					
				2.00 2.00	B-6 D-5					
Brown sandy very silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. Medium cobble content. Sand is fine. Cobbles are angular to subangular of psammite. (presumed weathered bedrock). [Macduff Formation]		[1.00]	2.50 126.86	3.00 3.00	B-8 D-7					
3.50m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.50m			3.50 125.86							

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.50	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	
						Not Encountered	0.00	3.50	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP26
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 28/08/2023
Date Completed: 28/08/2023

Survey Grid System: OSGB
Co-ordinates: 382057.41 mE
847037.18 mN
Ground Level: 122.23 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.30	122.23							
Brown very sandy very silty angular to subrounded fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular and subangular of psammite. [Macduff Formation]		0.30	121.93	0.50	B-3					
				0.50	D-6					
				1.00	B-2					
				1.00	D-8					
Brown sandy very silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With high cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Presumed weathered bedrock. [Macduff Formation]		[1.90]		2.00	B-1					
				2.00	D-5					
				2.20	120.03	3.00	B-4			
		[1.40]		3.00	D-7					
3.60m : Refusal. Presumed bedrock.		3.60	118.63							
Trial Pit Terminated at 3.60m										

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information										
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks		
0.00	3.60	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.		

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	3.60	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP27
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382016.05 mE	Checked By:	SR
Client:	SSEN-T	Ground Level:	847277.18 mN	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	131.43 mOD	Status:	1:33
Date Started:	01/09/2023		-- deg.	Print Date:	15/02/2024
Date Completed:	01/09/2023			Final Depth:	3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	131.43							
Brown very sandy silty angular to subrounded fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		[0.80]		0.50 0.50	B-2 D-1					
Brown sandy angular to subangular fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. (Possible weathered psammite. [Macduff Formation]		1.00	130.43	1.00 1.00	B-4 D-3					
1.00 - 3.00m : Gravel is frequently stained purplish brown and orangish brown.		[2.60]		2.00 2.00	B-6 D-5					
3.60m : Refusal. Presumed bedrock.		3.60	127.83	3.00 3.00	B-8 D-7					
Trial Pit Terminated at 3.60m										

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.60	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	3.60	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP28
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 31/08/2023
Date Completed: 31/08/2023

Survey Grid System: OSGB
Co-ordinates: 382068.34 mE
847385.49 mN
Ground Level: 129.42 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.40m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	129.42 129.22							
Greyish brown very sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		[1.20]		0.50 0.50	B-2 D-1					
Greyish brown very gravelly silty fine to coarse SAND with a medium cobble content. Gravel is angular to subangular fine to coarse of psammite and quartzite. Cobbles are angular to subangular of psammite. Possible residual / weathered psammite. [Macduff Formation]		1.40	128.02	1.00 1.00	B-4 D-3					
		[2.00]		2.00 2.00	B-6 D-5					
		3.00		3.00 3.00	B-8 D-7					
3.40m : Refusal. Excavator scraping base of pit. Possible psammite rock. Trial Pit Terminated at 3.40m		3.40	126.02							

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.40	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base	
							0.00	3.40	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP29
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382110.75 mE	Checked By:	SR
Client:	SSEN-T		847504.82 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	124.52 mOD	Scale:	1:33
Date Started:	04/09/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	04/09/2023			Print Date:	15/02/2024
				Final Depth:	3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite. [Topsoil]		0.20	124.52 124.32							
Brown very sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation] 0.50 - 2.00m : Occasional pockets of grey sandy silt (<20x20x10mm) with root traces (2mm diameter). Sand is fine.		[0.80]		0.50 0.50	B-2 D-1					
Brown very gravelly fine to coarse SAND with a medium cobble content. Gravel is angular to subangular fine to coarse of psammite and quartzite. Cobbles are angular and subangular of psammite and quartzite (<180mm). Possible weathered bedrock. [Macduff Formation]		1.00	123.52	1.00 1.00	B-4 D-3					
		[2.60]		2.00 2.00	B-6 D-5					
				3.00 3.00	B-8 D-7					
3.60m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.60m		3.60	120.92							

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.60	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered				

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP30
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 06/09/2023
Date Completed: 06/09/2023

Survey Grid System: OSGB
Co-ordinates: 382122.19 mE
847648.76 mN
Ground Level: 129.60 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.90m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite. [Topsoil]		0.10	129.60 129.50							
Brown very sandy very silty angular to subangular fine to coarse GRAVEL of pelite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of pelite. Possible residual soil. [Macduff Formation] <i>0.50 - 1.00m : Occasional orangish brown staining on surface of gravels and cobbles.</i>		[1.10]		0.50 0.50	B-2 D-1					
Brown sandy angular to subangular fine to coarse GRAVEL of pelite. With medium cobble content. Sand is medium to coarse. Cobbles are angular to subangular of pelite. Possible weathered bedrock. [Macduff Formation] <i>1.20 - 3.00m : Frequent dark purplish brown staining across strata (potential weathering).</i>		1.20	128.40	1.00 1.00	B-4 D-3					
		[2.70]		2.00 2.00	B-6 D-5					
		3.00		3.00 3.00	B-8 D-7					
<i>3.90m : Refusal. Presumed bedrock.</i> Trial Pit Terminated at 3.90m		3.90	125.70							

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.90	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	3.90	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP31
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 05/09/2023
Date Completed: 05/09/2023

Survey Grid System: OSGB
Co-ordinates: 382191.95 mE
Ground Level: 120.39 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to medium SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite (<150mm). [Topsoil]		0.20	120.39 120.19							
Bluish grey and greyish brown very sandy very silty angular to subrounded fine to coarse GRAVEL of psammite, phyllite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded of psammite and quartzite. Possible residual soil. [Macduff Formation] 0.20 - 0.70m : Frequent large pockets of light grey sandy silt (<600x500x400mm) with orangish brown root traces (50x3mm) and occasional plant debris. 1.00 - 1.60m : Occasional brownish orange and purplish brown staining (potential weathering).		[0.90]		0.50 0.50	B-2 D-1					
Brown sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite phyllite and quartzite. Possibly weathered bedrock. [Macduff Formation] 1.10 - 3.60m : Frequent orangish brown reddish brown and purplish brown staining on surface of gravel and cobbles.		1.10	119.29	1.00 1.00	B-4 D-3					
2.50 - 3.60m : Occasional recovery of gravels in a sand matrix (350x300x200mm).		[2.50]		2.00 2.00	B-6 D-5					
3.60m : Refusal. Presumed bedrock.		3.60	116.79	3.00 3.00	B-8 D-7					
Trial Pit Terminated at 3.60m										

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.60	3.00	1.00		None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base	
				2.80	5	2.75	0.00	3.60	Arisings
				2.80	10	2.75			
				2.80	15	2.70			
				2.80	20	2.70			

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP32
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 06/09/2023
Date Completed: 06/09/2023

Survey Grid System: OSGB
Co-ordinates: 382325.47 mE
847542.74 mN
Ground Level: 122.29 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite. [Topsoil]		0.20	122.29 122.09							
Greyish brown very sandy very silty angular to subrounded fine to coarse GRAVEL of pelite. With medium cobble content. Sand is fine to coarse. Cobbles are angular to subangular of pelite. Possible residual soil. [Macduff Formation]		[0.90]		0.50 0.50	B-2 D-1					
1.00m : Thermal resistivity test completed. 1.00 - 3.00m : Frequent orangish brown staining across strata (potential weathering). Brownish grey sandy silty angular to subangular fine to coarse GRAVEL of pelite with a high cobble content. Sand is fine to coarse. Cobbles are angular to subangular of pelite. (possible weathered bedrock). [Macduff Formation]		1.10	121.19	1.00 1.00	B-4 D-3					
2.00 - 3.00m : Occasional dark purplish brown staining across strata (potential weathering).		[2.50]		2.00 2.00	B-6 D-5					
3.60m : Refusal. Presumed bedrock.		3.60	118.69	3.00 3.00	B-8 D-7					
Trial Pit Terminated at 3.60m										

Reason for Hole Termination: Refusal. Scraping along entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.60	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	3.60	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP33
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 05/09/2023
Date Completed: 05/09/2023

Survey Grid System: OSGB
Co-ordinates: 382238.10 mE
847452.99 mN
Ground Level: 118.91 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite. [Topsoil]		0.20	118.91 118.71							
Brown very sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With medium cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		0.50 0.50		0.50 0.50	B-2 D-1					
1.00m : Thermal resistivity test completed.		[1.60]		1.00 1.00	B-4 D-3					
1.30 - 3.60m : Purplish brown staining on surfaces of gravel sand cobbles.										
Brown very sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible weathered bedrock. [Macduff Formation]		1.80	117.11	2.00 2.00	B-6 D-5					
		[1.80]								
				3.00 3.00	B-8 D-7					▼ ▽
3.60m : Refusal. Presumed bedrock.		3.60	115.31							
Trial Pit Terminated at 3.60m										

Reason for Hole Termination: Refusal. Scraping entire length of pit

Depth Related Exploratory Hole Information										
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks		
0.00	3.60	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.		

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
				3.30	5	3.25					
				3.30	10	3.20					
				3.30	15	3.15					
				3.30	20	3.10					

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP34
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382193.20 mE 847335.24 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	122.42 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	31/08/2023			Print Date:	15/02/2024
Date Completed:	31/08/2023			Final Depth:	3.40m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	122.42 122.22							
Greyish brown sandy very silty angular to subrounded fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		[1.00]		0.50 0.50	B-2 D-1					
Greyish brown sandy very silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite Possible residual / weathered psammite. [Macduff Formation]		[2.20]	121.22	1.00 1.00	B-4 D-3					
				2.00 2.00	B-5 D-6					
				3.00 3.00	B-8 D-7					
3.40m : Refusal. Excavator scraping base of pit. Possible psammite rock. Trial Pit Terminated at 3.40m		3.40	119.02							

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.40	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	3.40	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP35
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 31/08/2023
Date Completed: 31/08/2023

Survey Grid System: OSGB
Co-ordinates: 382152.18 mE
847232.78 mN
Ground Level: 123.40 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.30m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	123.40 123.20							
Brown slightly sandy slightly gravelly SILT with a low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of psammite and quartzite. Cobbles are angular to subangular of psammite. [Macduff Formation]		[0.80]		0.50 0.50	B-8 D-1					
Brown sandy silty angular to subangular fine to coarse GRAVEL of psammite and quartzite. With medium cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual / weathered psammite. [Macduff Formation]		1.00	122.40	1.00 1.00	B-7 D-2					
<i>1.00m : Thermal resistivity test completed.</i>										
		[2.30]		2.00 2.00	B-6 D-3					
				3.00 3.00	B-5 D-4					
<i>3.30m : Refusal. Excavator scraping at base of pit. Possible bedrock.</i> Trial Pit Terminated at 3.30m		3.30	120.10							

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.30	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base	
							0.00	3.30	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP36
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382207.91 mE	Checked By:	SR
Client:	SSEN-T		847051.55 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	116.41 mOD	Scale:	1:33
Date Started:	31/08/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	31/08/2023			Print Date:	15/02/2024
				Final Depth:	2.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	116.41							
Grey silty gravelly very silty fine to coarse SAND with a medium cobble content. Gravel is subangular to subrounded fine to coarse of psammite. Cobbles are subangular to subrounded of psammite. [Till]		[0.80]		0.50 0.50	B-2 D-1					
<i>1.00m : Thermal resistivity test completed.</i>		1.00	115.41	1.00	B-4 D-3					
Orange brown mottled light grey very silty gravelly fine to coarse SAND of psammite and quartzite. with a low cobble content and a low boulder content. Gravel is angular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of psammite. Boulders are subangular of psammite (<750mm). Possible residual soil. [Till]		[1.00]		1.00						
<i>2.00m : Pit terminated. Water strike causing walls to collapse.</i> Trial Pit Terminated at 2.00m		2.00	114.41	2.00 2.00	B-6 D-5					

Reason for Hole Termination: Trial pit terminated due to unstable pit walls.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	2.00	3.00	1.00	Locally unstable due to water strike. Sidewall collapse.	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes				Backfill Details		
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
			2.00	5	1.95		0.00	2.00	Arisings
			2.00	10	1.90				
			2.00	15	1.90				
			2.00	20	1.85				

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP37
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382353.34 mE 847094.98 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	113.02 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	02/09/2023			Print Date:	15/02/2024
Date Completed:	02/09/2023			Final Depth:	3.90m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.15	113.02 112.87							
Light brown and orange mottled very gravelly very silty fine to coarse SAND with a low cobble content. Gravel is subangular to rounded fine to coarse of psammite and quartzite. Cobbles are subrounded to rounded of siltstone and quartzite. [Till]		[1.85]		0.50 0.50	B-3 D-2					
Bluish grey very gravelly very silty fine to coarse SAND with a low cobble content. Gravel is angular to subrounded fine to coarse of semi-pelite. Possible completely weathered semi-pelite. [Macduff Formation]		2.00	111.02	2.00 2.00	B-7 D-6					
<i>2.00 - 3.90m : Sidewall collapse.</i>		[1.20]								
Greenish greyish brown silty gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of psammite. Possible completely weathered psammite. [Macduff Formation]		3.20	109.82	3.00 3.00	B-9 D-8					
		[0.70]								
Trial Pit Terminated at 3.90m		3.90	109.12							

Reason for Hole Termination: Terminated at 3.90m due to sidewall collapsing.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.90	3.00	1.00	Locally unstable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Description
							Not Encountered		Arisings
							Depth Top	Depth Base	
							0.00	3.90	

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP38
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382566.02 mE	Checked By:	SR
Client:	SSEN-T		847039.88 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	106.40 mOD	Scale:	1:33
Date Started:	07/09/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	07/09/2023			Print Date:	15/02/2024
				Final Depth:	3.90m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartz. Cobbles are subangular of quartzite. [Topsoil]		0.20	106.40							
Greyish brown slightly sandy slightly gravelly SILT with a low cobble content. Sand is fine to coarse. Gravel is angular to subrounded of fine to coarse of psammite and semi-pelite. Cobbles are angular to subrounded of psammite and quartz. [Till]		0.50	106.20	0.50	B-2 D-1					
0.20 - 1.00m : Frequent orangish brown surface staining throughout.		0.70	105.70							
Soft bluish grey slightly sandy slightly gravelly SILT with a low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of pelite. Cobbles are angular to subangular of pelite. Possible residual soil. [Macduff Formation]		1.40		1.00	B-4 D-3					
Blueish grey silty sandy angular to subangular fine to coarse GRAVEL of pelite with a low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of pelite. Possible weathered bedrock. [Macduff Formation]		2.10	104.30	2.00	B-6 D-5					
		1.80		3.00	B-8 D-7					
3.90m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.90m		3.90	102.50							

Reason for Hole Termination: Refusal. Scraping entire length of pit

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.90	3.00	1.00	Partial wall collapse due to water strike.	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes			Backfill Details			
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
			3.10	5	3.10		0.00	3.90	Arisings
			3.10	10	3.05				
			3.10	15	3.00				
			3.10	20	2.95				

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP39
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382469.02 mE	Checked By:	SR
Client:	SSEN-T	Ground Level:	847152.72 mN	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	109.83 mOD	Status:	1:33
Date Started:	02/09/2023		-- deg.	Print Date:	15/02/2024
Date Completed:	02/09/2023			Final Depth:	3.10m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		[0.30]	109.83							
Soft grey slightly sandy slightly gravelly SILT. With medium cobble content. Sand is fine to coarse. Gravel is angular to subangular of fine to coarse of siltstone and sandstone. [Till]		[0.70]	109.53	0.50 0.50	B-2 D-1					
Soft bluish grey clayey sandy gravelly SILT. Sand is fine. Gravel is angular to subangular fine to medium of semi-pelite. Possible completely weathered pelite. [Macduff Formation]		1.00	108.83	1.00 1.00	B-4 D-3					
		[2.10]		2.00 2.00	B-6 D-5					
3.10m : Refusal. Excavator bucket scraping base of pit. Presumed siltstone bedrock. Trial Pit Terminated at 3.10m		3.10	106.73	3.00 3.00	B-8 D-7					

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.10	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes			Backfill Details			
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
			2.20	5	2.20		0.00	3.10	Arisings
			2.20	10	2.15				
			2.20	15	2.15				
			2.20	20	2.20				

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP40
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382396.39 mE	Checked By:	SR
Client:	SSEN-T		847206.88 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	112.84 mOD	Scale:	1:33
Date Started:	03/09/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	03/09/2023			Print Date:	15/02/2024
				Final Depth:	3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of siltstone and quartzite. [Topsoil]		0.20	112.84							
Soft greyish brown slightly gravelly sandy SILT with a low cobble content. Gravel is angular to subangular of fine to coarse of siltstone and sandstone. Cobbles are angular to subangular of siltstone. [Till]		[1.20]	112.64	0.50 0.50	B-2 D-1					
0.40 - 0.90m : Frequent pockets of light brown fine to coarse sand (<200mm).										
1.00 - 1.40m : Orangish brown and dark purple/purplish brown weathering.				1.00 1.00	B-4 D-3					
Light bluish grey very sandy very silty angular fine to coarse GRAVEL of with a low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of semipelite. Possible weathered bedrock. [Macduff Formation]		1.40	111.44							
2.00 - 3.60m : Occasional pockets of soft silty bluish grey clay (<50mm).		[2.20]		2.00 2.00	B-6 D-5					
3.60m : Refusal. Presumed bedrock.		3.60	109.24	3.00 3.00	B-8 D-7					
Trial Pit Terminated at 3.60m										

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.60	2.50	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base		
							0.00	3.60	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP41
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382446.97 mE 847320.24 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	112.22 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	03/09/2023			Print Date:	15/02/2024
Date Completed:	03/09/2023			Final Depth:	3.40m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of siltstone and quartzite. [Topsoil]		0.20	112.22 112.02							
Light brown very gravelly very silty fine to coarse SAND with a low cobble content. Gravel is angular to subangular of fine to coarse of siltstone quartzite and sandstone. Cobbles are angular to subangular of siltstone. [Till]		[1.40]		0.50 0.50	B-2 D-1					
0.90 - 1.50m : Occasional traces of roots (<25mm diameter) 1.00 - 1.40m : Orangish brown and dark purple staining (potential weathering)				1.00 1.00	B-4 D-3					
Bluish grey very sandy silty angular to subangular fine to coarse GRAVEL of semi-pelite, quartzite and psammite. Sand is fine to coarse. Cobbles are angular to subangular of semi-pelite and quartzite. Possible weathered bedrock. [Macduff Formation]		1.60	110.62	2.00 2.00	B-6 D-5					
		[1.80]								
3.00m : Occasional cobbles of quartzite (<250x200x150mm) and pinkish brown coarse sandstone (400x160x120mm).				3.00 3.00	B-8 D-7					
3.40m : Refusal. Presumed bedrock.		3.40	108.82							
Trial Pit Terminated at 3.40m										

Reason for Hole Termination: Refusal. Scraping entire length of pit. Walls collapsing.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.40	3.00	1.00	Locally unstable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes				Backfill Details		Description
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base		
			3.00	5	2.90	0.00	3.40	Arisings	
			3.00	10	2.90				
			3.00	15	2.90				
			3.00	20	2.85				

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP42
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382347.85 mE	Checked By:	SR
Client:	SSEN-T		847441.55 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	117.87 mOD	Scale:	1:33
Date Started:	06/09/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	06/09/2023			Print Date:	15/02/2024
				Final Depth:	2.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to medium SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite (<140mm). [Topsoil]		0.20	117.87							
Brown very silty sandy angular to subangular fine to coarse GRAVEL of psammite and quartzite with a high cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite (<160mm). Possible residual soil. [MacDuff Formation]		0.60	117.27	0.50 0.50	B-2 D-1					
Brown very silty sandy angular and subangular fine to coarse GRAVEL of psammite with a high cobble content and a medium boulder content. Gravel is angular and subangular fine to coarse of psammite and quartzite (<200mm). Cobbles are angular and subangular of psammite. Boulders are angular and subangular of psammite (<600mm). Possible weathered bedrock. [Macduff Formation]		2.00		1.00 1.00	B-4 D-3					
1.00 - 2.60m : Frequent dark purplish brown staining on surface of gravels, cobbles and boulders.		[2.00]								
2.30 - 2.60m : Large concentration of boulders.				2.00 2.00	B-6 D-5					
2.60m : Refusal. Presumed bedrock.		2.60	115.27							▼
Trial Pit Terminated at 2.60m										

Reason for Hole Termination: Refusal. Cannot dislodge boulders. Presumed rockhead.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	2.60	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base	
				2.60	5	2.60	0.00	2.60	Arisings
				2.60	10	2.60			
				2.60	15	2.60			
				2.60	20	2.60			

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP43
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 08/09/2023
Date Completed: 08/09/2023

Survey Grid System: OSGB
Co-ordinates: 382566.18 mE
Ground Level: 107.06 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown brown clayey gravelly fine to medium SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of quartzite (<120mm). [Topsoil]		0.20	107.06							
Greyish brown very silty very sandy angular to subrounded of fine to coarse GRAVEL of siltstone and quartz. with a low cobble content. Sand is fine to coarse. Cobbles are angular to subrounded of siltstone and quartz (<140mm). Possible residual soil. [Macduff Formation] 0.20 - 1.00m : Frequent pockets of soft grey sandy silt (<200x100x75mm). Sand is fine.		[0.80]	106.86	0.50 0.50	B-2 D-1					
Bluish grey very silty very sandy angular to subangular fine to coarse GRAVEL of semipelite with a medium cobble content and a low boulder content. Sand is fine to coarse. Cobbles are angular to subangular of semipelite. Boulders are angular to subangular (<500mm). Possible weathered bedrock. [Macduff Formation] 1.00 - 3.60m : Occasional laminations of sandstone in siltstone clasts.		[2.60]	106.06	1.00 1.00 2.00 2.00	B-4 D-3 B-6 D-5					
3.60m : Refusal. Excavator scraping entire length of pit. Presumed bedrock. Trial Pit Terminated at 3.60m		3.60	103.46	3.00 3.00	B-8 D-7					

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.60	3.00	1.00	Unstable. Sidewall collapse.	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes			Backfill Details			
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
			3.10	5	3.05				
			3.10	10	3.00				
			3.10	15	2.95				
			3.10	20	2.90				

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP44
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382652.01 mE 847128.54 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	105.57 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	11/09/2023			Print Date:	15/02/2024
Date Completed:	11/09/2023			Final Depth:	1.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over brown clayey gravelly fine to medium SAND with a low cobble content. Frequent very fine to medium roots. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular predominantly of quartzite (<140mm). [Topsoil]		0.20	105.37							
Firm becoming stiff bluish grey slightly gravelly sandy SILT with a low cobble content. Occasional fine to medium roots. Sand is fine. Gravel is angular to subrounded fine to coarse of psammite and quartz. Cobbles are angular to subangular of psammite (<180mm). [Till]		[0.80]								
1.00m : Terminated due to encountering field drain. Trial Pit Terminated at 1.00m		1.00	104.57							

Reason for Hole Termination: Pit terminated due to encountering field drain.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	1.00	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	1.00	Arisings

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP44A
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382652.01 mE	Checked By:	SR
Client:	SSEN-T		847128.54 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	105.57 mOD	Scale:	1:33
Date Started:	11/09/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	11/09/2023			Print Date:	15/02/2024
				Final Depth:	3.90m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over brown clayey gravelly fine to medium SAND with a low cobble content. Frequent very fine to medium roots. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular predominantly of quartzite (<110mm). [Topsoil]		0.20	105.37							
				0.50	B-2					
Firm becoming stiff bluish grey slightly gravelly slightly sandy SILT with a low cobble content. Occasional fine to medium roots. Sand is fine. Gravel is angular to subrounded fine to coarse of psammite and quartz. Cobbles are angular to subangular of psammite (<150mm). [Till] <i>0.20 - 1.50m : Occasional lenses of light grey silty fine sand (10-35mm thick).</i>		[1.90]		1.00	B-4					
				1.00	D-3					
Bluish grey sandy silty angular and subangular fine to coarse GRAVEL of predominantly psammite with a medium cobble content and a medium boulder content. Sand is fine to coarse. Cobbles are angular and subangular of psammite (<190mm). Boulders are angular and subangular of psammite (<550mm). Possible residual soil. [Macduff Formation]		2.10	103.47	2.00	B-6					
				2.00	D-5					
		[1.80]		3.00	B-8					
				3.00	D-7					
3.90m : Termination. Partial sidewall collapse. Trial Pit Terminated at 3.90m			101.67							

Reason for Hole Termination: Pit terminated due to wall collapse.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.90	3.00	1.00	Unstable. Partial sidewall collapse.	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes				Backfill Details		Description
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	
			2.20	5	2.10		0.00	3.90	Arisings
			2.20	10	2.05				
			2.20	15	2.00				
			2.20	20	1.95				

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP45
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 11/09/2023
Date Completed: 11/09/2023

Survey Grid System: OSGB
Co-ordinates: 382743.29 mE
847117.09 mN
Ground Level: 103.28 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.70m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Grass over brown clayey gravelly fine to medium SAND with a low cobble content. Common very fine to medium roots. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular predominantly of quartzite (<120mm). [Topsoil]		0.20	103.28 103.08							
Greyish brown mottled bluish grey very gravelly very silty fine to coarse SAND with a low cobble content. Occasional orangish brown greenish brown and rare purple staining. Gravel is angular and subrounded fine to coarse of psammite quartzite and calcite. Cobbles are angular to subrounded predominantly of psammite (<160mm). Possible residual soil. [Macduff Formation]		[0.90]		0.50 0.50	B-2 D-1					
0.20 - 1.10m : Locally greyish to greenish brown silty fine sand (avg. 500x250x100mm). 0.20 - 2.00m : Locally soft light grey/white mottled orangish brown silty gravelly sandy clay (Avg 300x250x150mm).		1.10	102.18	1.00 1.00	B-4 D-3					
Greyish brown mottled bluish grey very silty very sandy angular to subrounded fine to coarse GRAVEL predominantly of psammite with a low cobble content and a low boulder content. Locally soft light grey mottled orangish brown silty gravelly sandy clay. Occasional orangish brown greenish brown and rare purple staining. Cobbles are angular to subrounded predominantly of psammite (<200mm). Boulders are angular to subangular of psammite (<600mm). Possible residual soil. [Macduff Formation]		[2.60]		2.00 2.00	B-6 D-5					
3.70m : Refusal. Boulder obstruction. Trial Pit Terminated at 3.70m		3.70	99.58	3.00 3.00	B-8 D-7					

Reason for Hole Termination: Pit terminated due to partial collapse of wall.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.70	3.00	1.00	Unstable. Partial sidewall collapse.	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes				Backfill Details		Description
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	
			1.50	5	1.50		0.00	3.70	Arisings
			1.50	10	1.45				
			1.50	15	1.45				
			1.50	20	1.40				

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP46
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382813.24 mE	Checked By:	SR
Client:	SSEN-T		847099.88 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	102.17 mOD	Scale:	1:33
Date Started:	13/09/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	13/09/2023			Print Date:	15/02/2024
				Final Depth:	3.30m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Vegetation over brown brown clayey gravelly fine to coarse SAND with a low cobble content. Common very fine to medium roots. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular predominantly of quartzite. [Topsoil]		0.20	102.17 101.97							
Grey mottled orangish brown angular to subrounded fine to coarse GRAVEL of predominantly psammite with low cobble content. Occasional lenses of coarse sand (10 to 40mm). Sand is fine to coarse. Cobbles are subangular to subrounded of psammite (<180mm). Possible residual soil. [Macduff Formation]		[1.00]		0.50 0.50	B-2 D-1					
Bluish grey very silty very sandy angular to subrounded fine to coarse GRAVEL of predominantly fine grained psammite with a high cobble content. Occasional lenses of coarse sand (10-40mm thick). Sand is fine to coarse. Cobbles are subangular to subrounded of psammite (<200mm). Possible residual soil. [Macduff Formation.]		1.20	100.97	1.00 1.00	B-4 D-3					
		[2.10]		2.00 2.00	B-6 D-5					Water Level
				3.00 3.00	B-8 D-7					
Trial Pit Terminated at 3.30m		3.30	98.87							

Reason for Hole Termination: Pit terminated due to continued sidewall collapse.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.30	3.00	1.00	Unstable due to water strike	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base	Description
				1.90	5	1.95	0.00	3.30	Arisings
				1.90	10	2.00			
				1.90	15	2.05			
				1.90	20	2.10			

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP47
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382824.86 mE	Checked By:	SR
Client:	SSEN-T		847026.47 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	101.30 mOD	Scale:	1:33
Date Started:	13/09/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	13/09/2023			Print Date:	15/02/2024
				Final Depth:	3.30m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Vegetation over brown clayey gravelly fine to medium SAND with a low cobble content. Common very fine to medium roots. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular predominantly of quartzite (<140mm). [Topsoil]		0.20	101.30 101.10							
Brown silty very sandy angular to subrounded fine to coarse GRAVEL of predominantly psammite with medium cobble content. Occasional lenses of coarse sand (10 to 40mm). Sand is fine to coarse. Cobbles are subangular to subrounded of psammite (<180mm). Possible residual soil. [Macduff Formation]		[1.60]		0.50 0.50	B-2 D-1					
				1.00 1.00	B-4 D-3					
Brownish grey very silty very gravelly fine to coarse SAND with low becoming medium cobble content and a low becoming medium boulder content. Occasional lenses of firm sandy clay (20 to 40mm thick). Gravel is subangular to rounded fine to coarse of psammite and quartzite. Cobbles are subangular to subrounded of psammite and quartzite (<200mm). Boulders are subangular to subrounded of psammite (<450mm). Possible residual soil. [Macduff Formation]		1.80	99.50	2.00 2.00	B-6 D-5					
		[1.50]		3.00 3.00	B-8 D-7					
Trial Pit Terminated at 3.30m		3.30	98.00							

Reason for Hole Termination: Pit terminated due to continued sidewall collapse.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.30	3.00	1.00	Unstable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes			Backfill Details		
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Depth Top	Depth Base	Description
			2.00	5	1.95	0.00	3.30	Arisings
			2.00	10	1.90			
			2.00	15	1.85			
			2.00	20	1.80			

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP48
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382834.90 mE	Checked By:	SR
Client:	SSEN-T		846935.77 mN	Approved By:	PMCG
Engineer:	Tony Gee	Ground Level:	99.96 mOD	Scale:	1:33
Date Started:	13/09/2023	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Completed:	13/09/2023			Print Date:	15/02/2024
				Final Depth:	3.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Vegetation over brown clayey gravelly fine to medium SAND with a low cobble content. Frequent very fine to medium roots. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular predominantly of quartzite. [Topsoil]		0.20	99.96 99.76							
Greyish brown silty very sandy angular to subrounded fine to coarse GRAVEL of predominantly psammite. with medium cobble content. Occasional lenses of coarse sand (10-40mm thick). Sand is fine to coarse. Cobbles are angular to subrounded of psammite (Avg 175x160x140mm). Possible residual soil. [Macduff Formation]		[1.00]		0.50 0.50	B-2 D-1					
1.00m : Thermal resistivity test completed.				1.00 1.00	B-4 D-3					
Brownish grey locally bluish grey very silty very sandy subangular to rounded fine to coarse GRAVEL of psammite and quartzite with medium cobble content and medium boulder content. Occasional lenses of firm sandy clay (20 to 40mm). Sand is fine to coarse. Cobbles are subangular to subrounded of psammite and quartzite (<180mm). Boulders are subangular to subrounded of psammite (<550mm). Possible residual soil. [Macduff Formation]		[1.40]	98.76	2.00 2.00	B-6 D-5					
1.30 - 1.55m : Orangish brown staining across strata										
Brownish grey locally bluish grey very silty very sandy angular to subangular fine to coarse GRAVEL of psammite and pelite with a medium cobble content and a medium boulder content. Sand is fine to coarse. Cobbles are subangular to subrounded of psammite and quartzite (<180mm). Boulders are subangular to subrounded of psammite (<550mm). Possible residual soil. [Macduff Formation]		[0.40]	97.36	3.00 3.00	B-8 D-7					
Trial Pit Terminated at 3.00m			96.96							

Reason for Hole Termination: Pit terminated due to continued sidewall collapse.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.00	3.00	1.00	Unstable. Sidewall collapse.	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks			Water Strikes			Backfill Details			
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
			2.00	5	1.95		0.00	3.00	Arisings
			2.00	10	1.90				
			2.00	15	1.90				
			2.00	20	1.90				

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP49
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 13/09/2023
Date Completed: 13/09/2023

Survey Grid System: OSGB
Co-ordinates: 382841.95 mE
846840.11 mN
Ground Level: 98.83 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.70m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Vegetation over brown clayey gravelly fine to medium SAND with a low cobble content. Common very fine to medium roots. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular predominantly of quartzite. [Topsoil]		0.20	98.83							
Brownish grey locally bluish grey silty gravelly fine to medium SAND with low cobble content. Occasional sections of greyish blue soft sandy silt. Gravel is subangular to rounded fine to coarse of psammite and quartzite. Cobbles are subangular to subrounded of psammite and quartzite (<200mm). Boulders are subangular to subrounded of psammite (<550mm). Possible residual soil. [Macduff Formation]		[1.20]		0.50	B-2					
				0.50	D-1					
Brown clayey gravelly fine to coarse SAND with a low cobble content. Gravel is angular to subangular fine to coarse of psammite pelite and quartzite. Cobbles are angular to subangular of psammite (<180mm). Possible residual soil. [Macduff Formation]		1.40	97.43	1.00	B-4					
				1.00	D-3					
		[2.30]		2.00	B-6					
				2.00	D-5					
		[3.70]		3.00	B-8					
				3.00	D-7					
3.70m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.70m			95.13							

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.70	3.00	1.00	Unstable. Sidewall collapse.	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes				Backfill Details		Description
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	
				1.40	5	1.35		0.00	3.70	Arisings
				1.40	10	1.30				
				1.40	15	1.25				
				1.40	20	1.25				
				2.00	5	2.00				
				2.00	10	1.95				

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP50
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	381979.48 mE 847164.43 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	127.29 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	01/09/2023			Print Date:	15/02/2024
Date Completed:	01/09/2023			Final Depth:	3.20m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	127.29 127.09							
Brown locally greyish brown sandy angular to subangular fine to coarse GRAVEL of psammite and quartzite with a high cobble content and a low boulder content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Boulders are angular to subangular of psammite (<900mm). Possible weathered bedrock. [Macduff Formation]				0.50 0.50	B-1 D-2					
1.00 - 3.00m : Frequent pockets of yellowish brown sandy silt (<100x40x40mm).				1.00 1.00	B-4 D-3					
3.20m : Refusal. Excavator scarping base of pit. Possible bedrock. Trial Pit Terminated at 3.20m		3.20	124.09	3.00 3.00	B-8 D-7					

Reason for Hole Termination: Refusal. Scraping full full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.20	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		Description
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	
						Not Encountered	0.00	3.20	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP52
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 06/09/2023
Date Completed: 06/09/2023

Survey Grid System: OSGB
Co-ordinates: 382508.65 mE
847438.60 mN
Ground Level: 116.39 mOD
Orientation of Logged Face: -- deg.
Hole Type: TP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 3.90m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to medium SAND with a low cobble content and occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. Cobbles are subangular of psammite (<140mm). [Topsoil]		0.20	116.39 116.19							
Brown very silty very sandy angular to subangular fine to coarse GRAVEL of psammite. Cobbles are angular to subangular of psammite with a medium cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite (<180mm). Possible residual soil. [Macduff Formation] 0.20 - 1.30m : Frequent pockets of light yellowish grey sandy silt (100x40x40mm). Sand is fine.		[1.40]		0.50 0.50	B-2 D-1					
Brown silty sandy angular to subangular fine to coarse GRAVEL of psammite with a high cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite (<200mm). Possible weathered bedrock. [Macduff Formation] 1.60 - 3.60m : Frequent dark purplish brown staining on surface of gravels and cobbles.		[2.30]	114.79	1.00 1.00	B-4 D-3					
				1.50		Soak		m/s		
				2.00 2.00	B-6 D-5					
				3.00 3.00	B-8 D-7					
3.90m : Refusal. Presumed bedrock. Trial Pit Terminated at 3.90m			112.49							

Reason for Hole Termination: Refusal. Scraping entire length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.90	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Description
							Not Encountered		Arisings
							Depth Top	Depth Base	
							0.00	3.90	

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Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP53
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382181.42 mE 846970.47 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	119.02 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	28/08/2023			Print Date:	15/02/2024
Date Completed:	28/08/2023			Final Depth:	3.30m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to medium SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	119.02 118.82							
Brown sandy gravelly SILT with a low cobble content. Sand is medium to coarse. Gravel is angular to subrounded fine to coarse of psammite and quartzite. Cobbles are angular to subangular of psammite. [Till]		[0.80]		0.50 0.50	B-2 D-1					
Brown silty sandy angular to subangular fine to coarse GRAVEL of psammite and quartzite with a medium cobble content. Gravel is angular to subangular fine to coarse of psammite and quartzite. Cobbles are angular to subangular of psammite. Presumed weathered bedrock. [Macduff Formation]		1.00	118.02	1.00 1.00	B-4 D-3					
				1.50		Soak		m/s		
		[2.30]		2.00 2.00	B-6 D-5					
				3.00 3.00	B-8 D-7					
3.30m : Refusal. Presumed bedrock.		3.30	115.72							
Trial Pit Terminated at 3.30m										

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	3.30	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	3.30	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
TP54
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	TP
Project No:	RGN.330G	Co-ordinates:	382134.59 mE 846894.50 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	122.69 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	1:33 FINAL
Date Started:	28/08/2023			Print Date:	15/02/2024
Date Completed:	28/08/2023			Final Depth:	2.20m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Dark brown clayey gravelly fine to medium SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse of psammite and quartzite. [Topsoil]		0.20	122.69 122.49							
Brown very silty sandy angular to subrounded fine to coarse GRAVEL of psammite and quartzite with a low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Possible residual soil. [Macduff Formation]		[1.85]		0.50 0.50	B-2 D-1					
				1.00 1.00	B-4 D-3					
				1.50		Soak		m/s		
				2.00 2.00	B-6 D-5					
Brown gravelly fine to coarse SAND with a medium cobble content. Gravel is angular to subangular fine to coarse of psammite and quartzite. Cobbles are angular to subangular of psammite. Presumed weathered bedrock. [Macduff Formation]		2.05 2.20	120.64 120.49							
2.19m : Refusal. Presumed bedrock. Trial Pit Terminated at 2.20m										

Reason for Hole Termination: Refusal. Scraping full length of pit.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	2.20	3.00	1.00	Stable	None	Scott Campbell	14T tracked excavator	Photographs taken of pit side and spoil. Trial pit backfilled in reverse order and compacted using excavator bucket.	

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	2.20	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'

**APPENDIX 3.3
HAND PIT LOGS**



TRIAL PIT LOG

Trial Pit No.
HP01
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	IP
Project No:	RGN.330G	Co-ordinates:	382874.97 mE 846849.95 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	98.93 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	18/10/2023			Print Date:	15/02/2024
Date Completed:	18/10/2023			Final Depth:	0.60m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subrounded, fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		[0.40]	98.93							
Grey very gravelly very silty fine to coarse SAND with high cobble content. Gravel is angular to subrounded fine to coarse of sandstone and siltstone. Sand is fine to medium. (Possible residual). [Macduff Formation]		0.40 0.60	98.53 98.33	0.50 0.50	B-1 D-2				▼	
<p>0.60m : Refusal due to possible boulder obstruction. Trial Pit Terminated at 0.60m</p>										

Reason for Hole Termination: Refusal. Possible boulder obstruction.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	0.60	0.50	0.50	Stable		Lawrence Ahukannah	Insulated digging tools	Refusal at 0.60m due to possible boulder obstruction.	

Depth Related Remarks				Water Strikes			Backfill Details			
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
				0.60	5	0.60		0.00	0.60	Arisings
				0.60	10	0.60				
				0.60	15	0.60				
				0.60	20	0.60				

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
HP02
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 18/10/2023
Date Completed: 18/10/2023

Survey Grid System: OSGB
Co-ordinates: 382924.72 mE
846845.41 mN
Ground Level: 99.83 mOD
Orientation of Logged Face: 090 deg.
Hole Type: IP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 1.00m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Soft dark brown gravelly sandy CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse of sandstone and siltstone Cobbles are angular to subangular of siltstone (<80mm). Sand is fine to medium. [Topsoil]		[0.50]	99.83							
Grey mottled orange gravelly very silty fine to coarse SAND. Gravel is angular to subrounded, fine to coarse of sandstone and siltstone. (Possible residual). [Macduff Formation]		[0.50]	99.33	0.50 0.50	B-4 D-1					
1.00m : Refusal due to possible boulder obstruction. Trial Pit Terminated at 1.00m		1.00	98.83	1.00 1.00	B-3 D-2					

Reason for Hole Termination: Refusal. Possible boulder obstruction.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	1.00	0.50	0.50	Stable		Lawrence Ahukannah	Insulated Digging Tools	Refusal at 1.00m due to possible boulder obstruction.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	1.00	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
HP03
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	IP
Project No:	RGN.330G	Co-ordinates:	382974.52 mE 846840.88 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	104.53 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	18/10/2023			Print Date:	15/02/2024
Date Completed:	18/10/2023			Final Depth:	0.55m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subrounded of sandstone and siltstone. Sand is fine to medium. [Topsoil]		0.30	104.53							
Brown very sandy angular to subrounded fine to coarse GRAVEL of pelite and psammite. With high cobble content. Sand is fine to coarse. Cobbles are angular to subangular of semi-pelite (<80mm). (Possible residual). [Macduff Formation]		0.30	104.23							
		0.55	103.98	0.50 0.50	B-2 D-1					
<p>0.55m : Refusal due to possible boulder obstruction. Trial Pit Terminated at 0.55m</p>										

Reason for Hole Termination: Refusal. Possible boulder obstruction.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	0.55	0.50	0.50	Stable		Lawrence Ahukannah	Insulated digging tools	Refusal at 0.55m due to possible boulder obstruction.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	0.55	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
HP04
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	IP
Project No:	RGN.330G	Co-ordinates:	383024.34 mE 846836.32 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	104.50 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	FINAL
Date Started:	18/10/2023			Print Date:	15/02/2024
Date Completed:	18/10/2023			Final Depth:	0.50m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse of sandstone and siltstone. Sand is fine to medium.		0.20	104.50							
[Topsoil]		[0.30]	104.30							
Orangish brown very silty very gravelly angular to subrounded fine to coarse GRAVEL of sandstone and siltstone. Sand is fine to coarse. (Possible residual). [Macduff Formation]		0.50	104.00	0.50	B-1					
<p>0.50m : Refusal due to possible boulder obstruction.</p> <p>Trial Pit Terminated at 0.50m</p>										

Reason for Hole Termination: Refusal. Possible boulder obstruction.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	0.50	0.50	0.50	Stable		Lawrence Ahukannah	Insulated digging tools	Refusal at 0.50m due to possible boulder obstruction	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	0.50	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
HP05
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	IP
Project No:	RGN.330G	Co-ordinates:	383074.10 mE	Checked By:	SR
Client:	SSEN-T	Ground Level:	846831.77 mN	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	103.57 mOD	Scale:	1:33
Date Started:	18/10/2023		-- deg.	Status:	FINAL
Date Completed:	18/10/2023			Print Date:	15/02/2024
				Final Depth:	0.70m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse of sandstone and siltstone. Sand is fine to medium. [Topsoil]		[0.30]	103.57							
Firm orangish brown slightly gravelly sandy silty CLAY. Gravel is angular to subrounded fine to coarse of sandstone and siltstone. Sand is fine to medium. (Possible residual). [Macduff Formation]		[0.40]	103.27	0.50	B-2					
		[0.70]	102.87	0.50	D-1					
0.70m : Refusal due to possible boulder obstruction. Trial Pit Terminated at 0.70m										

Reason for Hole Termination: Refusal. Possible boulder obstruction.

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	0.70	0.50	0.50	Stable		Lawrence Ahukannah	Insulated digging tools	Refusal at 0.70m due to possible boulder obstruction.	

Depth Related Remarks				Water Strikes			Backfill Details				
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Depth Top	Depth Base	Description
							Not Encountered		0.00	0.70	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
HP06
Sheet 1 of 1

Project Name:	ASTI Substation Site - LT379 New Deer 2	Survey Grid System:	OSGB	Hole Type:	IP
Project No:	RGN.330G	Co-ordinates:	383123.93 mE 846827.22 mN	Checked By:	SR
Client:	SSEN-T	Ground Level:	102.55 mOD	Approved By:	PMCG
Engineer:	Tony Gee	Orientation of Logged Face:	-- deg.	Status:	1:33 FINAL
Date Started:	18/10/2023			Print Date:	15/02/2024
Date Completed:	18/10/2023			Final Depth:	1.20m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse of siltstone and sandstone. Sand is fine to medium. [Topsoil]		[0.30]	102.55							
Soft orangish brown slightly gravelly sandy silty CLAY. Gravel is angular to subrounded fine to coarse of sandstone and siltstone. Sand is fine to medium. [Macduff Formation]		0.30 [0.50]	102.25	0.50 0.50	B-1 D-2					
Yellowish brown slightly gravelly very silty fine to medium SAND. Gravel is fine. (Possible residual) [Macduff Formation]		0.80 [0.40]	101.75	1.00 1.00	B-3 D-4					
Trial Pit Terminated at 1.20m										

Reason for Hole Termination: Reached scheduled depth

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	1.20	0.50	0.50	Stable		Lawrence Ahukannah	Insulated digging tools		

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks		Strike (m)	Time (mins)	Depth (m)	Remarks		Description
							0.00	1.20	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'



TRIAL PIT LOG

Trial Pit No.
HP07
Sheet 1 of 1

Project Name: ASTI Substation Site - LT379 New Deer 2
Project No: RGN.330G
Client: SSEN-T
Engineer: Tony Gee
Date Started: 18/10/2023
Date Completed: 18/10/2023

Survey Grid System: OSGB
Co-ordinates: 383173.69 mE
846822.67 mN
Ground Level: 102.25 mOD
Orientation of Logged Face: -- deg.
Hole Type: IP
Checked By: SR
Approved By: PMCG
Scale: 1:33
Status: FINAL
Print Date: 15/02/2024
Final Depth: 1.20m

Stratum Description	Legend	Depth [Thickness] (m)	Level (m)	Sampling and In Situ Testing					Water Strikes	Well
				Depth (m)	Type	Test	Test Result	Units		
Soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse of quartz and sandstone. Sand is fine to medium. [Topsoil]		[0.30]	102.25							
Soft to firm orangish brown slightly gravelly sandy silty CLAY. Gravel is angular to subangular fine to coarse of sandstone and siltstone. Sand is fine to coarse. (Possible residual). [Macduff Formation]		0.30 [0.90]	101.95	0.50 0.50	B-1 D-2					
		1.00 1.00			B-3 D-4					
Trial Pit Terminated at 1.20m		1.20	101.05							

Reason for Hole Termination: Reached scheduled depth

Depth Related Exploratory Hole Information									
From (m)	To (m)	Length (m)	Width (m)	Stability	Shoring	Logger	Plant	Remarks	
0.00	1.20	0.50	0.50	Stable		Lawrence Ahukannah	Insulated digging tools		

Depth Related Remarks				Water Strikes			Backfill Details		
From (m)	To (m)	Remarks	Strike (m)	Time (mins)	Depth (m)	Remarks	Depth Top	Depth Base	Description
						Not Encountered	0.00	1.20	Arisings

Groundwater levels may be subject to seasonal, tidal and other fluctuations and should not be taken as constant.

Explanation of symbols and abbreviations given in 'Key to Exploratory holes'

**APPENDIX 4.0
IN-SITU TEST RESULTS**

**APPENDIX 4.1
THERMAL RESISTIVITY TEST RESULTS**

Sensor Type	Sample ID	Ambient Temperature (C)	λ (W/mK)	R (mK/W)	Current (mA)	Test Time (s)	Delta T (C)	AVG Drift (C)	Power (W)	Date
TLS100	TP04	18.5	1.833	0.546	200	90	1.3	0.0	0.731	14/09/2023
TLS100	TP07	21.5	0.328	3.049	200	90	5.7	0.0	0.728	15/09/2023
TLS100	TP09	15.8	2.222	0.450	200	90	1.3	0.0	0.722	15/09/2023
TLS100	TP11	18.0	0.812	1.232	200	90	3.1	0.1	0.733	04/09/2023
TLS100	TP14	22.1	0.311	3.215	250	90	5.8	0.0	0.658	28/08/2023
TLS100	TP16	12.5	0.412	2.427	200	90	5.8	0.0	0.720	02/09/2023
TLS100	TP19	15.4	1.055	0.948	200	90	3.1	0.0	0.723	06/09/2023
TLS100	TP20	17.1	1.680	0.595	200	90	2.5	0.1	0.731	04/09/2023
TLS100	TP21	16.0	0.231	4.329	200	90	8.1	0.1	0.727	01/09/2023
TLS100	TP32	16.5	1.398	0.715	200	90	2.3	0.0	0.723	06/09/2023
TLS100	TP33	14.9	1.465	0.683	200	90	2.1	0.0	0.723	05/09/2023
TLS100	TP35	15.5	1.233	0.811	200	90	2.2	0.0	0.724	31/08/2023
TLS100	TP36	16.1	2.076	0.482	200	90	1.6	0.1	0.721	31/08/2023
TLS100	TP40	18.2	1.726	0.579	200	90	1.9	0.1	0.729	03/09/2023
TLS100	TP41	19.5	0.770	1.299	200	90	5.2	0.3	0.731	03/09/2023
TLS100	TP44	14.8	0.765	1.307	200	90	6.5	0.1	0.725	11/09/2023
TLS100	TP46	13.2	2.378	0.421	200	90	1.5	0.0	0.717	13/09/2023
TLS100	TP48	14.5	0.594	1.684	200	90	5.0	0.0	0.720	13/09/2023
TLS100	TP50	16.7	0.076	13.158	200	90	15.9	0.1	0.723	01/09/2023

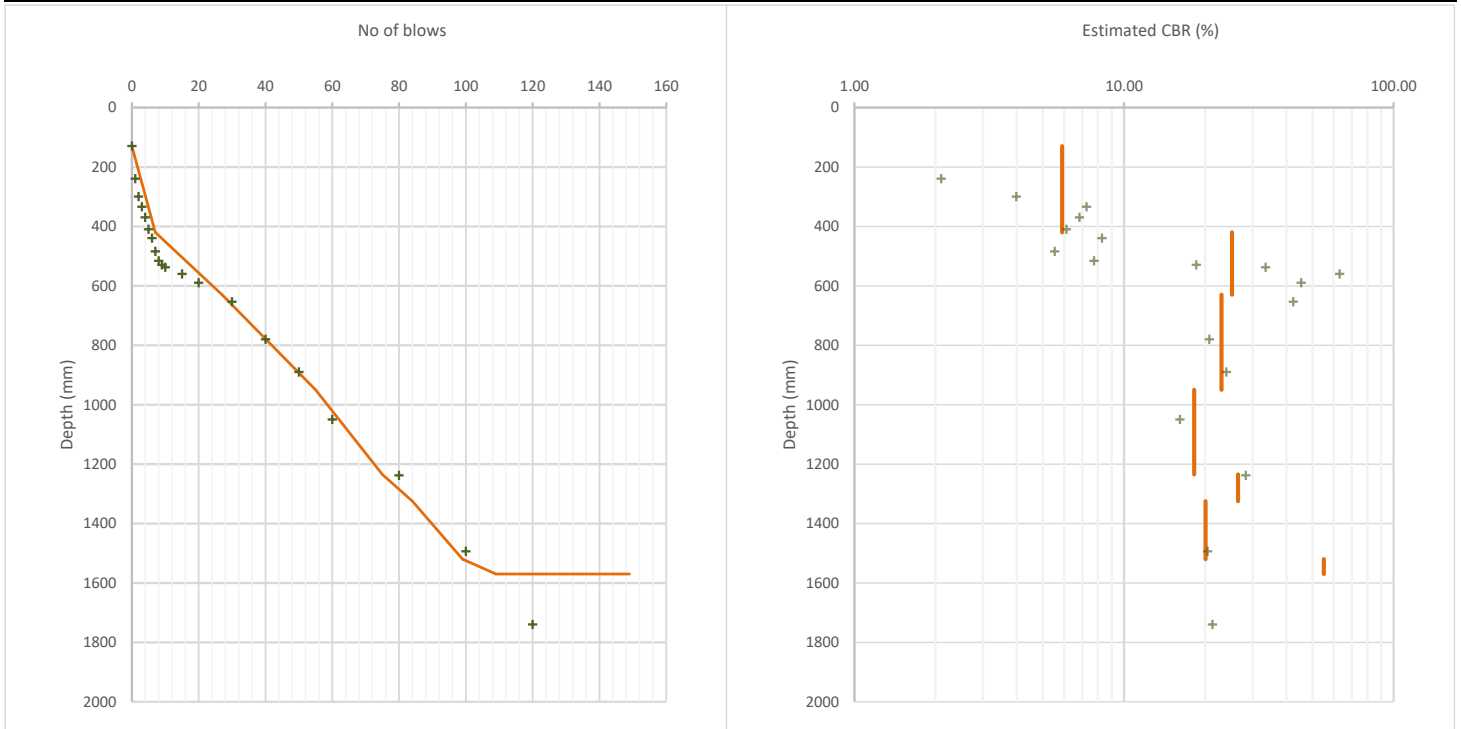
**APPENDIX 4.2
DYNAMIC CONE PENETRATION TEST RESULTS**

DYNAMIC CONE PENETRATION TEST

Test Location:
HP01 DCP
Page 2 of 2

Project Name: New Deer	Survey grid system: OSGB	Hole type: DCP
Project No: RGN.330G	Co-ordinates: mE	Checked by: MW
Client: SSENT	Ground level: mOD	Approved by: SR
Engineer: SR		Weather: Dry
Date of test: 17/10/2023	Start Depth: 130 mm	Equipment: CNS Farnell DCP Model A2465
Test number: 1	Inclination: 90 deg.	

Number of blows	Total blows	Reading (mm)	Rod Change Reading (mm)	Penetration Increment (mm)	Depth (mm)



Test No.	Depth from (mm)	Depth to (mm)	CBR value
1	130	420	5.9
2	420	630	25
3	630	950	23
4	950	1235	18
5	1235	1325	26
6	1325	1520	20
7	1520	1570	55

Estimated CBR value calculated using TRL equation:

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

References:

- CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
- Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
- Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

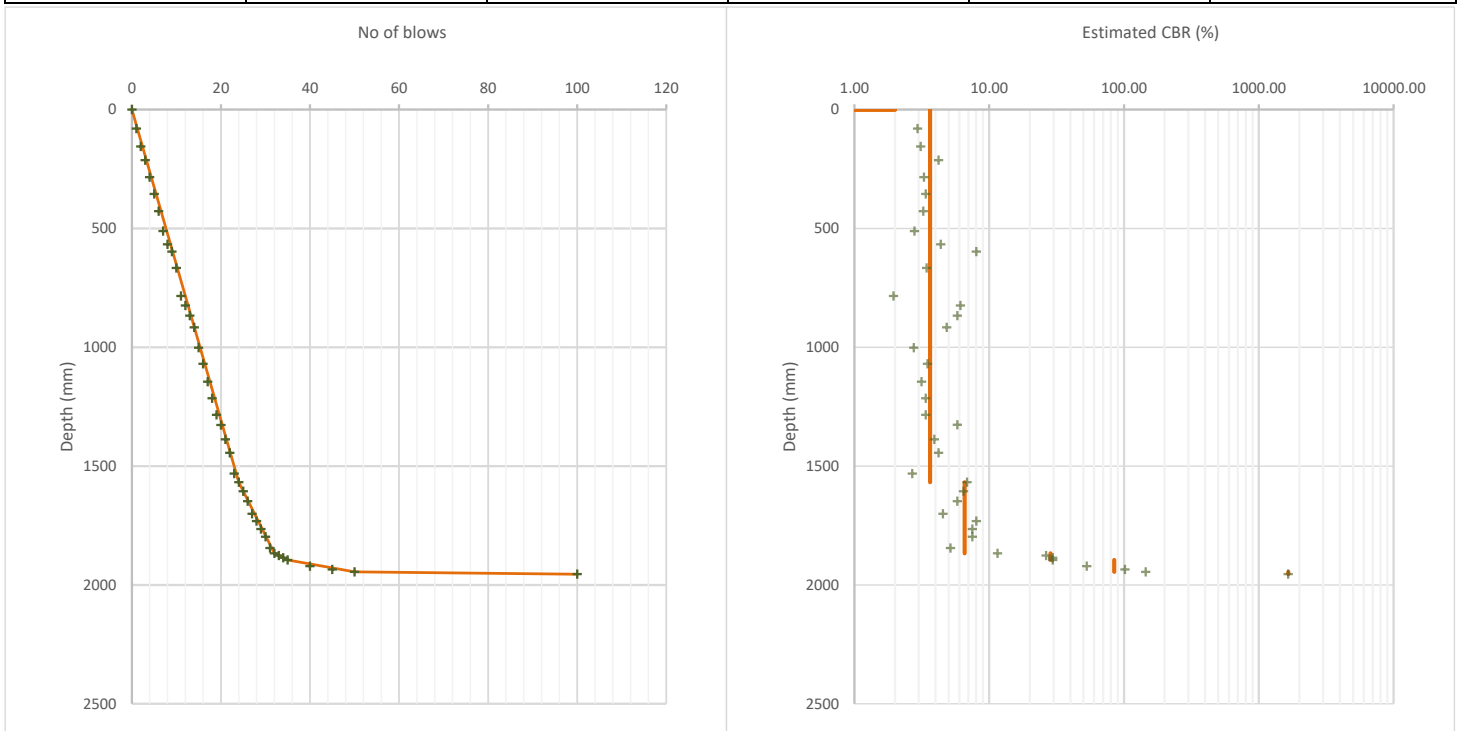
Final depth: 1.570m

DYNAMIC CONE PENETRATION TEST

Test Location:
HP03 DCP1
Page 2 of 2

Project Name: New Deer 2	Survey grid system: OSGB	Hole type: DCP
Project No: 330G	Co-ordinates: mE	Checked by: SR
Client: SSEN-T	Ground level: mN	Approved by:
Engineer: SR		Weather: Dry
Date of test: 18/10/2023	Start Depth: 0 mm	Equipment: DCP TRL Probe
Test number: 1	Inclination: 90 deg.	

Number of blows	Total blows	Reading (mm)	Rod Change Reading (mm)	Penetration Increment (mm)	Depth (mm)



Test No.	Depth from (mm)	Depth to (mm)	CBR value
1	0	1568	3.6
2	1568	1867	6.6
3	1867	1895	28
4	1895	1945	85
5	1945	1955	1700

Estimated CBR value calculated using TRL equation:

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

References:

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
 Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
 Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
DCP Refusal at 1.955mbgl.

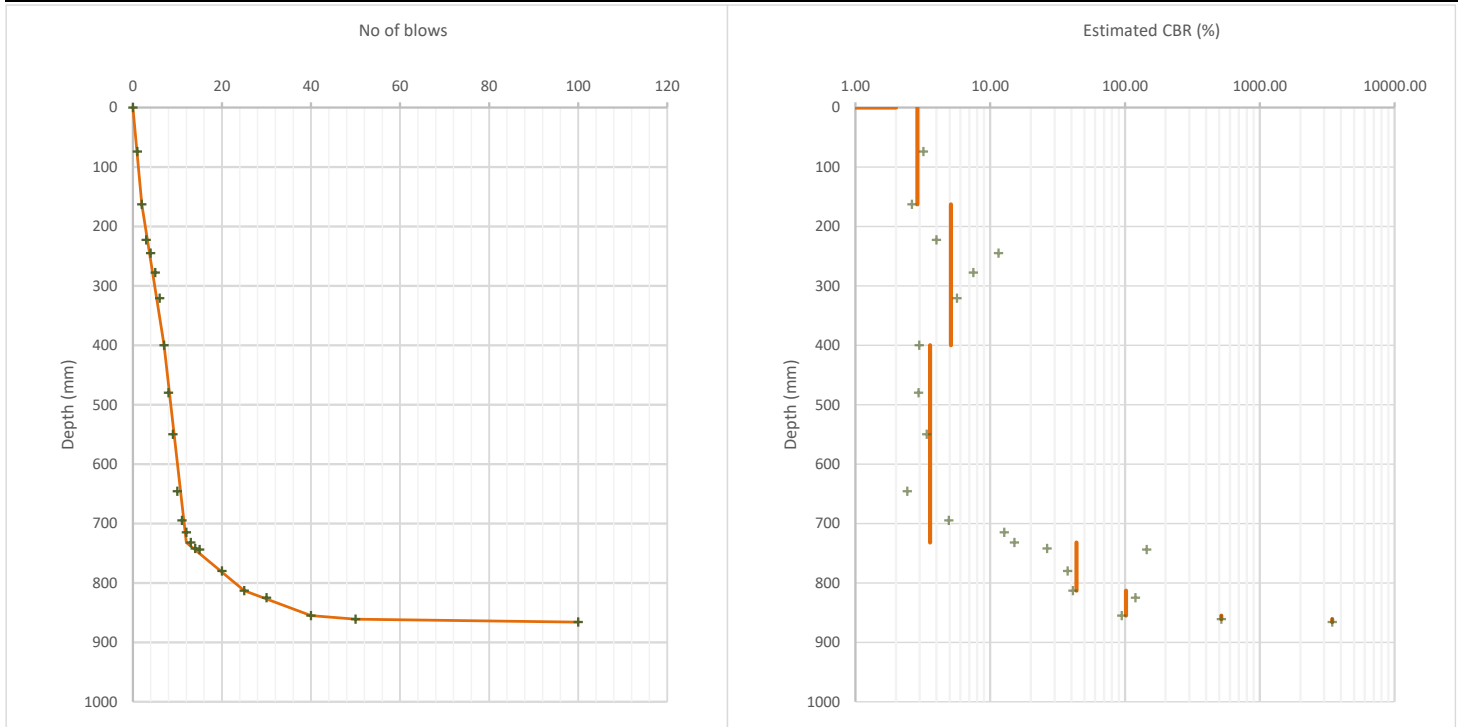
DYNAMIC CONE PENETRATION TEST

Project Name: New Deer 2
Project No: 330G
Client: SSEN-T
Engineer: SR
Date of test: 18/10/2023
Test number: 1

Survey grid system: OSGB
Co-ordinates: mE
Ground level: mOD
Start Depth: 0 mm
Inclination: 90 deg.

Hole type: DCP
Checked by: SR
Approved by:
Weather: Dry
Equipment: DCP TRL Probe

Number of blows	Total blows	Reading (mm)	Rod Change Reading (mm)	Penetration Increment (mm)	Depth (mm)



Test No.	Depth from (mm)	Depth to (mm)	CBR value
1	0	163	2.9
2	163	400	5.1
3	400	732	3.6
4	732	813	44
5	813	855	100
6	855	861	520
7	861	866	3400

Estimated CBR value calculated using TRL equation:

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

References:

- CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
- Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
- Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
DCP Refusal at 0.866mbgl.



DYNAMIC CONE PENETRATION TEST

Test Location:

TP44 DCP

Page 1 of 2

Project Name: New Deer 2

Survey grid system: OSGB

Hole type: DCP

Co-ordinates: mE

Checked by: MW

Project No: 330G

mN

Approved by: SR

Client: SSEN-T

Ground level: mOD

Engineer: MW

Weather: Dry

Date of test: 13/10/2023

Start Depth: 100 mm

Equipment: CNS Farnell DCP Model A2465

Test number: 1

Inclination: 90 deg.

Number of blows	Total blows	Reading (mm)	Rod Change Reading (mm)	Penetration Increment (mm)	Depth (mm)
0	0	100		0	100
1	1	160		60	160
1	2	220		60	220
1	3	250		30	250
1	4	290		40	290
1	5	330		40	330
1	6	370		40	370
1	7	400		30	400
1	8	440		40	440
1	9	470		30	470
2	11	510		40	510
2	13	540		30	540
2	15	580		40	580
2	17	630		50	630
2	19	660		30	660
2	21	700		40	700
2	23	735		35	735
4	27	770		35	770
4	31	800		30	800
4	35	860		60	860
4	39	920		60	920
5	44	960	30	40	960
5	49	100		70	1030
5	54	120		20	1050
5	59	150		30	1080
5	64	250		100	1180
5	69	320		70	1250
5	74	360		40	1290
5	79	410		50	1340
5	84	450		40	1380
5	89	490		40	1420
5	94	495		5	1425
5	99	510		15	1440
5	104	590		80	1520
5	109	670		80	1600
5	114	705		35	1635
5	119	730		25	1660
5	124	760		30	1690
5	129	785		25	1715
5	134	805		20	1735
5	139	860		55	1790
5	144	910		50	1840
5	149	955	20	45	1885
5	154	40		20	1905
5	159	60		20	1925
5	164	80		20	1945
5	169	95		15	1960
10	179	110		15	1975
10	189	130		20	1995
10	199	155		25	2020

Comments:

Final Depth : 2.090m

DYNAMIC CONE PENETRATION TEST

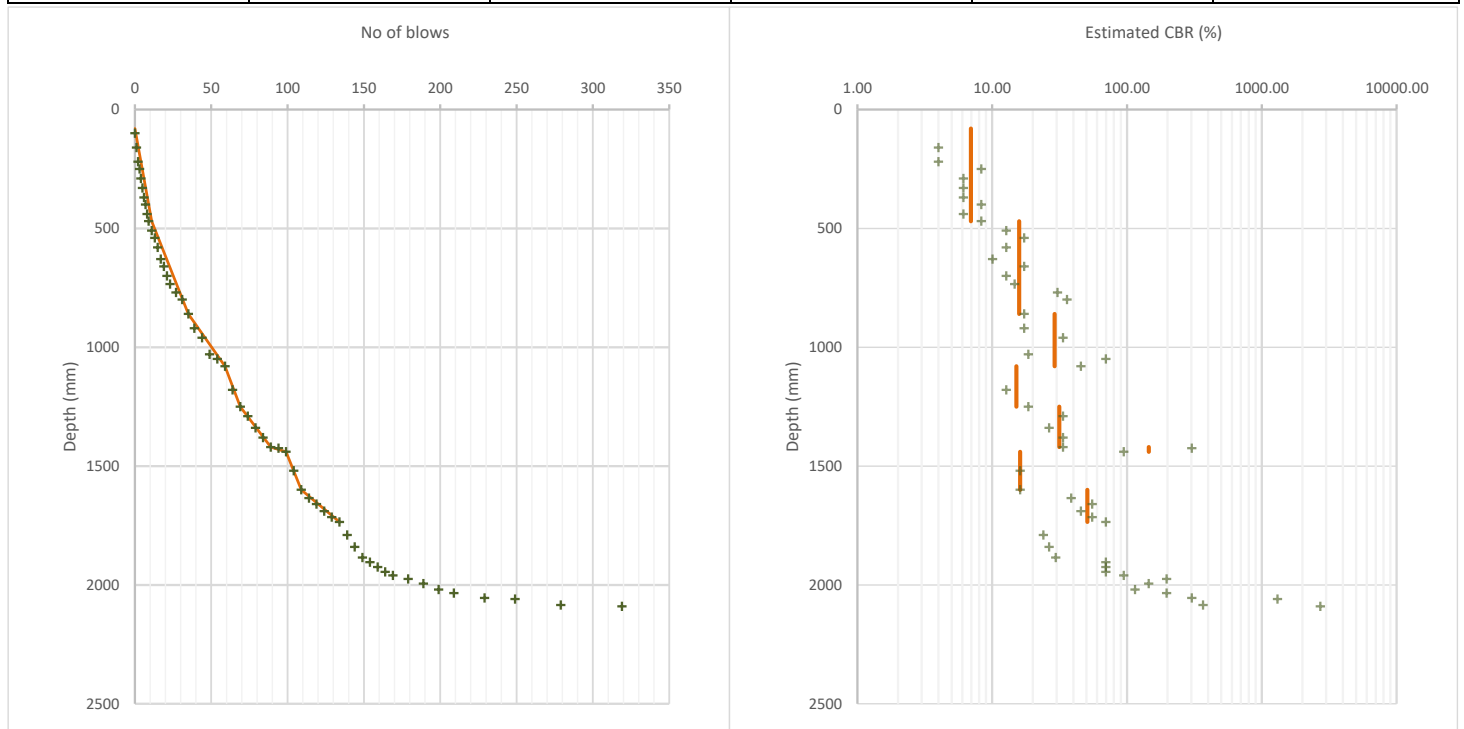
Test Location:

TP44 DCP

Page 2 of 2

Project Name: New Deer 2	Survey grid system: OSGB	Hole type: DCP
Project No: 330G	Co-ordinates: mE	Checked by: MW
Client: SSEN-T	Ground level: mN	Approved by: SR
Engineer: MW		Weather: Dry
Date of test: 13/10/2023	Start Depth: 100 mm	Equipment: CNS Farnell DCP Model A2465
Test number: 1	Inclination: 90 deg.	

Number of blows	Total blows	Reading (mm)	Rod Change Reading (mm)	Penetration Increment (mm)	Depth (mm)
10	209	170		15	2035
20	229	190		20	2055
20	249	195		5	2060
30	279	220		25	2085
40	319	225		5	2090



Test No.	Depth from (mm)	Depth to (mm)	CBR value
1	80	470	7
2	470	860	16
3	860	1080	29
4	1080	1250	15
5	1250	1420	31
6	1420	1440	150
7	1440	1600	16
8	1600	1735	51

Estimated CBR value calculated using TRL equation:

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

References:

- CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
- Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
- Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

Final Depth : 2.090m



DYNAMIC CONE PENETRATION TEST

Test Location:

TP46 DCP

Page 1 of 2

Project Name: New Deer 2

Survey grid system: OSGB

Hole type: DCP

Co-ordinates: mE

Checked by: MW

Project No: 330G

mN

Approved by: SR

Client: SSEN-T

Ground level: mOD

Engineer: MW

Weather: Dry

Date of test: 13/10/2023

Start Depth: 80 mm

Equipment: CNS Farnell DCP Model A2465

Test number: 1

Inclination: 90 deg.

Number of blows	Total blows	Reading (mm)	Rod Change Reading (mm)	Penetration Increment (mm)	Depth (mm)
0	0	80		0	80
1	1	180		100	180
1	2	220		40	220
1	3	240		20	240
1	4	270		30	270
1	5	310		40	310
1	6	340		30	340
1	7	370		30	370
1	8	390		20	390
1	9	420		30	420
1	10	440		20	440
1	11	465		25	465
1	12	480		15	480
1	13	500		20	500
2	15	520		20	520
2	17	530		10	530
2	19	540		10	540
2	21	555		15	555
2	23	570		15	570
2	25	580		10	580
3	28	590		10	590
3	31	600		10	600
3	34	615		15	615
3	37	625		10	625
3	40	640		15	640
3	43	655		15	655
4	47	680		25	680
4	51	695		15	695
4	55	725		30	725
4	59	730		5	730
4	63	760		30	760
4	67	785		25	785
4	71	820		35	820
5	76	885		65	885
5	81	950	60	65	950
1	82	70		10	960
1	83	80		10	970
1	84	105		25	995
1	85	120		15	1010
1	86	140		20	1030
1	87	155		15	1045
2	89	170		15	1060
2	91	190		20	1080
2	93	195		5	1085
2	95	210		15	1100
2	97	240		30	1130
2	99	270		30	1160
2	101	315		45	1205
2	103	340		25	1230
2	105	360		20	1250

Comments:

Final Depth : 1.710m

DYNAMIC CONE PENETRATION TEST

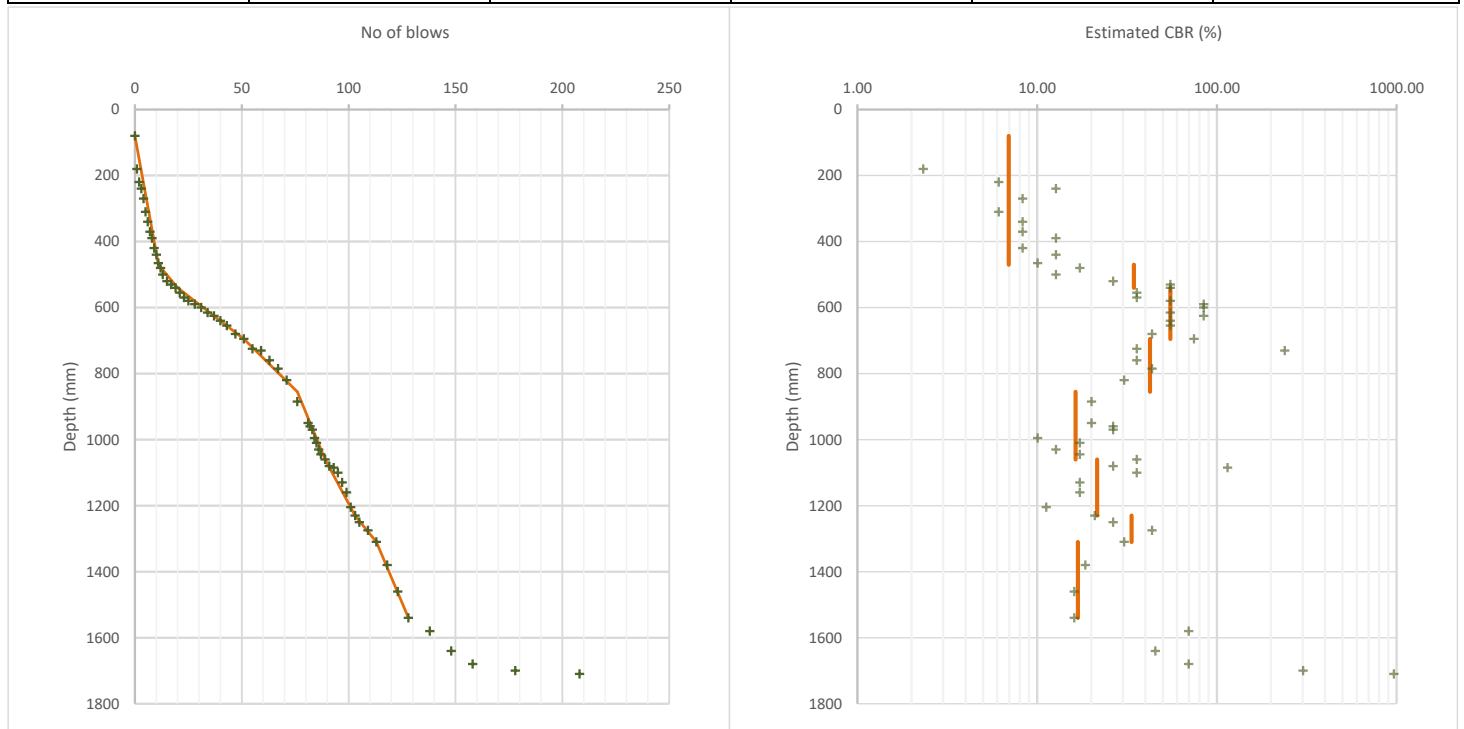
Test Location:

TP46 DCP

Page 2 of 2

Project Name: New Deer 2	Survey grid system: OSGB	Hole type: DCP
Project No: 330G	Co-ordinates: mE	Checked by: MW
Client: SSEN-T	Ground level: mN	Approved by: SR
Engineer: MW		Weather: Dry
Date of test: 13/10/2023	Start Depth: 80 mm	Equipment: CNS Farnell DCP Model A2465
Test number: 1	Inclination: 90 deg.	

Number of blows	Total blows	Reading (mm)	Rod Change Reading (mm)	Penetration Increment (mm)	Depth (mm)
4	109	385		25	1275
4	113	420		35	1310
5	118	490		70	1380
5	123	570		80	1460
5	128	650		80	1540
10	138	690		40	1580
10	148	750		60	1640
10	158	790		40	1680
20	178	810		20	1700
30	208	820		10	1710



Test No.	Depth from (mm)	Depth to (mm)	CBR value
1	80	470	7
2	470	540	35
3	540	695	55
4	695	855	42
5	855	1060	16
6	1060	1230	22
7	1230	1310	34
8	1310	1540	17

Estimated CBR value calculated using TRL equation:

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

References:

- CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
- Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
- Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

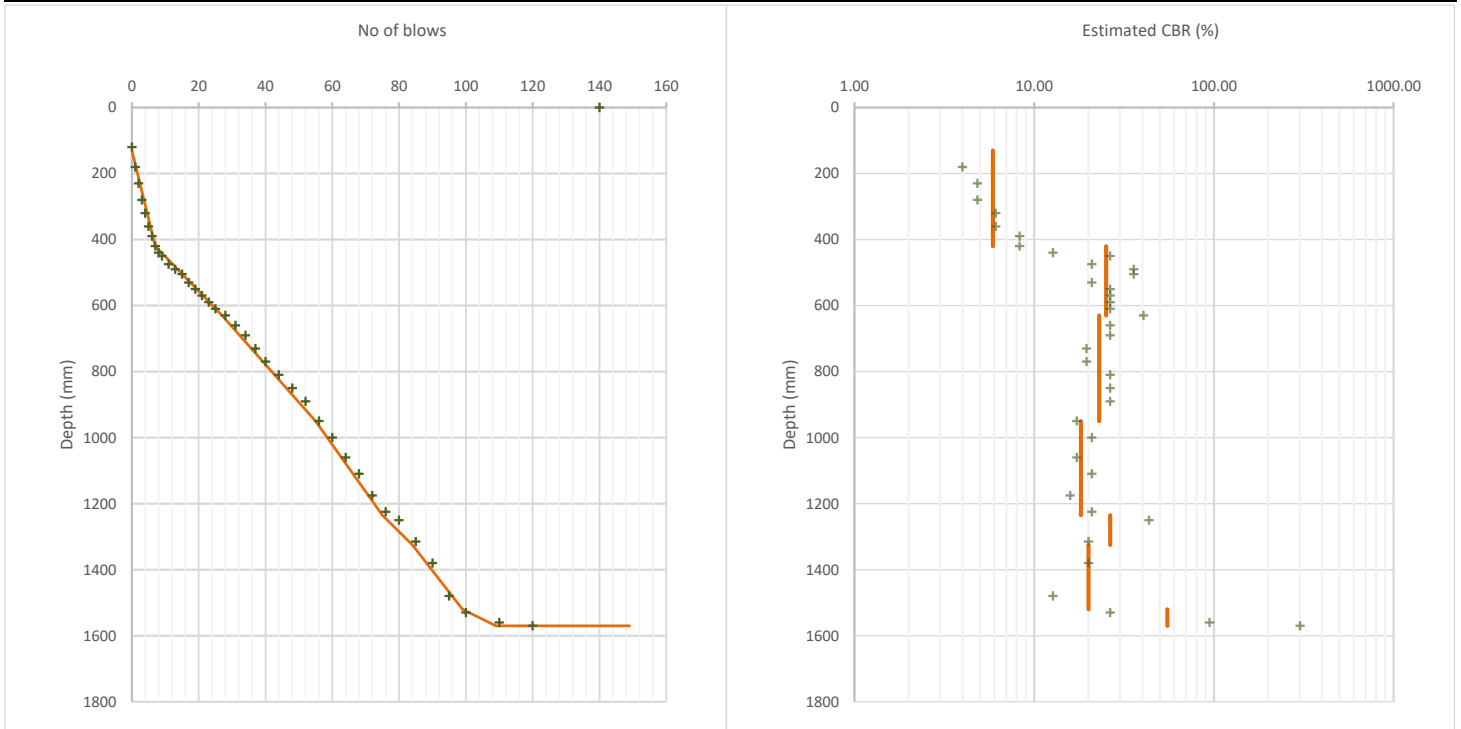
Final Depth : 1.710m

DYNAMIC CONE PENETRATION TEST

Test Location:
TP48 DCP
Page 2 of 2

Project Name: New Deer 2	Survey grid system: OSGB	Hole type: DCP
Project No: 330G	Co-ordinates: mE	Checked by: MW
Client: SSEN-T	Ground level: mN	Approved by: SR
Engineer: MW		Weather: Dry
Date of test: 13/10/2023	Start Depth: 120 mm	Equipment: CNS Farnell DCP Model A2465
Test number: 1	Inclination: 90 deg.	

Number of blows	Total blows	Reading (mm)	Rod Change Reading (mm)	Penetration Increment (mm)	Depth (mm)



Test No.	Depth from (mm)	Depth to (mm)	CBR value
1	130	420	5.9
2	420	630	25
3	630	950	23
4	950	1235	18
5	1235	1325	26
6	1325	1520	20
7	1520	1570	55

Estimated CBR value calculated using TRL equation:

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

References:

- CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
- Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
- Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

Final depth: 1.570m

**APPENDIX 4.3
SOAKAWAY TEST RESULTS**



Soil Infiltration Rate (Soakaway) Test

Soil Infiltration Test carried out in accordance with BRE Digest 365:2016.

Borehole number:

TP51

Page 1 of 1

Project name: New Deer
 Project number: 330G
 Client: SSE
 Operative: Scott Campbell
 Start of test: 12/09/2023 09:40:00
 End of test: 12/09/2023 16:40

Survey grid system: OSGB
 Co-ordinates: mE
 mN
 Ground level: mOD

Hole type: Trial Pit
 Checked by: MW
 Approved by: PM

Test reference: 1

Weather: Over/Overcast

Test type: Soil Infiltration Test
 Response zone top: 0.00 m bgl
 Response zone base: 1.50 m bgl
 Test section diameter: 0 mm

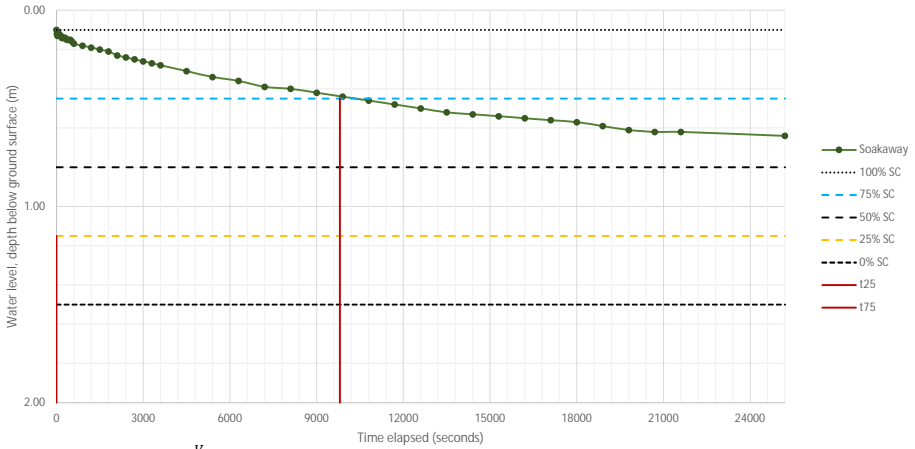
Shape of test section: Trial Pit (Cuboid)
 Test section dimensions: 1.00m x 2.00m
 Type of filter used: None
 (Assumed porosity) 100 %

Groundwater before: Dry
 Water added: 2000 l
 Water level start of test: 0.10 m bgl
 Water level end of test: 0.64 m bgl
 Hole depth after test: m bgl

Time, t (seconds)	Water Depth (m)
0	0.10
15	0.12
30	0.13
45	0.12
60	0.12
90	0.12
120	0.13
150	0.13
180	0.14
210	0.14
240	0.14
270	0.14
300	0.14
360	0.15
420	0.15
480	0.15
540	0.16

Time, t (seconds)	Water Depth (m)
600	0.17
900	0.18
1200	0.19
1500	0.20
1800	0.21
2100	0.23
2400	0.24
2700	0.25
3000	0.26
3300	0.27
3600	0.28
4500	0.31
5400	0.34
6300	0.36
7200	0.39
8100	0.40
9000	0.42

Time, t (seconds)	Water Depth (m)
9900	0.44
10800	0.46
11700	0.48
12600	0.50
13500	0.52
14400	0.53
15300	0.54
16200	0.55
17100	0.56
18000	0.57
18900	0.59
19800	0.61
20700	0.62
21600	0.62
25200	0.64



$$\text{Soil infiltration rate, } f = \frac{V_{p\ 75-25}}{a_{s\ 50} \times t_{p\ 75-25}}$$

Where $V_{p\ 75-25}$ Effective storage volume of water in borehole between 75% and 25% effective storage capacity (SC) depth. 1.4000 m³
 $a_{s\ 50}$ Internal surface area of borehole up to 50% effective storage capacity (SC) depth, including the base area. 6.2000 m²
 $t_{p\ 75-25}$ Time for water level to fall from 75% to 25% effective storage capacity (SC) depth. seconds

f = - m/s

Comments:
 Failed to reach 25% line.



Soil Infiltration Rate (Soakaway) Test

Soil Infiltration Test carried out in accordance with BRE Digest 365:2016.

Borehole number:

TP52

Page 1 of 1

Project name: New Deer
 Project number: 330G
 Client: SSE
 Operative: Stephen Kelly
 Start of test: 12/09/2023 09:00:00
 End of test: 45181.66667

Survey grid system: OSGB
 Co-ordinates: mE
 mN
 Ground level: mOD

Hole type: Trial Pit
 Checked by: MW
 Approved by: PM

Test reference: 1

Weather: Rain

Test type: Soil Infiltration Test
 Response zone top: 0.00 m bgl
 Response zone base: 1.50 m bgl
 Test section diameter: 0 mm

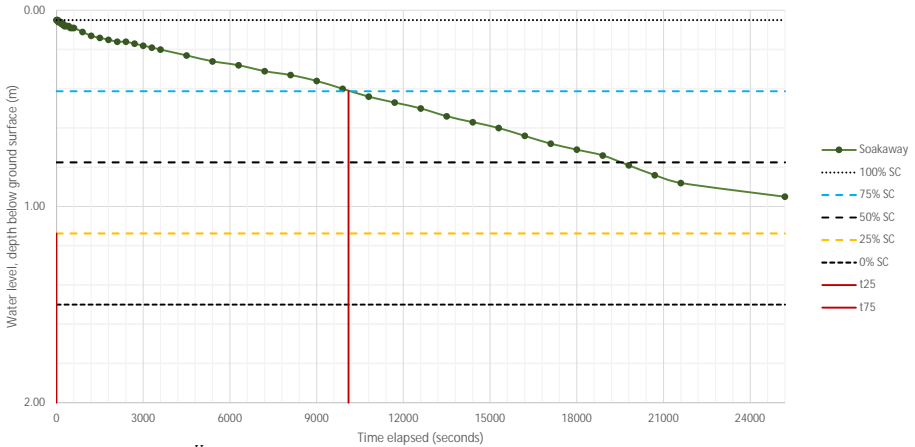
Shape of test section: Trial Pit (Cuboid)
 Test section dimensions: 1.00m x 1.50m
 Type of filter used: None
 (Assumed porosity) 100 %

Groundwater before: Dry
 Water added: 1000 l
 Water level start of test: 0.05 m bgl
 Water level end of test: 0.95 m bgl
 Hole depth after test: 1.50 m bgl

Time, t (seconds)	Water Depth (m)
0	0.05
15	0.05
30	0.05
45	0.05
60	0.06
90	0.06
120	0.06
150	0.06
180	0.07
210	0.07
240	0.07
270	0.08
300	0.08
360	0.08
420	0.08
480	0.09
540	0.09

Time, t (seconds)	Water Depth (m)
600	0.09
900	0.11
1200	0.13
1500	0.14
1800	0.15
2100	0.16
2400	0.16
2700	0.17
3000	0.18
3300	0.19
3600	0.20
4500	0.23
5400	0.26
6300	0.28
7200	0.31
8100	0.33
9000	0.36

Time, t (seconds)	Water Depth (m)
9900	0.40
10800	0.44
11700	0.47
12600	0.50
13500	0.54
14400	0.57
15300	0.60
16200	0.64
17100	0.68
18000	0.71
18900	0.74
19800	0.79
20700	0.84
21600	0.88
25200	0.95



$$\text{Soil infiltration rate, } f = \frac{V_{p\ 75-25}}{a_{s\ 50} \times t_{p\ 75-25}}$$

Where $V_{p\ 75-25}$ Effective storage volume of water in borehole between 75% and 25% effective storage capacity (SC) depth. 1.0875 m³
 $a_{s\ 50}$ Internal surface area of borehole up to 50% effective storage capacity (SC) depth, including the base area. 5.1250 m²
 $t_{p\ 75-25}$ Time for water level to fall from 75% to 25% effective storage capacity (SC) depth. seconds

f = - m/s

Comments:

**APPENDIX 5.0
GAS & GROUNDWATER MONITORING RESULTS**

**APPENDIX 5.1
GROUNDWATER MONITORING DURING SITE WORKS**

**APPENDIX 5.2
WELL DEVELOPMENT**



Contract No: RGN.330G
 Contract Name: New Deer
 Client: SSE

RESULTS OF WELL DEVELOPMENT

Borehole Number	Date of Installation	Depth of Installation	Date of purging	Initial water level (before purging)	delta H	Expected volume of well	Expected volume of water (0.25 x well volume)	Expected volume of water (0.50 x well volume)	Expected volume of water (0.75 x well volume)	Expected volume of water (1 x well volume)	Expected volume of water (2 x well volume)	Expected volume of water (3 x well volume)	Comments
		(mbgl)		(mbgl)	(m)	(litres)	(litres)	(litres)	(litres)	(litres)	(litres)	(litres)	
BH01	15/09/2023	5.00	05/12/2023	1.95	3.05	6.0	1.5	3.0	4.5	6.0	12.0	18.0	
BH02	21/09/2023	4.15		4.15	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Borehole is dry. No water sample
BH05	31/08/2023	8.00		7.63	0.37	0.7	0.2	0.4	0.5	0.7	1.5	2.2	Borehole is dry. No water sample
BH07	02/09/2023	2.50		2.20	0.30	0.6	0.1	0.3	0.4	0.6	1.2	1.8	Borehole is dry. No water sample
BH08	29/09/2023	7.80	05/12/2023	6.75	1.05	2.1	0.5	1.0	1.5	2.1	4.1	6.2	
BH10	28/09/2023	7.30	05/12/2023	0.20	7.10	13.9	3.5	7.0	10.5	13.9	27.9	41.8	
BH16	02/10/2023	2.70		DRY	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Borehole is dry. No water sample
BH18	12/09/2023	2.50	05/12/2023	1.04	1.46	2.9	0.7	1.4	2.1	2.9	5.7	8.6	
BH20	01/09/2023	2.30		2.30	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Borehole is dry. No water sample
BH24	27/09/2023	8.00	05/12/2023	4.10	3.90	7.7	1.9	3.8	5.7	7.7	15.3	23.0	
BH28	29/08/2023	5.00	05/12/2023	3.00	2.00	3.9	1.0	2.0	2.9	3.9	7.9	11.8	
BH31	05/09/2023	4.00	05/12/2023	2.52	1.48	2.9	0.7	1.5	2.2	2.9	5.8	8.7	
BH36	15/09/2023	2.30	05/12/2023	0.31	1.99	3.9	1.0	2.0	2.9	3.9	7.8	11.7	
BH39	19/09/2023	3.50		2.95	0.55	1.1	0.3	0.5	0.8	1.1	2.2	3.2	Borehole is dry. No water sample
BH42	15/10/2023	5.00	05/12/2023	0.00	5.00	9.8	2.5	4.9	7.4	9.8	19.6	29.4	
BH46	24/10/2023	2.00	05/12/2023	1.30	0.70	1.4	0.3	0.7	1.0	1.4	2.7	4.1	

**APPENDIX 5.3
GAS AND GROUNDWATER MONITORING**



Contract No. RGN.330G
 Contract Name New Deer 2
 Client: SSEN-T
 Engineer: Gordon Murray

RESULTS OF GROUNDWATER AND GAS MONITORING



Installation			Reading information		Water monitoring				Gas monitoring														Remarks			Reading Type					
Location	Point ID	Depth mbgl	Date Time	Reading Ref	Atm. Pressure bar	Method	Serial	Water mbgl	Base of install mbgl	Method	Serial	Atm. Temp. degC	LEL CH4		CH4		CO2		O2		H2S		CO		Flow		Diff. Pressure mbar	Weather	Contractor	Remark	
													peak	s/s	peak	s/s	peak	s/s	min	s/s	peak	s/s	peak	s/s	peak						s/s
BH01	1	5.00	01/11/2023 09:15	M1	972	Battery operated dipmeter	SN212407	1.95	5.83	GA5000	G500357	5.0	0	0	0.0	0.0	77.0		9.3	9.3	1.0	1.0	0.0	0.0	0.0	0.0	0.09	Cold, overcast, rain	BAM Ritchies	54ltr removed during water development.	Gas and Groundwater
BH02	1	3.50	01/11/2023 09:30	M1	972	Battery operated dipmeter	SN212407	4.15	4.15	GA5000	G500357	5.0	0	0	0.0	0.0	4.9	4.9	10.5	10.5	1.0	1.0	0.0	0.0	0.0	0.0	0.02	Cold, overcast, rain	BAM Ritchies	Damp. Water development not applicable.	Gas and Groundwater
BH05	1	8.00	01/11/2023 09:00	M1	972	Battery operated dipmeter	SN212407	7.63	8.25	GA5000	G500357	5.0	0	0	0.0	0.0	6.3	6.3	12.6	12.6	1.0	1.0	0.0	0.0	0.1	0.1	0.00	Cold, overcast, rain	BAM Ritchies	Dry after 3ltr during water development.	Gas and Groundwater
BH07	1	2.50	01/11/2023 10:00	M1	972	Battery operated dipmeter	SN212407	2.20	2.44	GA5000	G500357	5.0	0	0	0.0	0.0	4.9	4.2	17.4	18.3	0.0	0.0	0.0	0.0	1.6	1.1	0.00	Cold, overcast, rain	BAM Ritchies	Dry and 5ltr during water development.	Gas and Groundwater
BH08	1	7.50	01/11/2023 09:45	M1	972	Battery operated dipmeter	SN212407	6.75	7.80	GA5000	G500357	5.0	0	0	0.0	0.0	4.8	4.8	17.1	17.1	1.0	1.0	0.0	0.0	0.0	0.0	-0.03	Cold, overcast, rain	BAM Ritchies	15ltr removed during water development.	Gas and Groundwater
BH10	1	7.30	01/11/2023 12:00	M1	972	Battery operated dipmeter	SN212407	0.20	7.30	GA5000	G500357	5.0	0	0	0.0	0.0	2.3	2.0	21.3	21.3	0.0	0.0	0.0	0.0	1.7	1.2	0.02	Cold, overcast, rain	BAM Ritchies	129ltr removed during water development.	Gas and Groundwater
BH16	1	2.70	01/11/2023 11:00	M1	972	Battery operated dipmeter	SN212407	Dry	3.00	GA5000	G500357	5.0	0	0	0.0	0.0	2.8	2.8	16.1	16.1	1.0	1.0	0.0	0.0	0.0	0.0	0.02	Cold, overcast, rain	BAM Ritchies	Water development not applicable.	Gas and Groundwater
BH18	1	2.50	01/11/2023 10:15	M1	972	Battery operated dipmeter	SN212407	1.04	2.50	GA5000	G500357	5.0	0	0	0.0	0.0	2.9	2.9	15.7	15.7	1.0	1.0	0.0	0.0	0.4	0.4	0.00	Cold, overcast, rain	BAM Ritchies	27ltr removed during water development.	Gas and Groundwater
BH20	1	2.30	01/11/2023 10:30	M1	972	Battery operated dipmeter	SN212407	2.30	2.30	GA5000	G500357	5.0																Cold, overcast, dry	BAM Ritchies	No gas valve installed during installation. No gas readings obtained. Water development not applicable.	Gas and Groundwater
BH24	1	8.00	01/11/2023 11:45	M1	972	Battery operated dipmeter	SN212407	4.10	8.00	GA5000	G500357	5.0	0	0	0.0	0.0	2.5	2.5	20.7	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00	Cold, overcast, dry	BAM Ritchies	72ltr removed during water development.	Gas and Groundwater
BH28	1	5.00	01/11/2023 10:45	M1	972	Battery operated dipmeter	SN212407	3.00	4.25	GA5000	G500357	5.0	0	0	0.0	0.0	0.2	0.2	22.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.05	Cold, overcast, rain	BAM Ritchies	36ltr removed during water development.	Gas and Groundwater
BH31	1	4.00	01/11/2023 11:15	M1	972	Battery operated dipmeter	SN212407	2.52	3.80	GA5000	G500357	5.0	0	0	0.0	0.0	2.2	1.7	21.1	21.7	0.0	0.0	0.0	0.0	0.0	0.0	-0.05	Cold, overcast, rain	BAM Ritchies	24ltr removed during water development.	Gas and Groundwater
BH36	1	2.30	01/11/2023 11:30	M1	972	Battery operated dipmeter	SN212407	0.31	2.28	GA5000	G500357	5.0	0	0	0.0	0.0	3.2	3.0	21.0	21.0	1.0	1.0	0.0	0.0	5.2	4.7	0.00	Cold, overcast, rain	BAM Ritchies	Dry after 15ltr during water development.	Gas and Groundwater
BH39	1	3.50	01/11/2023 13:00	M1	972	Battery operated dipmeter	SN212407	2.95	3.30	GA5000	G500357	5.0																Cold, overcast, rain	BAM Ritchies	No gas valve installed during installation. Dry after 7th during water development.	Gas and Groundwater
BH42	1	5.00	01/11/2023 13:15	M1	972	Battery operated dipmeter	SN212407	0.00	5.00	GA5000	G500357	5.0																Cold, overcast, rain	BAM Ritchies	No gas valve installed during installation. 90ltr removed during water development.	Gas and Groundwater
BH46	1	2.00	01/11/2023 13:45	M1	972	Battery operated dipmeter	SN212407	1.30	1.95	GA5000	G500357	5.0	0	0	0.0	0.0	0.5	0.1	21.2	21.4	1.0	0.0	0.0	0.0	0.0	0.0	-0.02	Cold, overcast, rain	BAM Ritchies	13ltr removed during water development.	Gas and Groundwater



Contract No. RGN.330G
 Contract Name New Deer 2
 Client: SSEN-T
 Engineer: Tony Gee

RESULTS OF GROUNDWATER AND GAS MONITORING



Installation			Reading information			Water monitoring				Gas monitoring												Remarks			Reading Type				
Location	Point ID	Depth mbgl	Date Time	Reading Ref	Atm. Pressure bar	Method	Serial	Water mbgl	Base of install mbgl	Method	Serial	LEL CH4		CH4		CO2		O2		H2S		CO		Flow		Weather	Contractor	Remark	
												peak %LEL	s/s %LEL	peak %vol	s/s %vol	peak %vol	s/s %vol	min %vol	s/s %vol	peak ppm	s/s ppm	peak ppm	s/s ppm	peak l/hr					s/s l/hr
BH01	1	5.00	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	1.60	5.83	GA5000	G500357	0	0	0.0	0.0	3.9	3.9	20.9	20.9	0.0	0.0	0.0	0.0	0.0		0.0	Overcast	BAM Ritchies	
BH02	1	3.50	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407		4.15	GA5000	G500357	0	0	0.0	0.0	4.5	4.5	13.1	13.1	0.0	0.0	0.0	0.0	0.0	0.0	Overcast	BAM Ritchies	Standpipe is Dry	Gas and Groundwater
BH05	1	8.00	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407		8.25	GA5000	G500357	0	0	0.0	0.0	6.7	6.7	14.1	14.1	0.0	0.0	0.0	0.0	0.0	0.0	Overcast	BAM Ritchies	Standpipe is Dry	Gas and Groundwater
BH07	1	2.50	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407		2.44	GA5000	G500357	0	0	0.0	0.0	4.8	4.8	16.2	16.2	0.0	0.0	0.0	0.0	0.0	0.0	Overcast	BAM Ritchies	Standpipe is Dry	Gas and Groundwater
BH08	1	7.50	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	6.70	7.80	GA5000	G500357	0	0	0.0	0.0	5.2	5.2	16.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	Overcast	BAM Ritchies		Gas and Groundwater
BH10	1	7.30	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	2.15	7.30	GA5000	G500357	0	0	0.0	0.0	4.4	4.4	18.9	18.9	0.0	0.0	3.0	0.0	0.0	0.0	Overcast	BAM Ritchies		Gas and Groundwater
BH16	1	2.70	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407		3.00	GA5000	G500357	0	0	0.0	0.0	2.9	2.9	16.0	16.0	0.0	0.0	1.0	0.0	0.3	0.3	Overcast	BAM Ritchies	Standpipe is Dry	Gas and Groundwater
BH18	1	2.50	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	1.25	2.50	GA5000	G500357	0	0	0.0	0.0	3.7	3.7	16.6	16.6	0.0	0.0	0.0	0.0	0.4	0.4	Overcast	BAM Ritchies		Gas and Groundwater
BH20	1	2.30	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407		2.30	GA5000	G500357														Overcast	BAM Ritchies	Gas valve faulty. Standpipe is Dry	Gas and Groundwater	
BH24	1	8.00	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	4.70	8.00	GA5000	G500357	0	0	0.0	0.0	1.6	1.6	20.2	20.2	0.0	0.0	1.0	0.0	0.1	0.1	Overcast	BAM Ritchies		Gas and Groundwater
BH28	1	5.00	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	3.62	4.25	GA5000	G500357	0	0	0.0	0.0	2.2	2.2	19.7	19.7	0.0	0.0	0.0	0.0	-0.3	-0.3	Overcast	BAM Ritchies		Gas and Groundwater
BH31	1	4.00	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	3.25	3.80	GA5000	G500357	0	0	0.0	0.0	3.4	3.4	17.3	17.3	0.0	0.0	0.0	0.0	0.0	0.0	Overcast	BAM Ritchies		Gas and Groundwater
BH36	1	2.30	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	0.80	2.28	GA5000	G500357	0	0	0.0	0.0	4.1	4.1	17.8	17.8	0.0	0.0	0.0	0.0	0.2	0.2	Overcast	BAM Ritchies		Gas and Groundwater
BH39	1	3.50	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	3.25	3.30	GA5000	G500357	0	0	0.0	0.0	3.3	3.3	21.7	21.7	0.0	0.0	0.0	0.0	0.0	0.0	Overcast	BAM Ritchies		Gas and Groundwater
BH42	1	5.00	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	0.25	5.00	GA5000	G500357	0	0	0.0	0.0	3.8	3.8	18.5	18.5	0.0	0.0	0.0	0.0	0.5	0.5	Overcast	BAM Ritchies		Gas and Groundwater
BH46	1	2.00	20/11/2023 00:00	M2	989	Battery operated dipmeter	SN212407	1.80	1.95	GA5000	G500357	0	0	0.0	0.0	2.3	2.3	18.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	Overcast	BAM Ritchies		Gas and Groundwater



Contract No. RGN.330G
 Contract Name New Deer 2
 Client: SSEN-T
 Engineer: Tony Gee

RESULTS OF GROUNDWATER AND GAS MONITORING



Installation			Reading information			Water monitoring			Gas monitoring														Remarks			Reading Type				
Location	Point ID	Depth mbgl	Date Time	Reading Ref	Atm. Pressure bar	Method	Water mbgl	Base of install mbgl	Method	Serial	Atm. Temp. degC	LEL CH4		CH4		CO2		O2		H2S		CO		Flow			Weather	Contractor	Remark	
												peak %LEL	s/s %LEL	peak %vol	s/s %vol	peak %vol	s/s %vol	min %vol	s/s %vol	peak ppm	s/s ppm	peak ppm	s/s ppm	peak l/hr	s/s l/hr					
BH01	1	5.00	05/12/2023 00:00	M3	1015	Battery operated dipmeter	1.19	5.83	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe purged and water sample obtained for testing.	Gas and Groundwater
BH02	1	3.50	05/12/2023 00:00	M3	1015	Battery operated dipmeter	Dry	4.15	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe is Dry.	Gas and Groundwater
BH05	1	8.00	05/12/2023 00:00	M3	1015	Battery operated dipmeter	Dry	8.25	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe is Dry.	Gas and Groundwater
BH07	1	2.50	05/12/2023 00:00	M3	1015	Battery operated dipmeter	Dry	2.44	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe is Dry.	Gas and Groundwater
BH08	1	7.50	05/12/2023 00:00	M3	1015	Battery operated dipmeter	6.71	7.80	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe purged and water sample obtained for testing.	Gas and Groundwater
BH10	1	7.30	05/12/2023 00:00	M3	1015	Battery operated dipmeter	1.05	7.30	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe purged and water sample obtained for testing.	Gas and Groundwater
BH16	1	2.70	05/12/2023 00:00	M3	1015	Battery operated dipmeter	Dry	3.00	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe is Dry.	Gas and Groundwater
BH18	1	2.50	05/12/2023 00:00	M3	1015	Battery operated dipmeter	1.20	2.50	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe purged and water sample obtained for testing.	Gas and Groundwater
BH20	1	2.30	05/12/2023 00:00	M3	1015	Battery operated dipmeter	Dry	2.30	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe is dry.	Gas and Groundwater
BH24	1	8.00	05/12/2023 00:00	M3	1015	Battery operated dipmeter	4.66	8.00	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe purged and water sample obtained for testing.	Gas and Groundwater
BH28	1	5.00	05/12/2023 00:00	M3	1015	Battery operated dipmeter	3.57	4.25	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe purged and water sample obtained for testing.	Gas and Groundwater
BH31	1	4.00	05/12/2023 00:00	M3	1015	Battery operated dipmeter	3.20	3.80	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe purged and water sample obtained for testing.	Gas and Groundwater
BH36	1	2.30	05/12/2023 00:00	M3	1015	Battery operated dipmeter	0.70	2.28	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe purged and water sample obtained for testing.	Gas and Groundwater
BH39	1	3.50	05/12/2023 00:00	M3	1015	Battery operated dipmeter	3.27	3.30	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Insufficient water to collect with bailer.	Gas and Groundwater
BH42	1	5.00	05/12/2023 00:00	M3	1015	Battery operated dipmeter	0.29	5.00	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Standpipe purged and water sample obtained for testing.	Gas and Groundwater
BH46	1	2.00	05/12/2023 00:00	M3	1015	Battery operated dipmeter	1.74	1.95	GA5000	G500357	3.0																Overcast with light rain	BAM Ritchies	No gas readings - Gas monitor developed a fault. Borehole dried out during purging, part sample obtained.	Gas and Groundwater



Contract No. RGN.330G
 Contract Name New Deer 2
 Client: SSEN-T
 Engineer: Daniel Lawson

RESULTS OF GROUNDWATER AND GAS MONITORING



Installation			Reading information			Water monitoring				Gas monitoring														Remarks			Reading Type			
Location	Point ID	Depth mbgl	Date Time	Reading Ref	Atm. Pressure bar	Method	Serial	Water mbgl	Base of install mbgl	Method	Serial	Atm. Temp. degC	LEL CH4		CH4		CO2		O2		H2S		CO		Flow			Weather	Contractor	Remark
													peak %LEL	s/s %LEL	peak %vol	s/s %vol	peak %vol	s/s %vol	min %vol	s/s %vol	peak ppm	s/s ppm	peak ppm	s/s ppm	peak l/hr	s/s l/hr				
BH01	1	5.00	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	0.55	5.83	GA5000	G500357	9.0	0	0	0.0	0.0	4.8	4.8	19.6	19.6	0.0	0.0	0.0	0.0	0.4	0.4	Windy with showers	BAM Ritchies		Gas and Groundwater
BH02	1	3.50	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	2.46	4.15	GA5000	G500357	9.0	0	0	0.0	0.0	2.5	2.5	15.7	15.7	0.0	0.0	0.0	0.0	0.4	0.4	Windy with showers	BAM Ritchies		Gas and Groundwater
BH05	1	8.00	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	7.15	8.25	GA5000	G500357	9.0	0	0	0.0	0.0	7.1	7.1	14.7	14.7	0.0	0.0	0.0	0.0	0.3	0.3	Windy with showers	BAM Ritchies		Gas and Groundwater
BH07	1	2.50	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	1.88	2.44	GA5000	G500357	9.0	0	0	0.0	0.0	4.9	4.9	14.3	14.3	0.0	0.0	0.0	0.0	0.4	0.4	Windy with showers	BAM Ritchies		Gas and Groundwater
BH08	1	7.50	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	5.86	7.80	GA5000	G500357	9.0	0	0	0.0	0.0	5.1	5.1	16.5	16.5	0.0	0.0	0.0	0.0	0.4	0.4	Windy with showers	BAM Ritchies		Gas and Groundwater
BH10	1	7.30	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	0.66	7.30	GA5000	G500357	9.0	0	0	0.0	0.0											Windy with showers	BAM Ritchies	No gas readings - water being drawn up hose pipe into filtre/	Gas and Groundwater
BH16	1	2.70	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407		3.00	GA5000	G500357	9.0	0	0	0.0	0.0	3.8	3.8	17.5	17.5	0.0	0.0	0.0	0.0	0.4	0.4	Windy with showers	BAM Ritchies	Standpipe is Dry	Gas and Groundwater
BH18	1	2.50	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	1.20	2.50	GA5000	G500357	9.0	0	0	0.0	0.0	3.8	3.8	18.8	18.8	0.0	0.0	0.0	0.0	0.3	0.3	Windy with showers	BAM Ritchies		Gas and Groundwater
BH20	1	2.30	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	2.29	2.30	GA5000	G500357	9.0	0	0	0.0	0.0	1.4	1.4	20.6	20.6	0.0	0.0	0.0	0.0	0.4	0.4	Windy with showers	BAM Ritchies		Gas and Groundwater
BH24	1	8.00	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	4.40	8.00	GA5000	G500357	9.0	0	0	0.0	0.0	2.2	2.2	19.6	19.8	0.0	0.0	0.0	0.0	0.5	0.5	Windy with showers	BAM Ritchies		Gas and Groundwater
BH28	1	5.00	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	3.78	4.25	GA5000	G500357	9.0	0	0	0.0	0.0	2.8	2.8	18.6	18.6	0.0	0.0	0.0	0.0	0.2	0.2	Windy with showers	BAM Ritchies		Gas and Groundwater
BH31	1	4.00	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	3.04	3.80	GA5000	G500357	9.0	0	0	0.0	0.0	0.2	0.2	21.8	21.8	0.0	0.0	0.0	0.0	0.4	0.4	Windy with showers	BAM Ritchies		Gas and Groundwater
BH36	1	2.30	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	0.52	2.28	GA5000	G500357	9.0	0	0	0.0	0.0	4.7	4.7	11.0	11.0	0.0	0.0	0.0	0.0	0.6	0.6	Windy with showers	BAM Ritchies		Gas and Groundwater
BH39	1	3.50	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	3.13	3.30	GA5000	G500357	9.0															Windy with showers	BAM Ritchies	No gas readings - Cap and gas valve missing	Gas and Groundwater
BH42	1	5.00	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	0.32	5.00	GA5000	G500357	9.0	0	0	0.0	0.0	0.2	0.2	21.6	21.6	0.0	0.0	0.0	0.0	0.4	0.4	Windy with showers	BAM Ritchies		Gas and Groundwater
BH46	1	2.00	22/01/2024 00:00	M4	993	Battery operated dipmeter	SN212407	1.61	1.95	GA5000	G500357	9.0	0	0	0.0	0.0	0.9	0.9	20.3	20.3	0.0	0.0	0.0	0.0	0.3	0.3	Windy with showers	BAM Ritchies		Gas and Groundwater



Contract No. RGN.330G
 Contract Name New Deer 2
 Client: SSEN-T
 Engineer:

RESULTS OF GROUNDWATER AND GAS MONITORING



Installation			Reading information			Water monitoring			Gas monitoring														Remarks			Reading Type			
Location	Point ID	Depth mbgl	Date Time	Reading Ref	Atm. Pressure bar	Method	Water mbgl	Base of install mbgl	Method	Serial	Atm. Temp. degC	LEL CH4		CH4		CO2		O2		H2S		CO		Flow			Weather	Contractor	Remark
												peak %LEL	s/s %LEL	peak %vol	s/s %vol	peak %vol	s/s %vol	min %vol	s/s %vol	peak ppm	s/s ppm	peak ppm	s/s ppm	peak l/hr	s/s l/hr				
BH01	1	5.00	07/02/2024 12:00	M5	989	Battery operated dipmeter	1.18	5.83	GA5000	G500357	6.0	0	0	0	0	4.1	4.1	20.4	20.4	0	0	0	0	0.0	0.0		Cold, cloudy with sunny spells	BAM Ritchies	
BH02	1	3.50	07/02/2024 12:00	M5	989	Battery operated dipmeter	3.30	4.15	GA5000	G500357	6.0	0	0	0	0	0.4	0.4	21.7	21.7	0	0	0	0	0.3	0.3	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH05	1	8.00	07/02/2024 12:00	M5	989	Battery operated dipmeter	7.76	8.25	GA5000	G500357	6.0	0	0	0	0	7.1	7.1	15.1	15.1	0	0	0	0	0.4	0.4	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH07	1	2.50	07/02/2024 12:00	M5	989	Battery operated dipmeter	1.97	2.44	GA5000	G500357	6.0	0	0	0	0	6.1	6.1	12.9	12.9	0	0	0	0	0.3	0.3	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH08	1	7.50	07/02/2024 12:00	M5	989	Battery operated dipmeter	6.63	7.80	GA5000	G500357	6.0	0	0	0	0	6.0	6.0	16.5	16.5	0	0	0	0	0.3	0.3	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH10	1	7.30	07/02/2024 12:00	M5	989	Battery operated dipmeter	1.22	7.30	GA5000	G500357	6.0															Cold, cloudy with sunny spells	BAM Ritchies	Gas valve left open - no readings	Gas and Groundwater
BH16	1	2.70	07/02/2024 12:00	M5	989	Battery operated dipmeter		3.00	GA5000	G500357	6.0															Cold, cloudy with sunny spells	BAM Ritchies	Gas valve left open - no readings. Borehole is Dry	Gas and Groundwater
BH18	1	2.50	07/02/2024 12:00	M5	989	Battery operated dipmeter	1.26	2.50	GA5000	G500357	6.0	0	0	0	0	6.0	6.0	19.1	19.1	0	0	0	0	0.0	0.0	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH20	1	2.30	07/02/2024 12:00	M5	989	Battery operated dipmeter	2.39	2.30	GA5000	G500357	6.0	0	0	0	0	1.7	1.7	20.5	20.5	0	0	0	0	0.5	0.5	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH24	1	8.00	07/02/2024 12:00	M5	989	Battery operated dipmeter	4.64	8.00	GA5000	G500357	6.0	0	0	0	0	1.8	1.8	20.5	20.5	0	0	0	0	0.1	0.1	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH28	1	5.00	07/02/2024 12:00	M5	989	Battery operated dipmeter	3.90	4.25	GA5000	G500357	6.0	0	0	0	0	2.8	2.8	19.6	19.6	0	0	0	0	0.4	0.4	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH31	1	4.00	07/02/2024 12:00	M5	989	Battery operated dipmeter	3.24	3.80	GA5000	G500357	6.0	0	0	0	0	0.4	0.4	21.6	21.6	0	0	0	0	0.6	0.6	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH36	1	2.30	07/02/2024 12:00	M5	989	Battery operated dipmeter	0.35	2.28	GA5000	G500357	6.0	0	0	0	0	5.6	5.6	11.0	11.0	0	0	0	0	0.0	0.0	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH39	1	3.50	07/02/2024 12:00	M5	989	Battery operated dipmeter		3.30	GA5000	G500357	6.0															Cold, cloudy with sunny spells	BAM Ritchies	Gas valve replaced. Borehole is Dry	Gas and Groundwater
BH42	1	5.00	07/02/2024 12:00	M5	989	Battery operated dipmeter	0.40	5.00	GA5000	G500357	6.0	0	0	0	0	0.3	0.3	21.9	21.9	0	0	0	0	0.3	0.3	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater
BH46	1	2.00	07/02/2024 12:00	M5	989	Battery operated dipmeter	1.77	1.95	GA5000	G500357	6.0	0	0	0	0	1.0	1.0	20.8	20.8	0	0	0	0	0.4	0.4	Cold, cloudy with sunny spells	BAM Ritchies		Gas and Groundwater

CERTIFICATION OF CALIBRATION



Date Of Calibration: 17-Jul-2023

Certificate Number: G500357_2/33181

Issued by: QED Environmental Systems Ltd.

Customer: BAM Ritches
Glasgow Road Kilsyth Glasgow
Lanarkshire G65 9BL UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G500357

UKAS Accredited results:

Results after adjustment :

Methane (CH ₄)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	5.0	0.072
15.0	14.9	0.13
60.0	59.7	0.42

Carbon Dioxide (CO ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.9	0.074
15.0	14.7	0.13
40.0	40.1	0.29

Oxygen (O ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
20.2	20.3	0.25

The inwards assessment was carried out 04-Jul-2023.

The maximum adjustment is larger than the specification limit.

Inwards assessment data is available if requested.

All concentrations are molar.

CH₄, CO₂ readings recorded at : 34.2 °C ± 2.5 °C

O₂ readings recorded at : 24.5 °C ± 2.5 °C

Barometric Pressure : 1006 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.

The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:117 IGC Instance:117

Page 1 of 2 | LP015GIUKAS-2.5

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION



Date Of Calibration: 17-Jul-2023

Certificate Number: G500357_2/33181

Issued by: QED Environmental Systems Ltd

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	Instrument Reading
1006	1006

Additional Gas Cells		
Gas	Certified Gas (ppm)	Instrument Reading (ppm)
CO	500	500
H ₂ S	258.8	259

Internal Flow	
Applied (l/hr)	Instrument Reading (l/hr)
5.0	5.0
10.0	10.1

Date of Issue : 26-Jul-2023

Approved by Signatory


Fani Zolota
Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 117 IGC Instance: 117

CERTIFICATION OF CALIBRATION



Date Of Calibration: 03-Oct-2023

Certificate Number: G500764_2/33702

Issued by: QED Environmental Systems Ltd.

Customer: BAM Ritches
Glasgow Road Kilsyth Glasgow
Lanarkshire G65 9BL UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G500764

UKAS Accredited results:

Results after adjustment :

Methane (CH ₄)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	5.0	0.072
15.0	15.0	0.13
60.0	59.7	0.42

Carbon Dioxide (CO ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.9	0.074
15.0	14.8	0.13
40.0	40.1	0.29

Oxygen (O ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
21.0	21.1	0.25

The inwards assessment was carried out 18-Sep-2023.

The maximum adjustment is larger than the specification limit.

Inwards assessment data is available if requested.

All concentrations are molar.

CH₄, CO₂ readings recorded at : 33.0 °C ± 2.5 °C

O₂ readings recorded at : 24.5 °C ± 2.5 °C

Barometric Pressure : 1008 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.

The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 118 IGC Instance: 118

Page 1 of 2 | LP015GIUKAS-2.5

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION



Date Of Calibration: 03-Oct-2023

Certificate Number: GS00764_2/33702

Issued by: BFD Calibration Technology Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	Instrument Reading
1008	1008

Additional Gas Cells		
Gas	Certified Gas (ppm)	Instrument Reading (ppm)
CO	501	501
H ₂ S	273.5	274

Internal Flow	
Applied (l/hr)	Instrument Reading (l/hr)
5.0	5.1
10.0	10.1

Date of Issue : 04-Oct-2023

Approved by Signatory

Fani Zolota

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

**APPENDIX 6.0
PHOTOGRAPHS**

**APPENDIX 6.1
SONIC, U86 AND CORE PHOTOGRAPHS**



BH01 – 1.20 to 5.70m



BH01 – 6.15 to 10.20m



BH01 – 10.20 to 14.70m



BH01 – 14.70 to 20.20m



BH02 – 1.20 to 5.70m



BH01 – 5.70 to 10.20m



BH02 – 10.20 to 14.70m



BH02 – 14.70 to 20.00m



BH03 – 1.20 to 5.70m



BH03 – 5.70 to 10.20m



BH03 – 10.20 to 14.70m



BH03 – 14.70 to 20.30m



BH04 – 1.20 to 5.70m



CONTRACT:

NEW DEER



BOREHOLE: BH04

JOB No: RGN.330G

DEPTH: 5.70_m - 10.20_m



0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5
Metres

BH04 – 5.70 to 10.20m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



BH04 – 10.20 to 14.70m



BH04 – 14.70 to 20.00m



BH05 – 1.20 to 5.70m



BH05 – 5.70 to 10.20m



BH05 – 10.20 to 14.50m



CONTRACT:

NEW DEER

JOB No: RGN.3309

 bam
ritchies

BOREHOLE: BH05

DEPTH: 14.50 - 20.00m
Metres

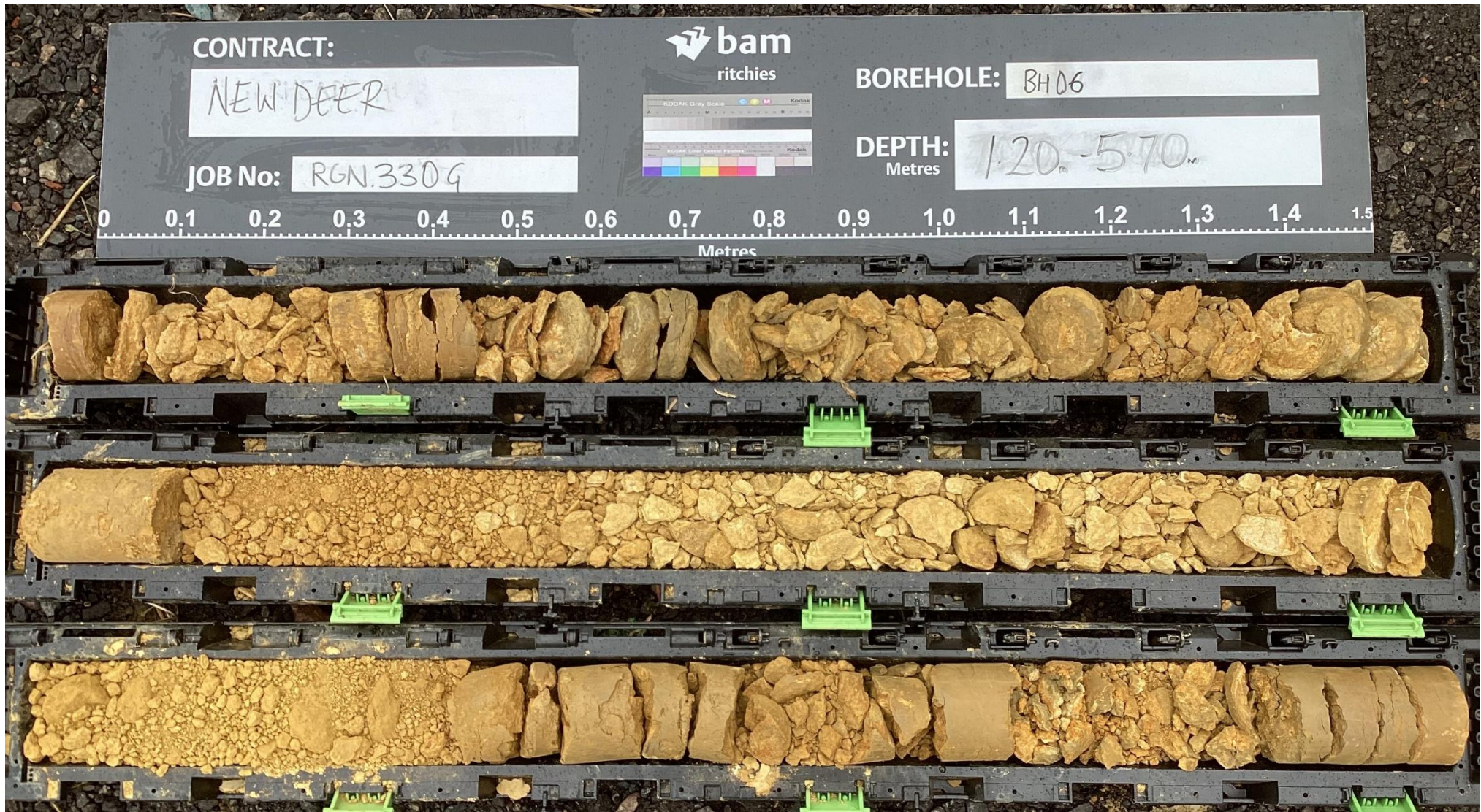
BH05 – 14.50 to 20.00m

 bam
ritchies

Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



BH06 – 1.20 to 5.70m



BH06 – 5.70 to 10.20m



BH06 – 10.20 to 14.70m



BH06 – 14.70 to 20.00m



BH07 – 1.20 to 5.70m



BH07 – 5.70 to 10.20m



BH07 – 10.20 to 14.70m



BH07 – 14.70 to 20.00m



CONTRACT:

NEW DEER



BOREHOLE: BH08

JOB No: RGN.3309



DEPTH: 1.20m - 5.70m
Metres

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5
Metres

BH08 – 1.20 to 5.70m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



BH08 – 5.70 to 10.20m



BH08 – 10.20 to 14.70m



BH08 – 14.70 to 20.30m



BH09 – 1.20 to 5.70m



BH09 – 5.70 to 10.20m



BH09 – 10.20 to 14.70m



BH09 – 14.70 to 20.30m



BH10 – 2.30 to 4.30m



BH10 – 4.30 to 6.30m



BH10 – 6.30 to 8.30m



BH10 – 8.30 to 10.30m



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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH10	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	10.30 TO 11.80m



BH10 – 10.30 to 11.80m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

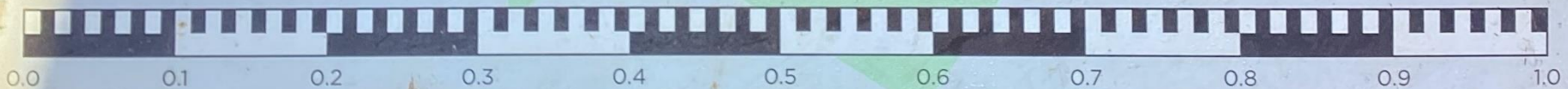
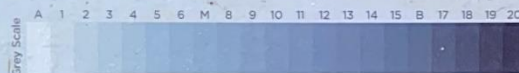
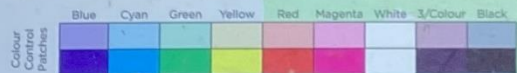


BH10 – 11.80 to 14.80m



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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH10	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	14.80m TO 15.00m



BH10 – 14.80 to 15.00m



Core Photographs

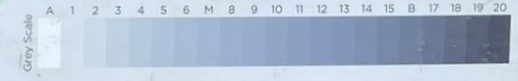
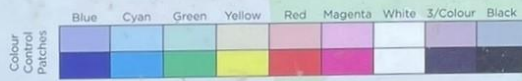
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	11 / 10 / 23	BOREHOLE ID	BH11	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	2.00 m TO 4.00 m



BH11 – 2.00 to 4.00m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	11 / 10 / 23	BOREHOLE ID	BH11	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	2	DEPTH FROM	4.00 m TO 4.50 m



BH11 – 4.00 to 4.50m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH11	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	3	DEPTH FROM	4.50 m TO 6.00 m



BH11 – 4.50 to 6.00m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

CONTRACT:

NEW DEER



BOREHOLE: BH11

JOB No: RGN.330G



DEPTH: 6.00 - 10.50
Metres



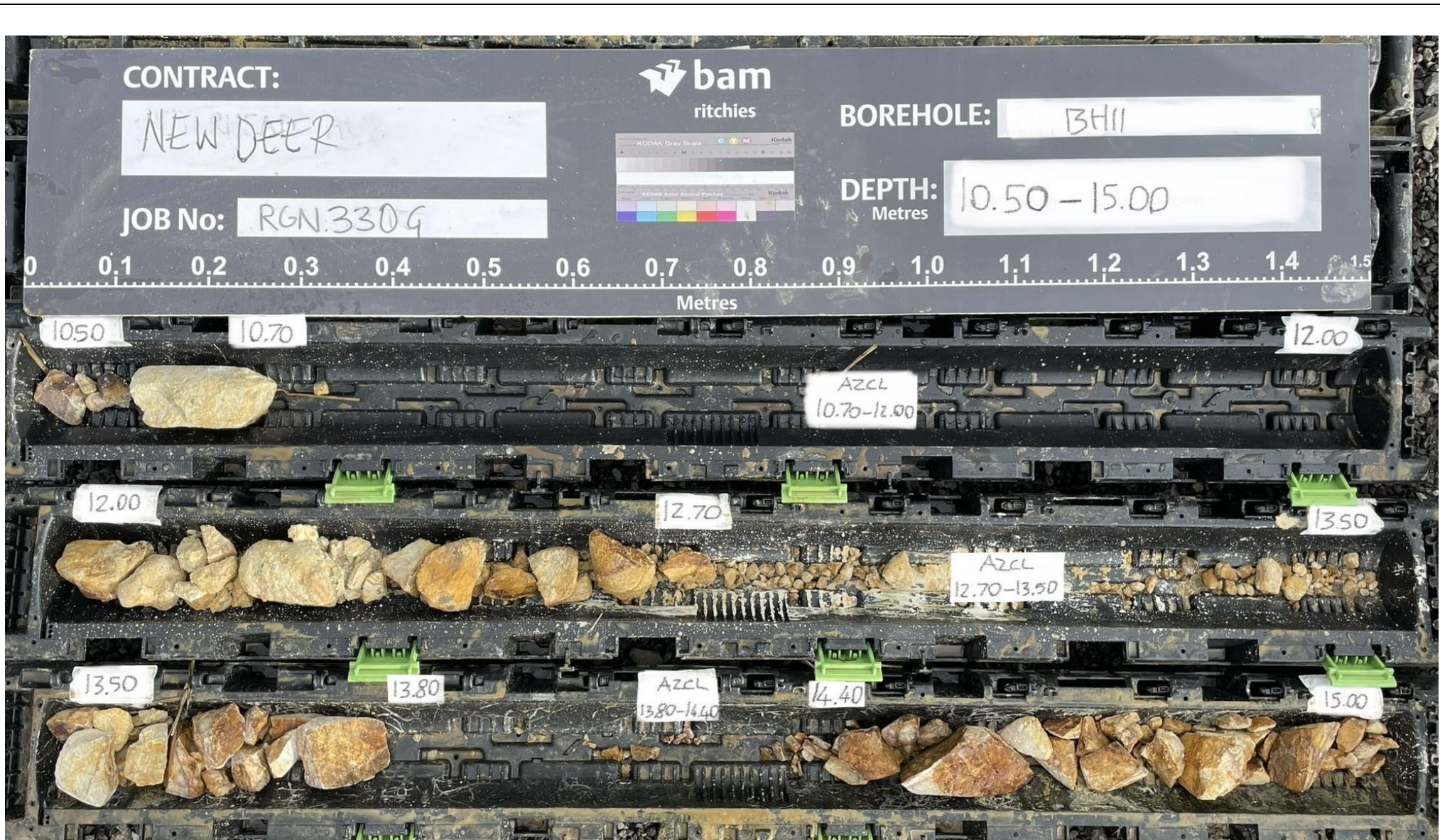
BH11 – 6.00 to 10.50m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



BH11 – 10.50 to 15.00m



BH12 – 3.00 to 7.50m



BH12 – 7.50 to 11.00m

Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



BH13 – 1.20 to 5.70m



BH13 – 5.70 to 10.20m



BH13 – 10.20 to 14.70m



BH14 – 1.20 to 5.70m



BH14 – 5.70 to 10.20m



BH14 – 11.70 to 15.20m



Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



BH15 – 1.00 to 4.00m



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH15	ENGINEER TONY GEE
PROJECT NO. RG.N.330G	CLIENT SSENT	BOX NO. 4	DEPTH FROM 4.00m TO 6.00m



BH15 – 4.00 to 6.00m



Core Photographs

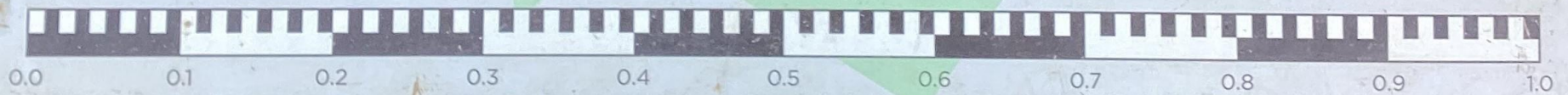
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH15	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	6.00m TO 8.00m



BH15 – 6.00 to 8.00m



Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH15	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 8.00 TO 10.00 m

8.00

3.30

8.50

12

3.30

4.30

10.00

DEPTH



BH15 – 8.00 to 10.00m



Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



BH15 – 10.00 to 12.00m



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH15	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 12.00m TO 14.00m

12.00m

3.30

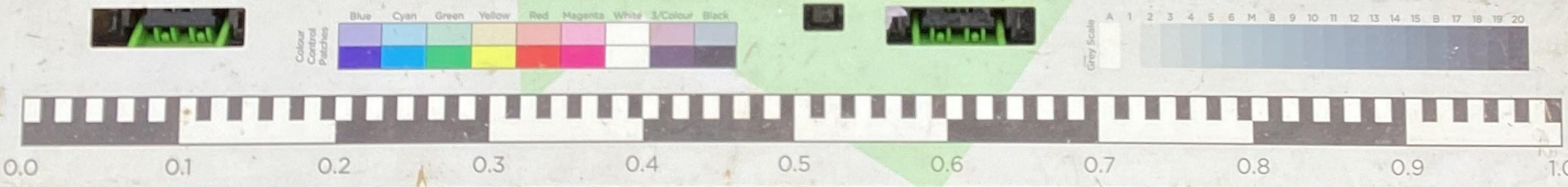
13.00m

13.00m

4.30

14.00m

DEPTH



BH15 – 12.00 to 14.00m



Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



BH16 1.20-5.70m



BH16 5.70-10.20m

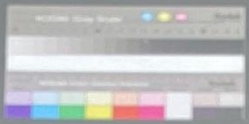
CONTRACT:

NEW DEER



BOREHOLE: BH16

JOB No: RGN.3309



DEPTH: 10:20m - 15:00m
Metres



BH16 10.20-15.00m



BH17 1.20-5.70m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



BH17 5.70-10.20m



ritchies

Contract No: RGN.329R
Contract: ASTI Substation Site - LT379 - New Deer 2

BH17 10.20-15.00m

CONTRACT:

NEW DEER



BOREHOLE: BH18

JOB No: RGN.3309



DEPTH: 1.20m - 5.70m
Metres



No Recovery



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

BH18 1.20-5.70m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

BH18 5.70-10.20m



CONTRACT:

NEW DEER



BOREHOLE: BH18

JOB No: RGN.3304

DEPTH: 10.20-15.60
Metres

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5



Contract No: RGN.329R
Contract: ASTI Substation Site - LT379 - New Deer 2

BH18 10.20-15.60m



BH19 1.20-7.20m



BH19 7.20-11.20m

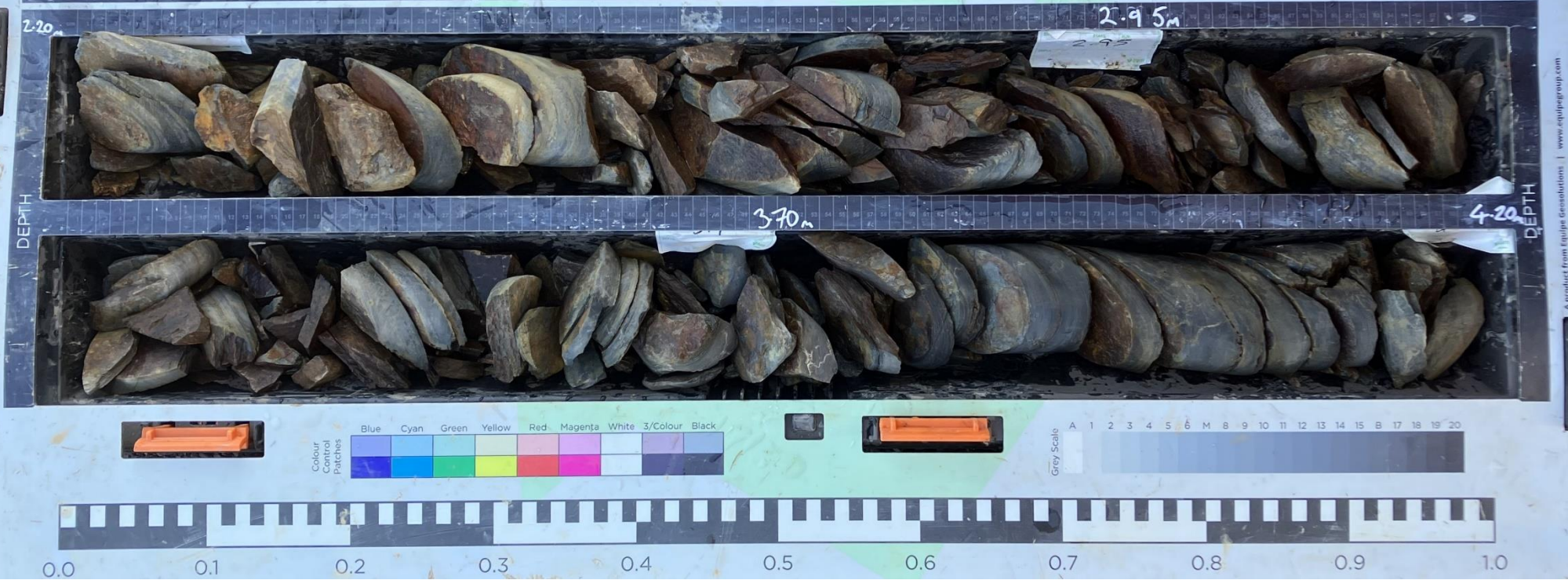


BH19 11.20-15.10m



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PROJECT NAME NEW DEER	DATE 07/09/23	BOREHOLE ID BH20	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 2.20 m TO 4.20 m



BH20 2.20-4.20m



Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME NEW DEER	DATE 07/09/23	BOREHOLE ID BH20	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 2	DEPTH FROM 4.20 m TO 6.20 m

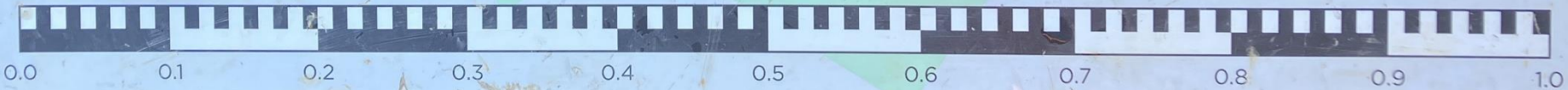
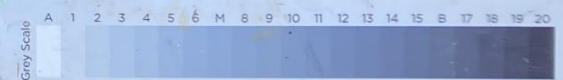
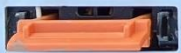


BH20 4.20-6.20m



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PROJECT NAME NEW DEER	DATE 07/09/23	BOREHOLE ID BH20	ENGINEER TONY GEE
PROJECT NO. RGN.3306	CLIENT SSENT	BOX NO. 3	DEPTH FROM 6.20 m TO 8.20 m



BH20 6.20-8.20m



Core Photographs

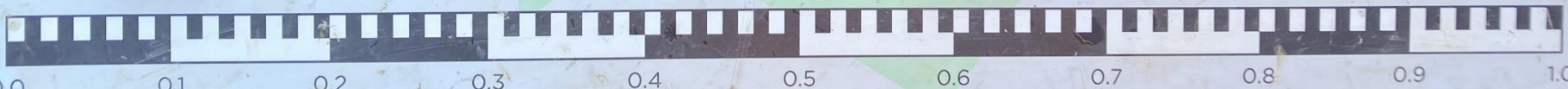
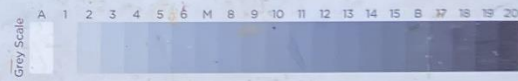
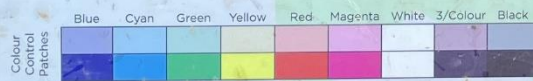
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME NEW DEER	DATE 07/09/23	BOREHOLE ID BH20	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 4	DEPTH FROM 8.20 m TO 10.20 m



BH20 8.20-10.20m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	04/09/23	BOREHOLE ID	BH21	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	2.00 m TO 4.00 m



BH21 2.00-4.00m



Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	04/09/23	BOREHOLE ID	BH 21	ENGINEER	TONY GEE
PROJECT NO.	RGN.3306	CLIENT	SSENT	BOX NO.	2	DEPTH FROM	4.00 m TO 6.00 m



BH21 4.00-6.00m



Core Photographs

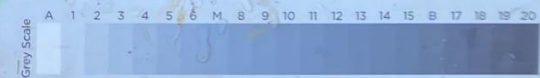
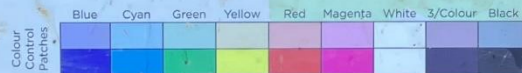
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	04/09/23	BOREHOLE ID	BH 21	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	3	DEPTH FROM	6.00 m TO 8.00 m



0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

BH21 6.00-8.00m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME	NEW DEER	DATE	04/09/23	BOREHOLE ID	BH 21	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	8.00 m TO 10.00 m

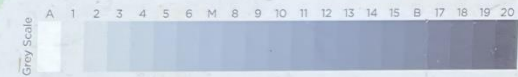
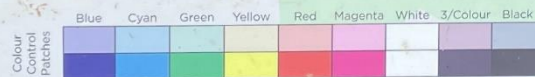


BH21 8.00-10.00m



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PROJECT NAME NEW DEER	DATE 17/09/23	BOREHOLE ID BH22	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 2.60 m TO 4.60 m



BH22 2.60-4.60m



Core Photographs

Contract No: RGN.329R

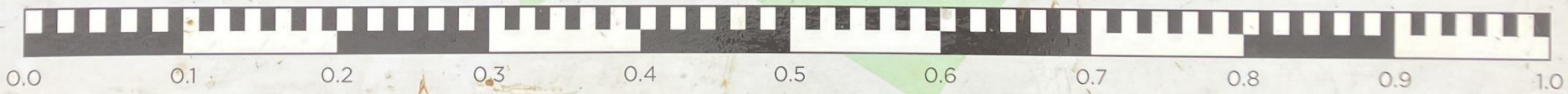
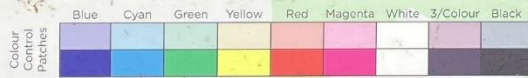
Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME NEW DEER	DATE 17/09/23	BOREHOLE ID BH22	ENGINEER TONY GEE
PROJECT NO. RG.N.330G	CLIENT SSENT	BOX NO. 2	DEPTH FROM 4.60 m TO 6.60 m



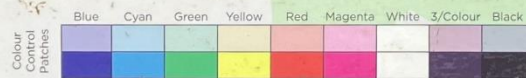
BH22 4.60-6.0m

PROJECT NAME NEW DEER	DATE 18/09/23	BOREHOLE ID BH22	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 3	DEPTH FROM 6.60 m TO 8.60 m



BH22 6.60-8.60m

PROJECT NAME	NEW DEER	DATE	18/09/23	BOREHOLE ID	BH22	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	8.60 m TO 10.00 m



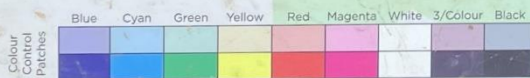
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

BH22 8.60-10.00m



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PROJECT NAME NEW DEER	DATE 15/09/23	BOREHOLE ID BH23	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 3.20 m TO 5.00 m



BH23 3.20-5.00m



Core Photographs

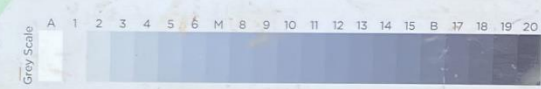
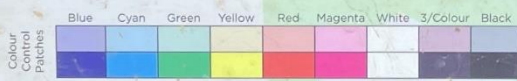
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	15/09/23	BOREHOLE ID	BH23	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	2	DEPTH FROM	5.00 m TO 7.00 m



BH23 5.00-7.00m

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Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME	NEW DEER	DATE	15/09/23	BOREHOLE ID	BH23	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	3	DEPTH FROM	7.00 m TO 9.00 m



BH23 7.00-9.00m



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PROJECT NAME NEW DEER	DATE 15/09/23	BOREHOLE ID BH23	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 4	DEPTH FROM 9.00 m TO 10.00 m



BH23 9.00-10.00m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

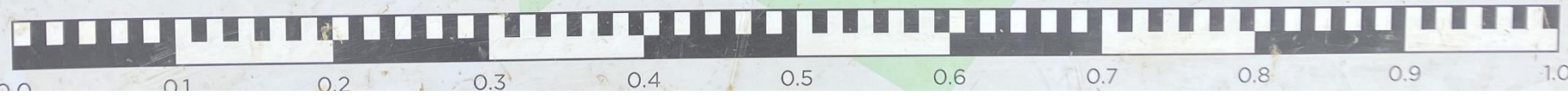
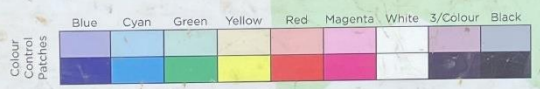


BH24 8.20-9.70m



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PROJECT NAME NEW DEER	DATE 15/09/23	BOREHOLE ID BH25	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 8.50 m TO 10.00 m



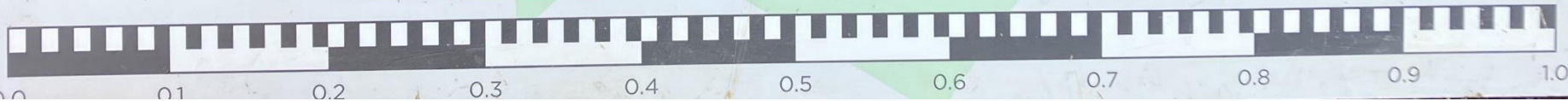
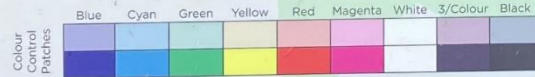
BH25 8.50-10.00m



Core Photographs

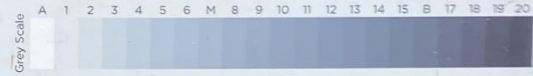
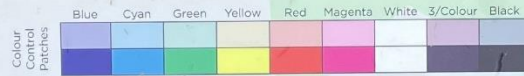
Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME NEW DEER	DATE 16/09/23	BOREHOLE ID BH26	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 5.80 m TO 7.80 m



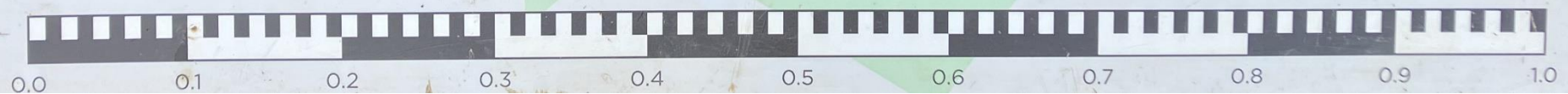
BH26 5.80-7.80m

PROJECT NAME NEW DEER	DATE 16/09/23	BOREHOLE ID BH26	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 2	DEPTH FROM 7.80 m TO 9.80 m



BH26 7.80-9.80m

PROJECT NAME	NEW DEER	DATE	16/09/23	BOREHOLE ID	BH26	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	3	DEPTH FROM	9.80 m TO 10.00 m



BH26 9.80-10.00m

PROJECT NAME	NEW DEER	DATE	05/09/23	BOREHOLE ID	BH 27	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	2.20 m TO 4.20 m

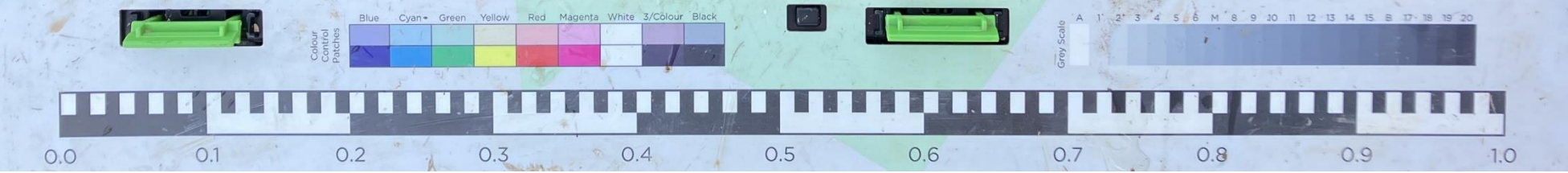


BH27 2.20-4.20m



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PROJECT NAME	NEW DEER	DATE	05/09/23	BOREHOLE ID	BH 27	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	2	DEPTH FROM	4.20 m TO 6.20 m



BH27 4.20-6.20m



Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME NEW DEER	DATE 05/09/23	BOREHOLE ID BH 27	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 3	DEPTH FROM 6.20 m TO 8.20 m



BH27 6.20-8.20m



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Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	05/09/23	BOREHOLE ID	BH 27	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	8.20 m TO 10.00 m



BH27 8.20-10.00m



Core Photographs

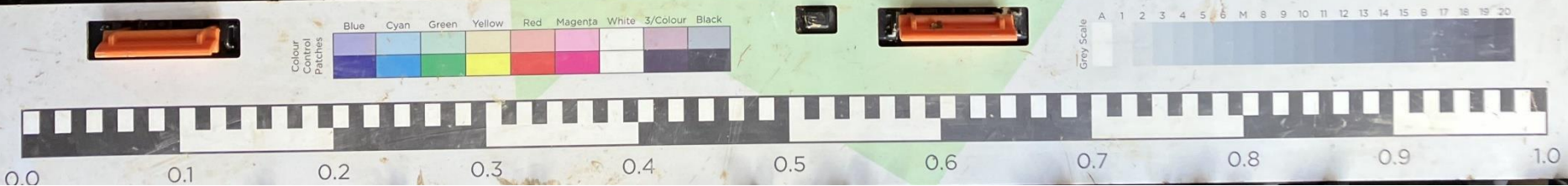
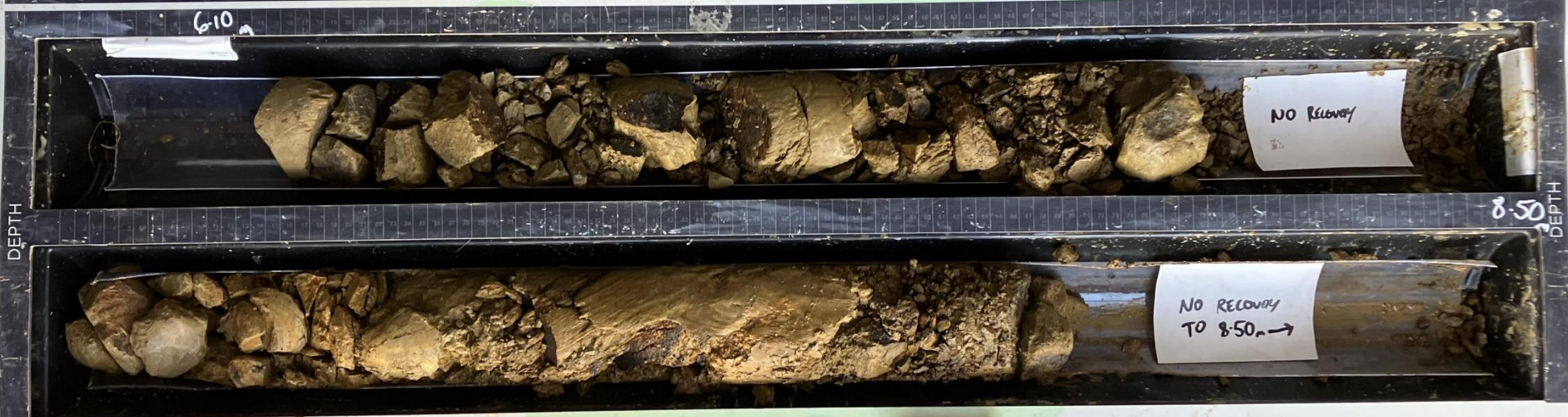
Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME	NEW DEER	DATE	01/09/23	BOREHOLE ID	BH28	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	4.60 m TO 6.10 m



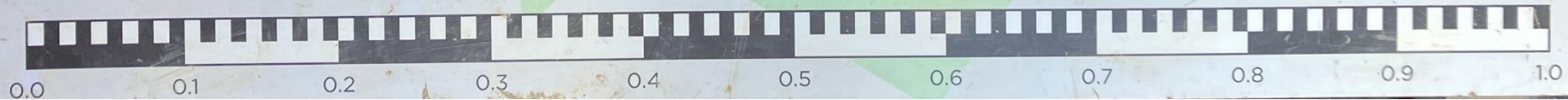
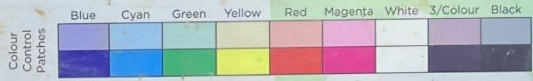
BH28 4.60-6.10m

PROJECT NAME	NEW DEER	DATE	01/09/23	BOREHOLE ID	BH28	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	2	DEPTH FROM	6.10 m TO 8.50 m



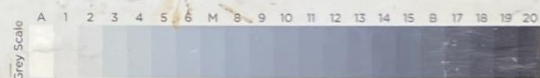
BH28 6.10-8.50m

PROJECT NAME	NEW DEER	DATE	01/09/23	BOREHOLE ID	BH28	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	3	DEPTH FROM	8.50 m TO 10.00 m



BH28 8.50-10.00m

PROJECT NAME	NEW DEER	DATE	04/09/23	BOREHOLE ID	BH29	ENGINEER	TONY GEE
PROJECT NO.	RGN.3306	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	2.30 m TO 4.00 m



BH29 2.30-4.00m



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PROJECT NAME	NEW DEER	DATE	04/09/23	BOREHOLE ID	BH29	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	2	DEPTH FROM	4.00 m TO 5.00 m



BH29 4.00-5.00m



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Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME	NEW DEER	DATE	04/09/23	BOREHOLE ID	BH29	ENGINEER	TONY GEE
PROJECT NO.	RG.N.330G	CLIENT	SSENT	BOX NO.	3	DEPTH FROM	5.00 m TO 6.50 m



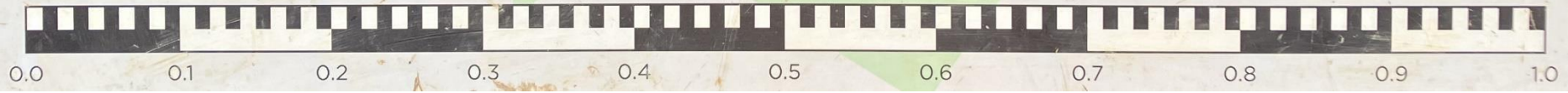
BH29 5.00-6.50m

PROJECT NAME	NEW DEER	DATE	04/09/23	BOREHOLE ID	BH29	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	6.50 m TO 8.50 m



BH29 6.50-8.50m

PROJECT NAME	NEW DEER	DATE	04/01/23	BOREHOLE ID	BH29	ENGINEER	TONY GEE
PROJECT NO.	RGN.3306	CLIENT	SSENT	BOX NO.	5	DEPTH FROM	8.50 m TO 10.00 m



BH29 8.50-10.00m

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PROJECT NAME NEW DEER	DATE 06/09/23	BOREHOLE ID BH30	ENGINEER TONY GEE
PROJECT NO. RG.N.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 2.30 m TO 4.30 m

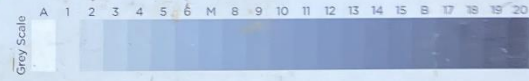
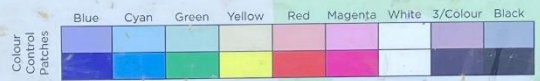


BH30 2.30-4.30m



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PROJECT NAME	NEW DEER	DATE	06/09/23	BOREHOLE ID	BH30	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	2	DEPTH FROM	4.30 m TO 6.30 m



BH30 4.30-6.30m



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Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	06/09/23	BOREHOLE ID	BH30	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	3	DEPTH FROM	6.30 m TO 8.30 m



BH30 6.30-8.30m



Core Photographs
Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME	NEW DEER	DATE	06/09/23	BOREHOLE ID	BH30	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	8.30 m TO 10.00 m



BH30 8.30-10.00



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PROJECT NAME NEW DEER	DATE 17/09/23	BOREHOLE ID BH31	ENGINEER TONY GEE
PROJECT NO. RG.N.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 8.00 m TO 10.00 m



BH31 8.00-10.00m



Core Photographs

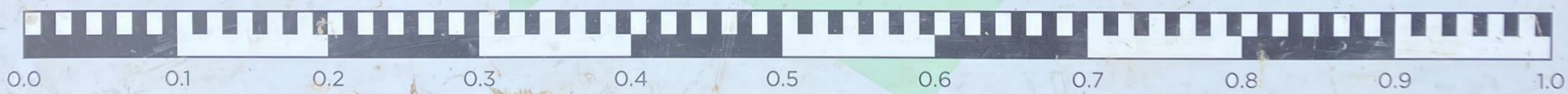
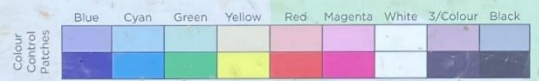
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME NEW DEER	DATE 14/09/23	BOREHOLE ID BH32	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 2.80 m TO 4.80 m



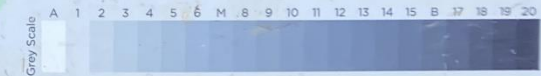
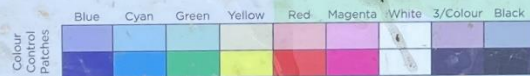
BH32 2.80-4.80m



Core Photographs

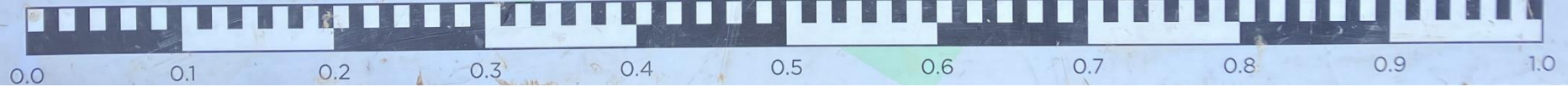
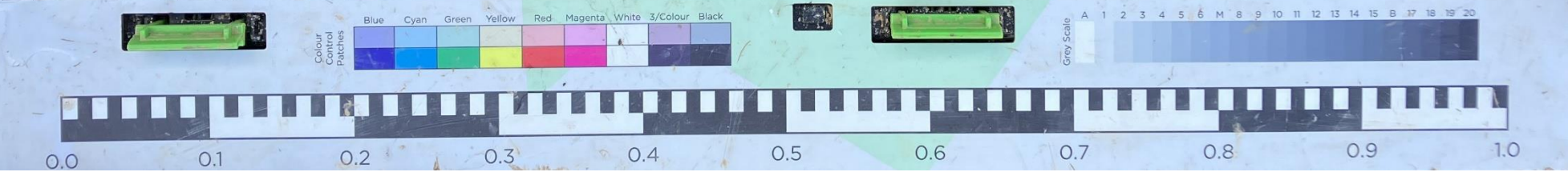
Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME NEW DEER	DATE 14/09/23	BOREHOLE ID BH32	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 2	DEPTH FROM 4.80 m TO 6.80 m



BH32 4.80-6.80m

PROJECT NAME NEW DEER	DATE 14/09/23	BOREHOLE ID BH32	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 3	DEPTH FROM 6.80 m TO 8.80 m



BH32 6.80-8.80m



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PROJECT NAME	NEW DEER	DATE	14/09/23	BOREHOLE ID	BH32	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	8.80 m TO 10.00 m



BH32 8.80-10.00m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



BH33 2.00-6.50m



BH33 6.50-10.00m



BH34 2.00-5.50m



BH34 5.50-10.00m

PROJECT NAME NEW DEER	DATE 18/09/23	BOREHOLE ID BH35	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 1.00 m TO 3.00 m



BH35 1.00-3.00m

PROJECT NAME NEW DEER	DATE 18/09/23	BOREHOLE ID BH35	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 2	DEPTH FROM 3.00 m TO 5.00 m



BH35 3.00-5.00m

PROJECT NAME NEW DEER	DATE 18/09/23	BOREHOLE ID BH35	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 3	DEPTH FROM 5.00 m TO 7.00 m



BH35 5.00-7.00m

PROJECT NAME	NEW DEER	DATE	18/09/23	BOREHOLE ID	BH35	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	7.00 m TO 9.00 m

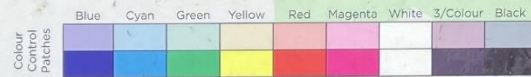


BH35 7.00-9.00m



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PROJECT NAME	NEW DEER	DATE	18/09/23	BOREHOLE ID	BH35	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	5	DEPTH FROM	9.00 m TO 10.00 m



BH35 9.00-10.00m

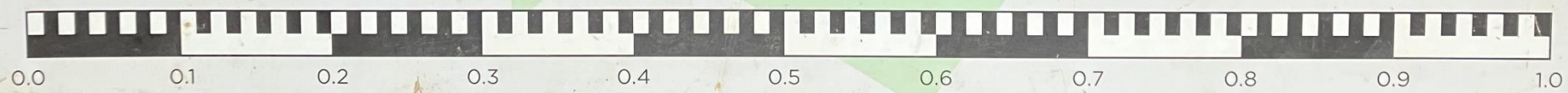
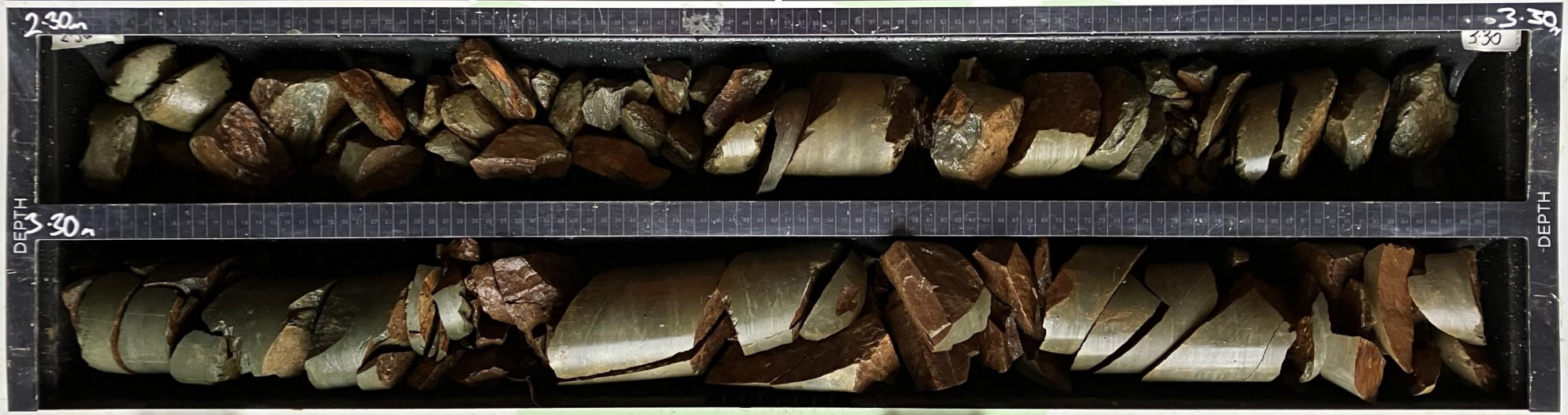


Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME	NEW DEER	DATE	20/09/23	BOREHOLE ID	BH36	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	2.30 m TO 4.30 m



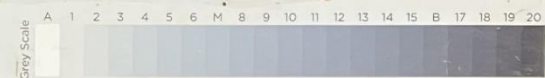
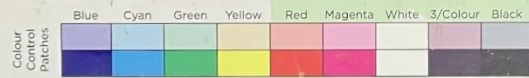
BH36 2.30-4.30m

PROJECT NAME	NEW DEER	DATE	20/09/23	BOREHOLE ID	BH36	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	2	DEPTH FROM	4.30 m TO 6.30 m



BH36 4.30-6.30m

PROJECT NAME NEW DEER	DATE 20/09/23	BOREHOLE ID BH36	ENGINEER TONY GEE
PROJECT NO. RG.N.330G	CLIENT SSENT	BOX NO. 3	DEPTH FROM 6.30 m TO 8.30 m

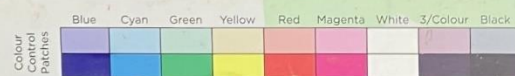


0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

BH36 6.30-8.30m

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PROJECT NAME NEW DEER	DATE 20/09/23	BOREHOLE ID BH36	ENGINEER TONY GEE
PROJECT NO. RG.N.330G	CLIENT SSENT	BOX NO. 4	DEPTH FROM 8.30 m TO 10.00 m



BH36 8.30-10.00m

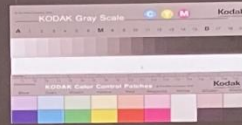
CONTRACT:

NEW DEER



BOREHOLE: BH37

JOB No: RGN.330G



DEPTH: 2.00 - 5.00m
Metres



BH37 2.00-5.00m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

CONTRACT:

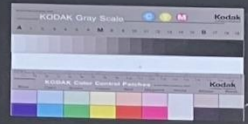
NEW DEER



BOREHOLE: BH37

JOB No: RGN.3309

DEPTH: 5.00 - 10.00m
Metres



ritchie's

Contract No: RGN.329K
Contract: ASTI Substation Site - LT379 - New Deer 2

BH37 5.00-10.00m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

BH38 2.20-5.20m

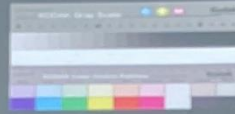
CONTRACT:

NEW DEER



BOREHOLE: BH38

JOB No: RGN.3309



DEPTH: 5.20 - 10.00m
Metres

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5
Metres



ritchie's

Contract No. RGN.329R
Contract: ASTI Substation Site - LT379 - New Deer 2

BH38 5.20-10.00m



BH39 2.00-5.50m



BH39 5.50-10.00



BH39 5.50-10.00m



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PROJECT NAME **NEW DEER**

DATE **11/10/23**

BOREHOLE ID **BH40**

ENGINEER **TONY GEE**

PROJECT NO. **RGN.330G**

CLIENT **SSENT**

BOX NO. **1**

DEPTH FROM **3.20m** TO **4.20m** m

3.20m

3.30

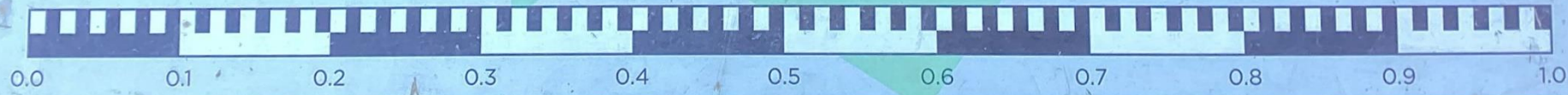
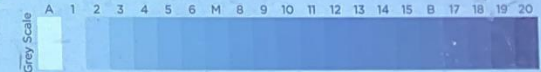
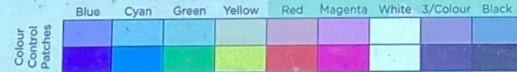
4.20m



3.30

4.30

DEPTH



BH40 3.20-4.20m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH40	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	4.20m TO 5.70m

4.20m

3.30

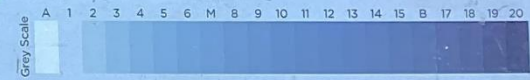
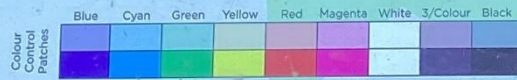
1.2



3.30

5.70m

DEPTH



BH40 4.20-5.70m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



BH40 5.70-7.20m



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH40	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 4	DEPTH FROM 7.20m TO 8.70m

7.20m **3.30** **8.70m**



3.30 **4.30**



BH40 7.20-8.70m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



BH40 8.70-9.70m



BH40 10.20-11.70m



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PROJECT NAME **NEW DEER**

DATE **11/10/23**

BOREHOLE ID **BH40**

ENGINEER **Tony GEE**

PROJECT NO. **RG.N.330G**

CLIENT **SSENT**

BOX NO. **1**

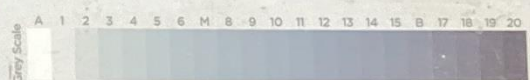
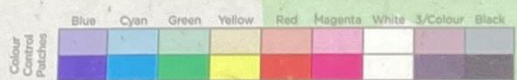
DEPTH FROM **11.70m** TO **13.20m**

11.70m

3.30

13.20m

1.20



BH40 11.70-13.20m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH40	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 13.20m TO 15.20m



BH40 13.20-15.20m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME **NEW DEER**

DATE **11/10/23**

BOREHOLE ID **BH42**

ENGINEER **TONY GEE**

PROJECT NO. **RGN.330G**

CLIENT **SSENT**

BOX NO. **1**

DEPTH FROM **5.80m** TO **9.50m**

5.80m

3.30

6.80m

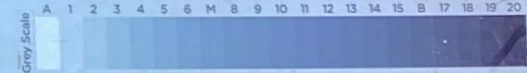
1.2

9.00m

9.50

4.30

No Relinquish



BH42 5.80-9.50m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

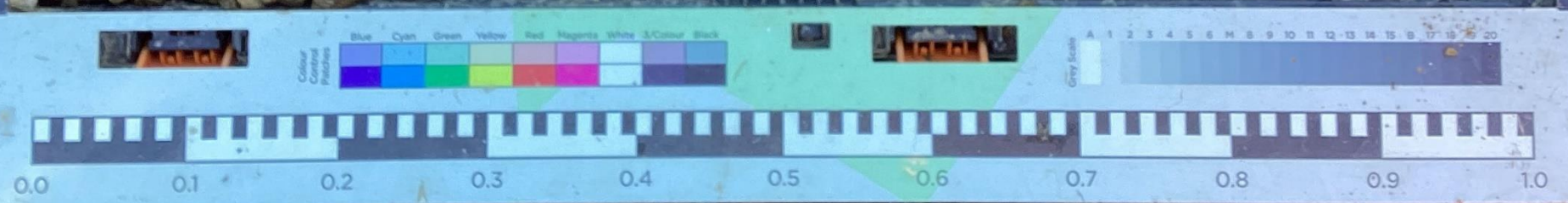


BH42 11.00-13.00m



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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH42	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	13.00m TO 15.00m



BH42 13.00-15.00m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

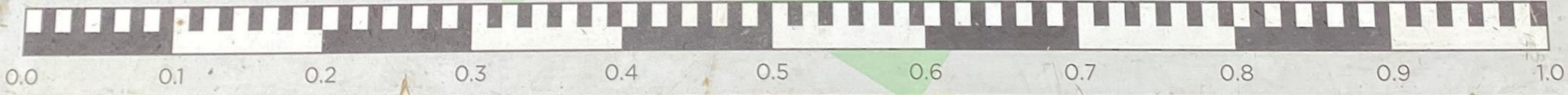


BH43 2.50-3.50m



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH43	ENGINEER TONY GEE
PROJECT NO. RGN.3306	CLIENT SSENT	BOX NO. 1	DEPTH FROM 3.50m TO 5.00m



BH43 3.50-5.00m



Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH 43	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 5.00m TO 6.50m m

5.00m

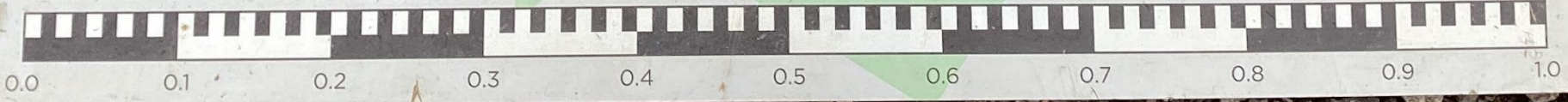
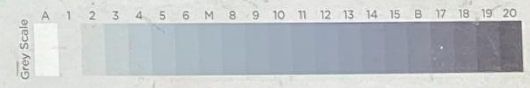
3.30

1.2

3.30

6.50m

4.30



BH43 5.00-6.50m



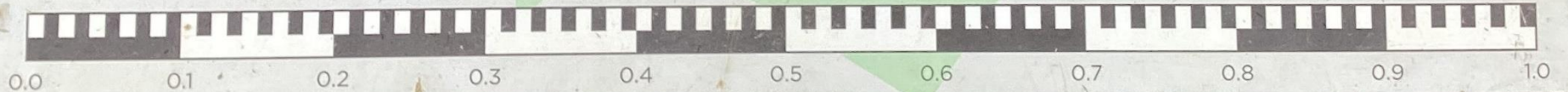
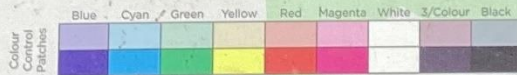
Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH43	ENGINEER TONY CEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 6.50m TO 8.00m



BH43 6.50-8.00m



Core Photographs

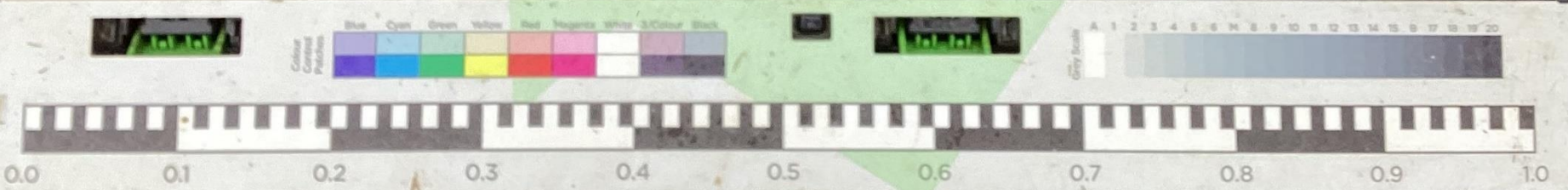
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH 44	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 1	DEPTH FROM 4.00m TO 6.00m



BH44 4.00-6.00m



Core Photographs

Contract No: RGN.329R

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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH 44	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	6.00m TO 8.00m



BH44 6.00-8.00m



Core Photographs

Contract No: RGN.329R
Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH 44	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	8.00m TO 10.00m



BH44 8.00-10.00m



Core Photographs

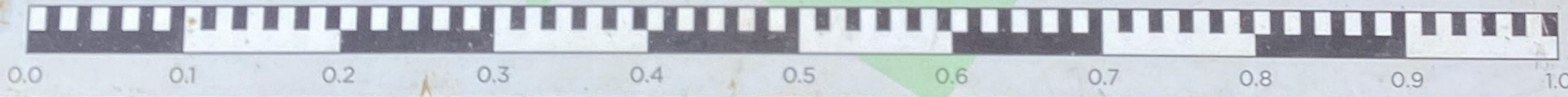
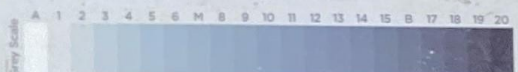
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH45	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	4	DEPTH FROM	5.30m TO 7.30m



BH45 5.30-7.30m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

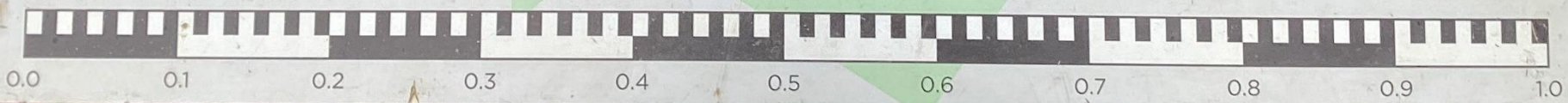


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PROJECT NAME	NEW DEER	DATE	11/10/23	BOREHOLE ID	BH45	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	1	DEPTH FROM	7.30m TO 9.30m



DEPTH
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BH45 7.30-9.30m



Core Photographs

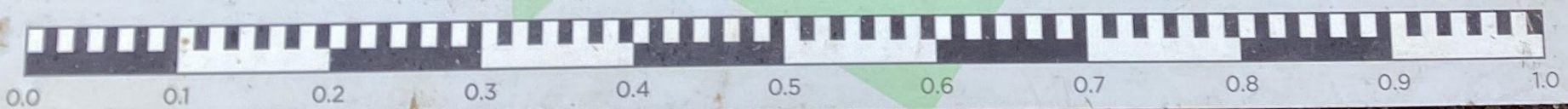
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME NEW DEER	DATE 11/10/23	BOREHOLE ID BH45	ENGINEER TONY GEE
PROJECT NO. RGN.330G	CLIENT SSENT	BOX NO. 4	DEPTH FROM 9.30_m TO 10.30_m



BH45 9.30-10.30m



Core Photographs

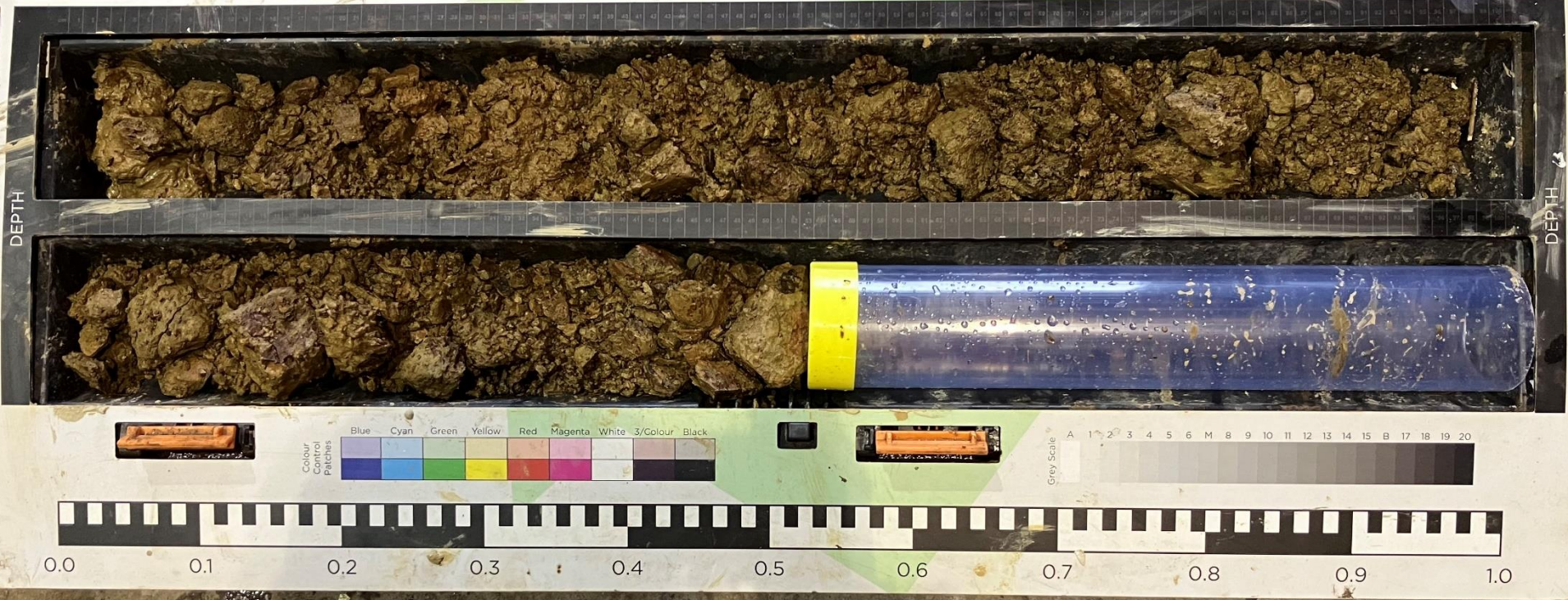
Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME	NEW DEER	DATE	26/10/2023	BOREHOLE ID	BH46	ENGINEER	TONY GEE
PROJECT NO.	RGN.330G	CLIENT	SSENT	BOX NO.	01	DEPTH FROM	2.20m TO 3.70m



BH46 2.20-3.70m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2



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PROJECT NAME

NEW DEER

DATE

26/10/2023

BOREHOLE ID

BH46

ENGINEER

TONY GEE

PROJECT NO.

RGN.330G

CLIENT

SSENT

BOX NO.

02

DEPTH FROM

3.70

m

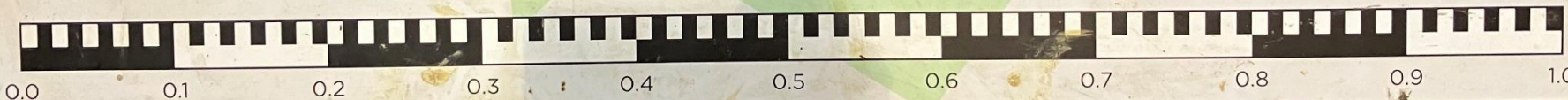
TO

6.70

m



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BH46 3.70-6.70m



Core Photographs

Contract No: RGN.329R

Contract: ASTI Substation Site – LT379 – New Deer 2

PROJECT NAME	NEW DEER	DATE	26/10/2023	BOREHOLE ID	BH46	ENGINEER	TONY GEE
PROJECT NO.	RGN.3304	CLIENT	SSENT	BOX NO.	03	DEPTH FROM	6.70 m TO 7.20 m



BH46 6.70-7.20m

**APPENDIX 6.2
TRIAL PIT PHOTOGRAPHS**



TP01 Long Side - 0.00m to 2.00m



TP01 Short Side - 0.00m to 2.00m



TP01 spoil



TP02 Long Side - 0.00m to 3.00m



Trial Pit Photographs

Contract: ASTI Substation Site – LT379 – New Deer 2

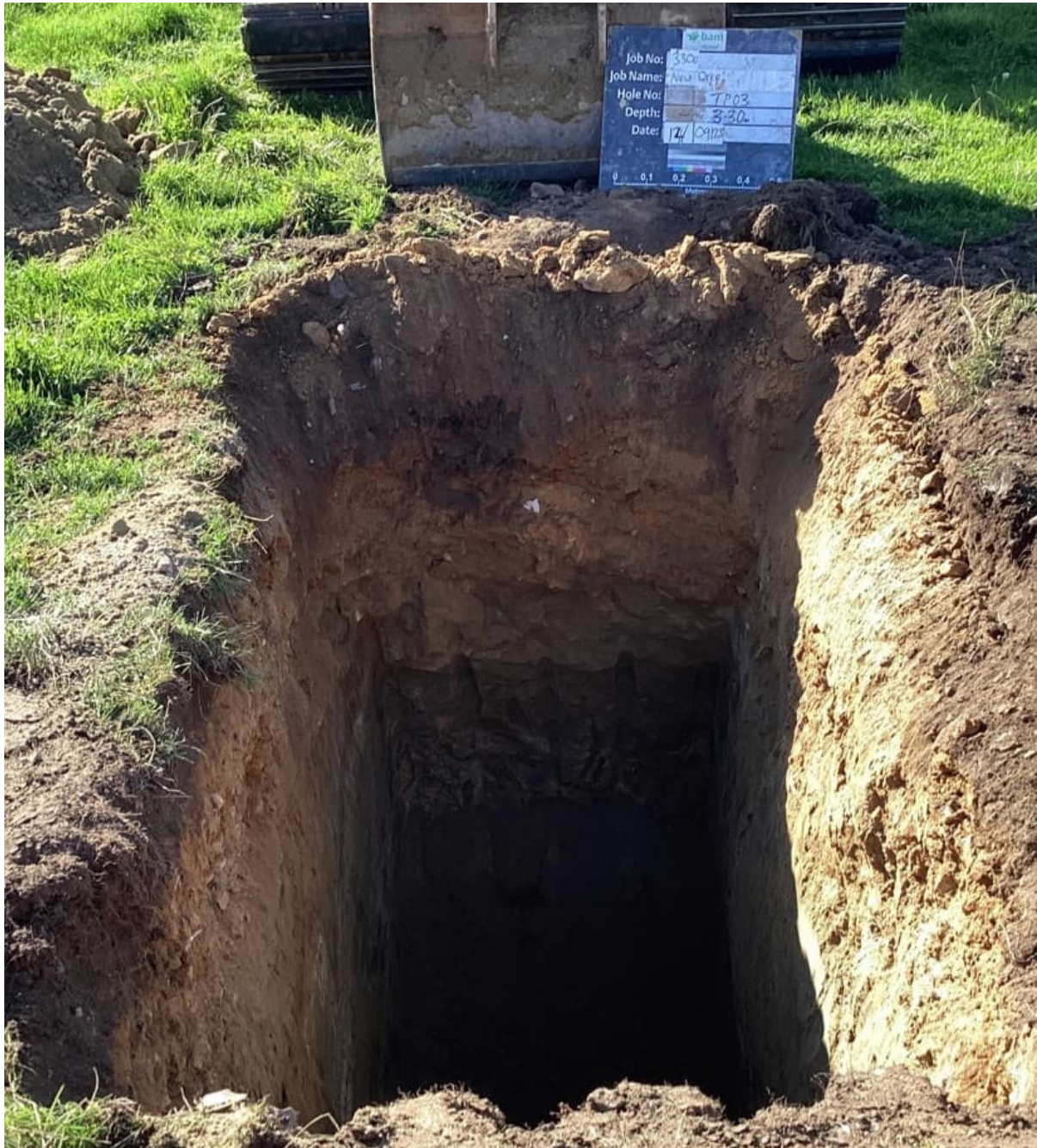
Contract No: RGN.330



TP02 Short Side - 0.00m to 3.00m



TP02 spoil



TP03 Long Side - 0.00m to 3.30m



TP03 Short Side - 0.00m to 3.30m



TP03 spoil



TP04 Long Side - 0.00m to 4.00m



TP04 Short Side - 0.00m to 4.00m



TP04 spoil



TP05 Long Side - 0.00m to 1.30m



TP05 Short Side - 0.00m to 1.30m



TP05 spoil



TP06 Long Side - 0.00m to 3.20m



TP06 Short Side - 0.00m to 3.20m



TP06 spoil



TP07 Long Side - 0.00m to 3.60m



TP07 Short Side - 0.00m to 3.60m



TP07 spoil



TP08 Long Side - 0.00m to 3.00m



TP08 Short Side - 0.00m to 3.00m



TP08 spoil



TP09 Long Side - 0.00m to 2.00m



TP09 Short Side - 0.00m to 2.00m



TP09 spoil



TP10 Long Side - 0.00m to 1.70m



TP10 Short Side - 0.00m to 1.70m



TP10 spoil



TP11 Long Side - 0.00m to 3.40m



TP11 Short Side - 0.00m to 3.40m



TP11 Spoil



TP12 Long Side - 0.00m to 2.90m



TP12 Short Side - 0.00m to 2.90m



TP12 Spoil



TP13 Long Side - 0.00m to 3.20m



TP13 Short Side - 0.00m to 3.20m



TP13 Spoil



TP14 Long Side - 0.00m to 3.80m



TP14 Short Side - 0.00m to 3.80m



Trial Pit Photographs

Contract: ASTI Substation Site – LT379 – New Deer 2

Contract No: RGN.330G



TP14 Spoil



TP15 Long Side - 0.00m to 3.50m



TP15 Short Side - 0.00m to 3.50m



TP15 Spoil



TP16 Long Side - 0.00m to 3.50m



TP16 Short Side - 0.00m to 3.50m



TP16 Spoil



TP17 Long Side - 0.00m to 3.30m



TP17 Short Side - 0.00m to 3.30m



Trial Pit Photographs

Contract: ASTI Substation Site – LT379 – New Deer 2

Contract No: RGN.330G



TP17 Spoil



TP18 Long Side - 0.00m to 3.40m



TP18 Short Side - 0.00m to 3.40m



TP18 Spoil



TP19 Long Side - 0.00m to 3.30m



TP19 Short Side - 0.00m to 3.30m



TP19 Spoil



TP20 Long Side - 0.00m to 3.60m



TP20 Short Side - 0.00m to 3.60m



TP20 Spoil



TP22 Long Side - 0.00m to 2.90m



TP22 Short Side - 0.00m to 2.90m



TP22 Spoil



TP23 Long Side - 0.00m to 2.30m



TP23 Short Side - 0.00m to 2.30m



TP23 Spoil



TP24 Long Side - 0.00m to 3.30m



TP24 Short Side - 0.00m to 3.30m



TP24 Spoil



TP26 Long Side - 0.00m to 3.60m



TP26 Short Side - 0.00m to 3.60m



TP26 Spoil



TP27 Long Side - 0.00m to 3.60m



TP27 Short Side - 0.00m to 3.60m



TP27 Spoil



TP28 Long Side - 0.00m to 3.40m



TP28 Short Side - 0.00m to 3.40m



TP28 Spoil



TP29 Long Side - 0.00m to 3.60m



TP29 Short Side - 0.00m to 3.60m



TP29 Spoil



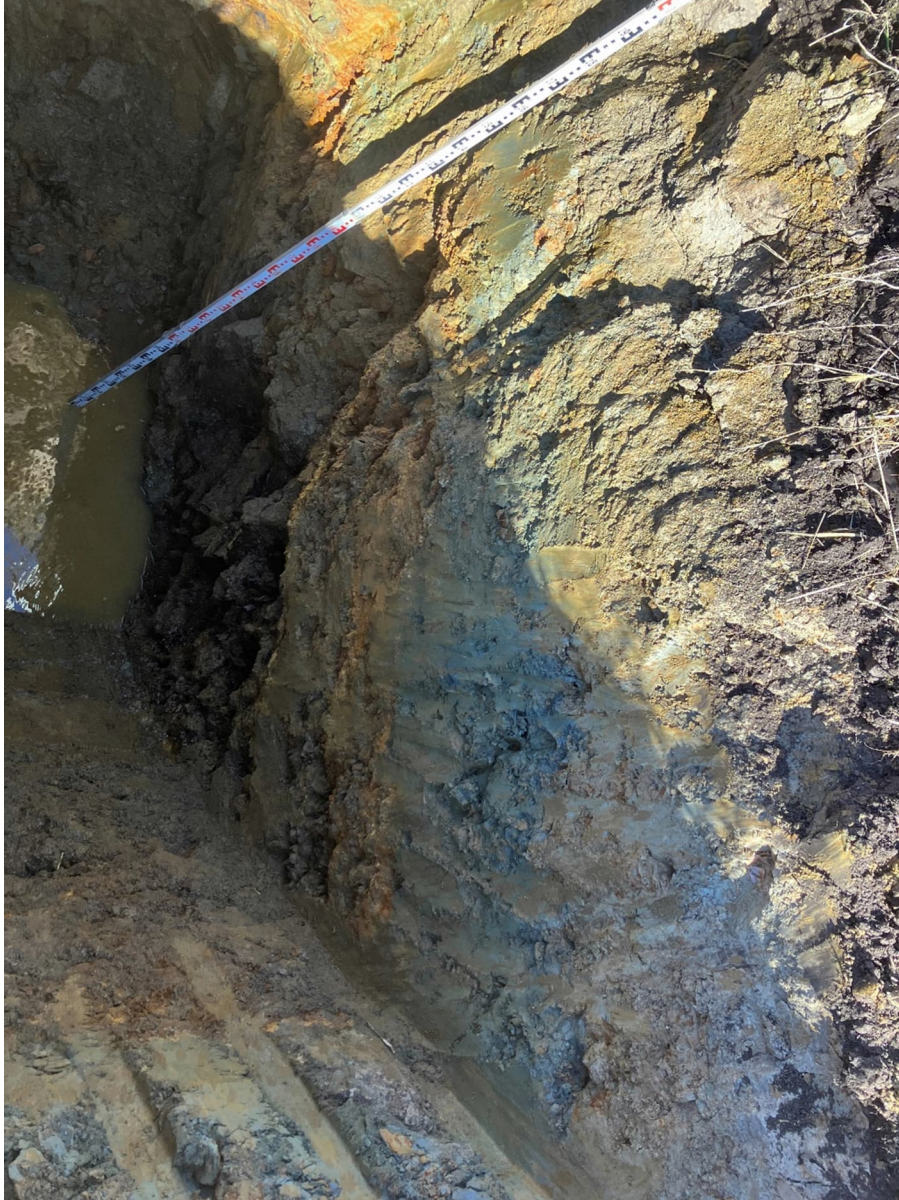
TP30 Long Side - 0.00m to 3.90m



TP30 Short Side - 0.00m to 3.90m



TP30 Spoil



TP31 Long Side - 0.00m to 3.60m



TP31 Short Side - 0.00m to 3.60m



TP31 Spoil



TP32 Long Side - 0.00m to 3.60m



TP32 Short Side - 0.00m to 3.60m



TP32 Spoil



TP33 Long Side - 0.00m to 3.60m



TP33 Short Side - 0.00m to 3.60m



TP33 Spoil



TP34 Long Side - 0.00m to 3.40m



TP34 Short Side - 0.00m to 3.40m



TP37 Long Side - 0.00m to 3.90m



TP37 Short Side - 0.00m to 3.90m



TP37 Spoil



TP38 Long Side - 0.00m to 3.90m



TP38 Short Side - 0.00m to 3.90m



TP38 Spoil



TP39 Long Side - 0.00m to 3.10m



TP39 Short Side - 0.00m to 3.10m



TP39 Spoil



TP40 Long Side - 0.00m to 3.60m



TP40 Short Side - 0.00m to 3.60m



TP40 Spoil



TP42 Long Side - 0.00m to 2.30m



TP42 Short Side - 0.00m to 2.30m



TP43 Long Side - 0.00m to 3.60m



TP43 Short Side - 0.00m to 3.60m



TP43 Spoil



TP44 Long Side - 0.00m to 3.90m



TP44 Short Side - 0.00m to 3.90m



TP44 Spoil



TP45 Long Side - 0.00m to 3.70m



TP45 Short Side - 0.00m to 3.70m



TP45 Spoil



TP46 Long Side - 0.00m to 3.30m



TP46 Short Side - 0.00m to 3.30m



TP46 Spoil



TP47 Long Side - 0.00m to 3.30m



TP47 Short Side - 0.00m to 3.30m



TP47 Spoil



TP48 Long Side - 0.00m to 3.00m



TP48 Short Side - 0.00m to 3.00m



TP48 Spoil



TP49 Long Side - 0.00m to 3.70m



TP49 Short Side - 0.00m to 3.70m



TP49 Spoil



TP50 Long Side - 0.00m to 3.20m



TP50 Short Side - 0.00m to 3.20m



TP50 Spoil



TP51 Long Side - 0.00m to 3.90m



TP51 Short Side - 0.00m to 3.90m



TP51 Spoil



TP52 Long Side - 0.00m to 3.90m



TP52 Short Side - 0.00m to 3.90m



TP52 Spoil



TP53 Long Side - 0.00m to 3.30m



TP53 Short Side - 0.00m to 3.30m



TP53 Spoil



TP54 Long Side - 0.00m to 2.20m



Job No: 5300
Job Name: New Drive
Hole No: TP54
Depth: 2.20m
Date: 21/08/23

TP54 Short Side - 0.00m to 2.20m



TP54 Spoil

**APPENDIX 6.3
HAND PIT PHOTOGRAPHS**



HP01



HP02



HP03



HP04



HP05



HP06



HP07

**APPENDIX 7.0
LABORATORY TEST RESULTS**

**APPENDIX 7.1
GEOTECHNICAL TEST RESULTS**



Summary of Classification Test Results

Project No.
RGN.330G

Project Name
New Deer 2

Hole No.	Sample				Soil Description	Density		w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
	Ref	Top	Base	Type		bulk Mg/m3	dry Mg/m3							
BH01	1	0.50		D	Brown clayey gravelly SAND			23.0	69	36 - 1pt	25	11		
BH01	3	1.00		D	Brown clayey gravelly SAND			11.0						
BH01	1	1.20		D	Brown gravelly sandy CLAY			21.0	68	38 - 1pt	23	15		
BH01	2	2.70		D	Brown gravelly clayey SAND			5.9						
BH02	1	0.50		D	Brown clayey SAND + GRAVEL			15.0						
BH02	5	1.20		D	Brown gravelly clayey SAND			8.8						
BH03	1	0.50		D	Brown gravelly SAND			12.0	52					Non Plastic
BH03	3	1.00		D	Brown gravelly clayey SAND			12.0						
BH03	5	1.20		D	Brown gravelly SAND			13.0						
BH04	1	0.50		D	Brown sandy gravelly CLAY			13.0	32	52 - 1pt	18	34		
BH04	3	1.00		D	Brown sandy clayey SILT			18.0						
BH05	3	1.00		D	Brown clayey gravelly SAND			10.0						
BH05	2	7.20		D	Brown silty sandy GRAVEL			7.4						
BH05	3	8.70		D	Brown clayey silty SAND			18.0						
BH06	2	0.20	0.40	D	Brown clayey gravelly SAND			27.0	90	54 - 1pt	35	19		
BH06	4	0.40	0.60	D	Brown clayey gravelly SAND			20.0						
BH06	1	0.60	1.00	D	Brown sandy gravelly CLAY			18.0	91	35 - 1pt	20	15		
BH06	3	1.20	1.65	D	Brown gravelly clayey SAND			16.0						
BH06	5	4.20	4.30	D	Brown gravelly clayey SAND			3.7	85					Non-Plastic
BH07	2	0.50		D	Brown gravelly SAND			16.0						
BH07	4	1.00		D	Brown gravelly clayey SAND			9.8						
BH07	6	1.20		D	Brown gravelly clayey SAND			5.7	83	24 - 1pt	16	8		
BH07	7	2.70		D	Brown SAND + GRAVEL			2.5						
BH07	9	5.70		D	Grey SAND + GRAVEL			4.6						
BH08	1	0.50		D	Brown gravelly SAND			15.0						
BH08	3	1.00		D	Brown sandy GRAVEL			10.0						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknomete
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	



Summary of Classification Test Results

Project No. RGN.330G	Project Name New Deer 2
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Hole No.	Sample				Soil Description	Density		w	Passing 425µm	LL	PL	PI	Particle density	Remarks
	Ref	Top	Base	Type		bulk	dry							
BH09	1	0.50		D	Brown gravelly sandy organic CLAY			29.0						
BH09	5	1.20		D	Brown gravelly clayey SAND			8.4						
BH10	2	0.50	0.60	D	Brown sandy CLAY			3.0						
BH10	4	1.90	2.20	D	Brown sandy GRAVEL			7.8						
BH11	2	1.40	1.85	D	Brown gravelly sandy CLAY			18.0						
BH12	2	0.50		D	Brown gravelly SAND			11.0						
BH13	K1101633	0.30		D	Brown gravelly sandy peaty CLAY			38.0	87	39 - 1pt	26	13		
BH13	K1101635	1.00		D	Brown gravelly sandy CLAY			18.0						
BH13	K1101639	4.20		D	Brown gravelly SAND			6.9						
BH14	3	0.50	1.00	D	Brown gravelly sandy CLAY			13.0	87	41 - 1pt	29	12		
BH14	5	1.20		D	Brown gravelly SAND			14.0	82	35 - 1pt	22	13		
BH14	6	2.70		D	Brown gravelly SAND			11.0						
BH15	2	0.50		D	Brown clayey SAND + GRAVEL			11.0						
BH15	4	1.70	1.80	D	Grey GRAVEL			4.7	12					Non Plastic
BH16	1	0.50		D	Brown gravelly clayey SAND			37.0						
BH16	5	1.20		D	Brown silty gravelly SAND			9.3						
BH17	1	0.50		D	Brown gravelly clayey SAND			25.0	68	53 - 1pt	34	19		
BH17	5	1.20		D	Brown silty SAND + GRAVEL			14.0						
BH18	4	1.00		D	Brown gravelly clayey SAND			21.0						
BH18	5	1.20	1.65	D	Brown gravelly clayey SAND			12.0						
BH18	1	2.70	3.15	D	Brown gravelly sandy CLAY			10.0	90	27 - 1pt	19	8		
BH19	1	0.50		D	Brown gravelly SAND			13.0						
BH19	3	1.00		D	Brown clayey sandy GRAVEL			25.0						
BH19	6	2.70		D	Brown gravelly sandy silty CLAY			14.0						
BH20	2	0.50	0.60	D	Brown gravelly SAND			10.0						
BH20	4	1.00	1.10	D	Brown gravelly SAND			9.9						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknomete
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	



Summary of Classification Test Results

Project No. RGN.330G	Project Name New Deer 2
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Hole No.	Sample				Soil Description	Density		w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
	Ref	Top	Base	Type		bulk Mg/m3	dry							
BH20	6	2.00	2.20	D	Brown SAND + GRAVEL			4.5						
BH21	2	1.40	1.75	D	Brown clayey SAND + GRAVEL			9.1						
BH22	2	0.50		D	Brown clayey gravelly SAND			9.5						
BH22	4	1.00		D	Brown gravelly clayey SAND			12.0						
BH23	4	1.90	2.35	D	Brown gravelly clayey SAND			11.0						
BH24	2	7.60	7.84	D	Brown sandy clayey SAND			35.0						
BH25	2	0.50	0.50	D	Brown clayey gravelly SAND			22.0						
BH25	4	1.90		D	Brown gravelly SAND			5.2						
BH25	7	5.00	5.45	D	Brown sandy gravelly CLAY			13.0						
BH26	2	0.50		D	Brown gravelly clayey SAND			29.0						
BH26	5	3.10		D	Brown gravelly clayey SAND			9.9						
BH28	2	0.50		D	Brown gravelly SAND			16.0						
BH28	6	2.00	2.45	D	Brown gravelly SAND			10.0						
BH28	1	4.20		D	Brown sandy GRAVEL			16.0						
BH29	2	0.50	0.60	D	Brown gravelly clayey SAND			15.0						
BH29	6	2.00	2.30	D	Brown clayey SAND + GRAVEL			8.2						
BH31	2	0.50	0.60	D	Brown gravelly SAND			10.0						
BH31	6	1.70	2.10	D	Brown gravelly SAND			11.0						
BH31	9	5.00	5.45	D	Brown gravelly SAND			14.0						
BH32	2	0.50	0.60	D	Brown gravelly sandy CLAY			30.0						
BH34	2	1.40	1.50	D	Brown sandy GRAVEL			5.4						
BH35	2	0.90		D	Brown sandy GRAVEL			5.6						
BH36	2	1.40	1.85	D	Brown sandy gravelly silty CLAY			13.0						
BH37	2	1.50		D	Brown gravelly sandy silty CLAY			11.0						
BH38	2	0.50	0.60	D	Brown SAND + GRAVEL			7.0						
BH38	6	2.00	2.20	D	Brown gravelly SAND			8.1						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknomete
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	



Summary of Classification Test Results

Project No. RGN.330G	Project Name New Deer 2
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Hole No.	Sample				Soil Description	Density		w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
	Ref	Top	Base	Type		bulk	dry							
BH39		1.40	1.50	D	Brown silty gravelly SAND			6.8						
BH40	K1091829	0.50		D	Brown sandy gravelly CLAY			19.0						
BH41	K1091838	0.50		D	Brown gravelly sandy CLAY			24.0						
BH41	K1091840	1.00		D	Brown gravelly sandy CLAY			22.0	62	42 - 1pt	28	14		
BH41	K1091842	2.20		D	Brown clayey SAND			29.0						
BH42	K1095774	0.50	0.60	D	Grey sandy gravelly SILT			16.0						
BH42	K1095780	3.50	3.95	D	Brown gravelly silty CLAY			29.0						
BH43	K1091832	0.50		D	Brown gravelly sandy CLAY			17.0	70	24 - 1pt	17	7		
BH44	K1095766	0.50	0.60	D	Brown gravelly sandy CLAY			16.0						
BH44	K1095772	3.50	3.95	D	Brown/ grey sandy CLAY + SILT			16.0						
BH45	K1095756	0.50	0.60	D	Brown clayey gravelly SAND			14.0						
BH45	K1095760	2.00	2.30	D	Brown/ grey sandy silty CLAY			17.0						
BH46	K1096698	0.50		D	Brown gravelly clayey SAND			24.0						
HP01	K1092397	0.50		D	Brown gravelly sandy CLAY M/G			19.0						
HP02	K1103089	0.50		D	Brown gravelly clayey SAND M/G			30.0	76	48 - 1pt	28	20		
HP02	K1103091	1.00		D	Brown clayey gravelly SAND			25.0						
HP03	K1103087	0.50		D	Brown clayey gravelly SAND			14.0	48	37 - 1pt	24	13		
HP04	K1103085	0.50		D	Brown gravelly clayey SAND			11.0	37	30 - 1pt	22	8		
HP05	K1103083	0.50		D	Brown gravelly SAND			10.0						
HP06	K1103079	0.50		D	Brown gravelly SAND			16.0						
HP06	K1103081	1.00		D	Brown clayey gravelly SAND			15.0						
HP07	K1103075	0.50		D	Brown clayey gravelly SAND			18.0	54	36 - 1pt	27	9		
HP07	K1103077	1.00		D	Brown gravelly SAND			23.0						
TP01	1	0.50	0.50	D	Brown gravelly SAND			13.0						
TP01	4	1.00	1.00	B	Brown clayey sandy GRAVEL with cobble			12.0						
TP02	1	0.50	0.50	D	Brown clayey gravelly SAND			18.0	54	36 - 1pt	23	13		

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknomete
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	



Summary of Classification Test Results

Project No. RGN.330G	Project Name New Deer 2
-------------------------	----------------------------

Hole No.	Sample				Soil Description	Density		w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
	Ref	Top	Base	Type		bulk Mg/m3	dry							
TP02	7	3.00	3.00	D	Brown gravelly SAND			6.1						
TP03	1	0.50	0.50	D	Brown gravelly CLAY			8.0						
TP03	7	3.00	3.00	D	Brown clayey gravelly SAND			11.0						
TP04	10	2.00	2.00	D	Brown gravelly SAND			14.0						
TP04	14	4.00	4.00	D	Brown clayey gravelly SAND			17.0						
TP05	3	1.00	1.00	D	Brown gravelly clayey SAND			10.0						
TP07	1	0.50	0.50	D	Brown clayey gravelly SAND			15.0						
TP07	10	2.00	2.00	D	Brown clayey gravelly SAND			11.0						
TP07	12	3.00	3.00	D	Brown gravelly sandy CLAY			7.5						
TP08	3	1.00	1.00	D	Brown gravelly clayey SAND			11.0						
TP08	10	2.00	2.00	D	Brown sandy GRAVEL			7.3						
TP08	12	3.00	3.00	D	Brown gravelly SAND			7.3						
TP09	1	0.50	0.50	D	Brown clayey gravelly SAND			9.7	44	22 - 1pt	16	6		
TP09	5	1.50	1.50	LB	Brown clayey gravelly SAND			9.4	72	25 - 1pt	18	7		
TP10	1	0.50	0.50	D	Brown clayey gravelly SAND			16.0	49	31 - 1pt	21	10		
TP10	3	0.80	0.80	D	Brown clayey gravelly SAND			15.0						
TP11	3	1.00		D	Brown gravelly SAND			8.3						
TP11	8	3.00		D	Brown silty gravelly SAND			8.9						
TP12	3	1.00		D	Brown gravelly SAND			6.8						
TP13	6	2.00		D	Brown clayey gravelly SAND			11.0						
TP13	8	3.00		D	Brown clayey gravelly SAND			13.0						
TP14	1	0.50		D	Brown clayey gravelly SAND			15.0						
TP14	5	2.00		D	Brown gravelly SAND			13.0						
TP15	1	0.50		D	Brown clayey gravelly SAND			16.0						
TP15	6	2.00		D	Brown gravelly SAND			11.0						
TP16	3	1.00		D	Brown clayey gravelly SAND			10.0						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknome
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	



Summary of Classification Test Results

Project No.
RGN.330G

Project Name
New Deer 2

Hole No.	Sample				Soil Description	Density		w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
	Ref	Top	Base	Type		bulk Mg/m3	dry							
TP16	8	3.00		D	Brown clayey gravelly SAND			9.7						
TP17	3	1.00		D	Brown gravelly sandy CLAY			14.0						
TP17	5	2.00		D	Brown gravelly SAND			14.0						
TP18	1	0.50		D	Brown gravelly SAND			16.0						
TP18	6	2.00		D	Brown clayey gravelly SAND			26.0						
TP19	3	1.00		D	Brown clayey gravelly SAND			18.0						
TP19	7	3.00		D	Brown clayey gravelly SAND			15.0						
TP20	3	1.00		D	Brown silty clayey gravelly SAND			16.0						
TP20	7	3.00		D	Brown sandy GRAVEL			12.0						
TP21	1	0.50		D	Brown clayey gravelly SAND			18.0						
TP21	5	2.00		D	Brown clayey gravelly SAND			15.0						
TP22	1	0.50		D	Brown gravelly SAND			13.0						
TP22	5	2.00		D	Brown clayey sandy GRAVEL			15.0						
TP23	1	0.50		D	Brown sandy clayey GRAVEL			18.0						
TP23	5	2.00		D	Brown gravelly clayey SAND			17.0						
TP24	1	0.50		D	Brown gravelly SAND			11.0						
TP24	6	2.00		D	Brown gravelly SAND			12.0						
TP25	3	1.00		D	Brown gravelly SAND			14.0						
TP25	7	3.00		D	Brown gravelly SAND			15.0						
TP26	8	1.00		D	Brown clayey gravelly SAND			15.0						
TP26	7	3.00		D	Brown clayey gravelly SAND			13.0						
TP27	1	0.50		D	Brown gravelly SAND			14.0						
TP27	5	2.00		D	Brown sandy GRAVEL			10.0						
TP28	1	0.50		D	Brown gravelly SAND			13.0						
TP28	5	2.00		D	Brown gravelly SAND			16.0						
TP29	1	0.50		D	Brown gravelly SAND			12.0						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknomete
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	



Summary of Classification Test Results

Project No. RGN.330G	Project Name New Deer 2
-------------------------	----------------------------

Hole No.	Sample				Soil Description	Density		w	Passing 425µm	LL	PL	PI	Particle density	Remarks
	Ref	Top	Base	Type		bulk	dry							
TP29	5	2.00		D	Brown gravelly SAND			12.0						
TP30	1	0.50		D	Brown gravelly SAND			11.0						
TP30	3	1.00		D	Brown gravelly SAND			12.0						
TP31	3	1.00		D	Brown clayey gravelly SAND			16.0						
TP31		3.00		D	Brown sandy silty GRAVEL			18.0						
TP32	1	0.50		D	Brown clayey gravelly SAND			12.0						
TP32	5	2.00		D	Brown SAND + GRAVEL			9.2						
TP33	3	1.00		D	Brown clayey gravelly SAND			13.0						
TP33	7	3.00		D	Brown clayey silty sandy GRAVEL			21.0						
TP34	1	0.50		D	Brown clayey gravelly SAND			13.0						
TP34	6	2.00		D	Brown clayey gravelly SAND			15.0						
TP35	1	0.50		D	Brown clayey gravelly SAND			9.9						
TP35	3	2.00		D	Brown clayey gravelly SAND			13.0						
TP36	1	0.50		D	Brown gravelly SAND			14.0						
TP36	5	2.00		D	Brown gravelly silty sandy CLAY			27.0	78	43 - 1pt	28	15		
TP37	4	1.00		D	Brown clayey gravelly SAND			9.8						
TP37	6	2.00		D	Brown clayey gravelly SAND			17.0						
TP37	8	3.00		D	Brown clayey gravelly SAND			16.0						
TP38	1	0.50		D	Greyish brown gravelly clayey SAND			13.0						
TP38	3	1.00		D	Brown gravelly silty clayey SAND			10.0	62	29 - 1pt	18	11		
TP38	5	2.00		D	Grey sandy gravelly SILT			16.0						
TP38	7	3.00		D	Brown/ grey clayey SILT			21.0						
TP39	1	0.50		D	Brown/ grey gravelly sandy CLAY			20.0						
TP39	5	2.00		D	Brown silty sandy CLAY			33.0	83	47 - 1pt	29	18		
TP40	1	0.50		D	Brown clayey gravelly SILT			20.0						
TP40	5	2.00		D	Brown gravelly SAND			15.0						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknomete
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	



Summary of Classification Test Results

Project No. RGN.330G	Project Name New Deer 2
-------------------------	----------------------------

Hole No.	Sample				Soil Description	Density		w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
	Ref	Top	Base	Type		bulk Mg/m3	dry							
TP41	3	1.00		D	Brown gravelly SAND			15.0						
TP41	5	2.00		D	Brown sandy silty GRAVEL			14.0						
TP42	1	0.50		D	Brown gravelly clayey SAND			13.0						
TP42	3	1.00		D	Brown gravelly SAND			13.0						
TP43	1	0.50		D	Brown gravelly SAND			16.0						
TP43	3	1.00		D	Brown gravelly SAND			13.0						
TP43	5	2.00		D	Brown sandy clayey gravelly SILT			22.0						
TP43	7	3.00		D	Brown sandy clayey SILT			15.0						
TP44A	1	0.50		D	Brown/ grey slightly gravelly clayey SILT			24.0	80	38 - 1pt	25	13		
TP44A	3	1.00		D	Brown/ grey slightly gravelly clayey SILT			23.0						
TP44A	5	2.00		D	Grey gravelly sandy SILT			19.0						
TP44A	7	3.00		D	Brown gravelly clayey SILT			13.0						
TP45	1	0.50		D	Brown sandy gravelly CLAY			13.0						
TP45	3	1.00		D	Brown sandy CLAY + GRAVEL			11.0						
TP45	5	2.00		D	Brown clayey sandy GRAVEL			16.0						
TP46	1	0.50		D	Brown gravelly clayey SAND			13.0						
TP46	3	1.00		D	Brown gravelly sandy CLAY			13.0						
TP46	5	2.00		D	Brown gravelly sandy CLAY			12.0						
TP47	1	0.50		D	Brown clayey gravelly SAND			13.0						
TP47	5	2.00		D	Brown silty SAND + GRAVEL			14.0						
TP48	1	0.50		D	Brown clayey gravelly SAND			17.0						
TP48	5	2.00		D	Brown clayey gravelly SAND			14.0						
TP48	7	3.00		D	Brown gravelly sandy CLAY			16.0						
TP50	5	2.00		D	Brown gravelly SAND			10.0						
TP51	1	0.50		D	Brown clayey gravelly SAND			17.0						
TP52	1	0.50		D	Brown gravelly SAND			13.0						

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Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknomete
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH01**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey gravelly SAND**

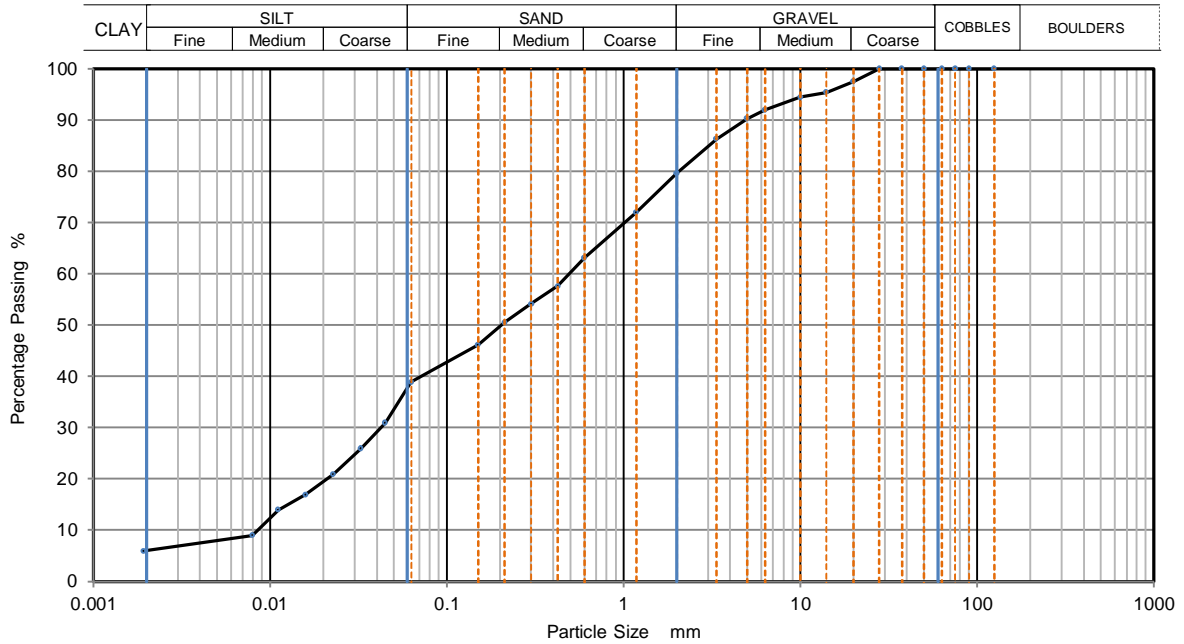
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102580**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	31
90	100	0.0326	26
75	100	0.0227	21
63	100	0.0159	17
50	100	0.0111	14
37.5	100	0.0079	9
28	100	0.0019	6
20	98		
14	95		
10	95		
6.3	92		
5	90		
3.35	86		
2	80		
1.18	72		
0.6	63	Particle density (assumed) 2.67 Mg/m ³	
0.425	58		
0.3	54		
0.212	51		
0.15	46		
0.063	39		

Dry Mass of sample, g. 3553

Sample Proportions	% dry mass
Very coarse	0
Gravel	20
Sand	41
Silt	33
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.493
D30	mm	0.0419
D10	mm	0.00867
Uniformity Coefficient		57
Curvature Coefficient		0.41

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH02**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown gravelly clayey SAND**

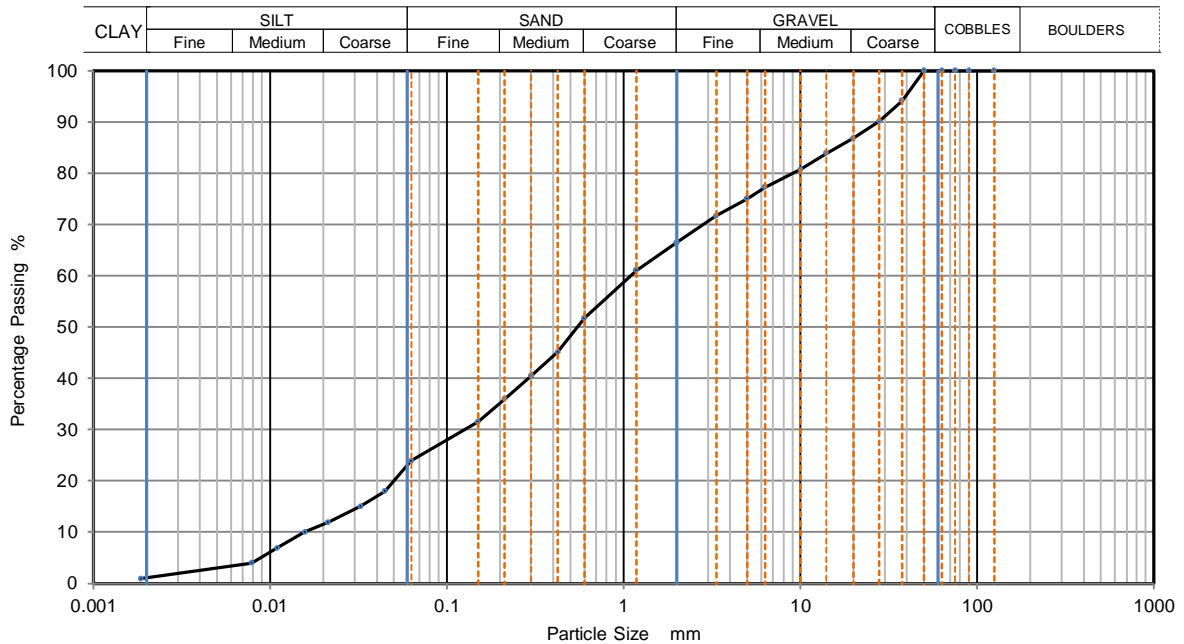
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102606**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	18
90	100	0.0325	15
75	100	0.0213	12
63	100	0.0158	10
50	100	0.0110	7
37.5	94	0.0079	4
28	90	0.0019	1
20	87		
14	84		
10	81		
6.3	77		
5	75		
3.35	72		
2	67		
1.18	61		
0.6	52	Particle density (assumed) 2.67 Mg/m ³	
0.425	45		
0.3	41		
0.212	36		
0.15	32		
0.063	24		

Dry Mass of sample, g. 9475

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	43
Silt	23
Clay	1

Grading Analysis	
D100	mm
D60	mm 1.09
D30	mm 0.126
D10	mm 0.0164
Uniformity Coefficient	67
Curvature Coefficient	0.89

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH04**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown gravelly sandy SILT**

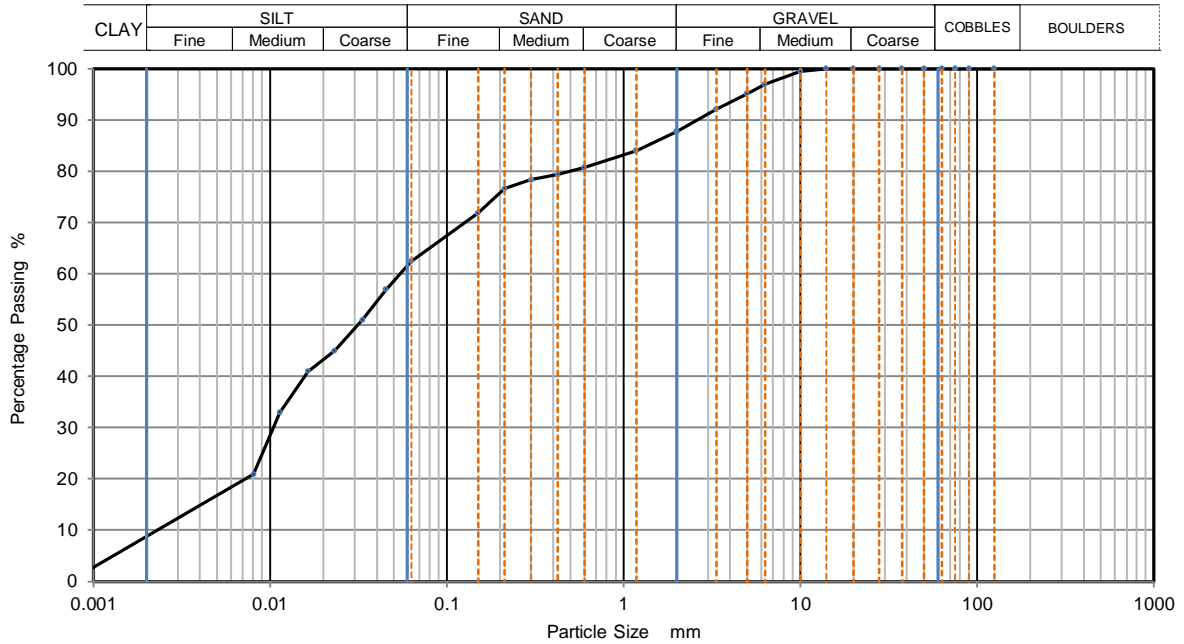
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102592**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0453	57
90	100	0.0333	51
75	100	0.0233	45
63	100	0.0163	41
50	100	0.0114	33
37.5	100	0.0081	21
28	100	0.0009	2
20	100		
14	100		
10	100		
6.3	97		
5	95		
3.35	92		
2	88		
1.18	84		
0.6	81	Particle density (assumed)	
0.425	79	2.67	Mg/m ³
0.3	78		
0.212	77		
0.15	72		
0.063	62		

Dry Mass of sample, g. 2890

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	25
Silt	54
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.055
D30	mm	0.0104
D10	mm	0.00225
Uniformity Coefficient		24
Curvature Coefficient		0.87

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH05**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown silty sandy GRAVEL with cobble**

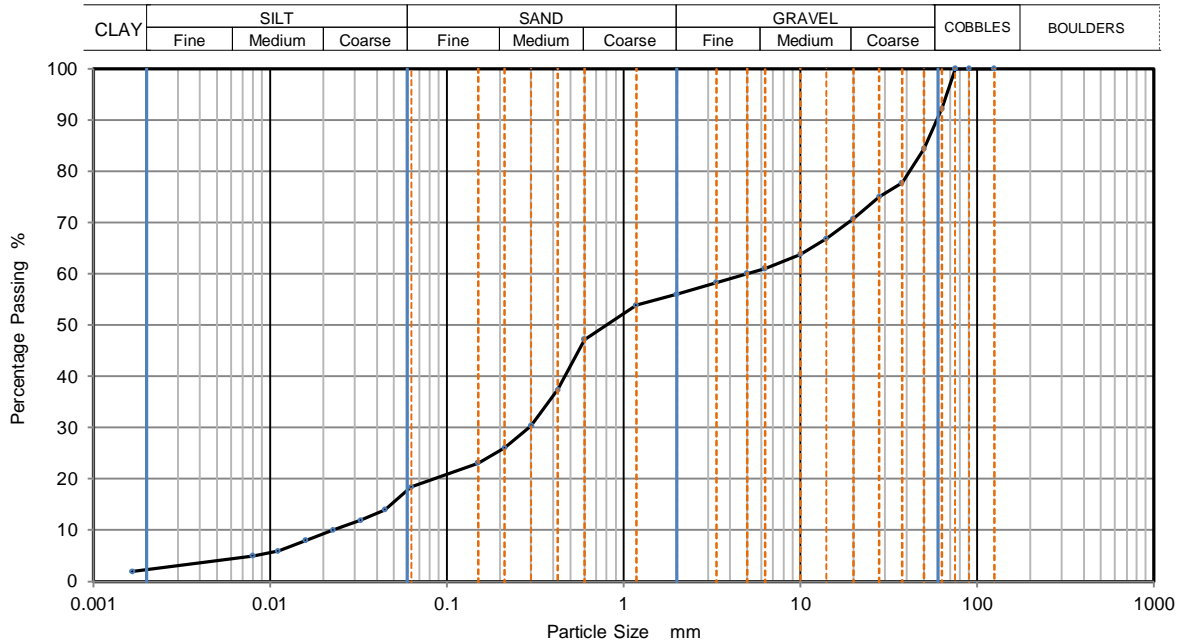
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Wa1039699**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	14
90	100	0.0325	12
75	100	0.0227	10
63	92	0.0159	8
50	84	0.0111	6
37.5	78	0.0080	5
28	75	0.0017	2
20	71		
14	67		
10	64		
6.3	61		
5	60		
3.35	58		
2	56		
1.18	54		
0.6	47	Particle density (assumed) 2.67 Mg/m ³	
0.425	37		
0.3	30		
0.212	26		
0.15	23		
0.063	18		

Dry Mass of sample, g. 5489

Sample Proportions	% dry mass
Very coarse	8
Gravel	36
Sand	38
Silt	16
Clay	2

Grading Analysis		
D100	mm	
D60	mm	5.03
D30	mm	0.29
D10	mm	0.0236
Uniformity Coefficient		210
Curvature Coefficient		0.71

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH06**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy gravelly SILT with cobble**

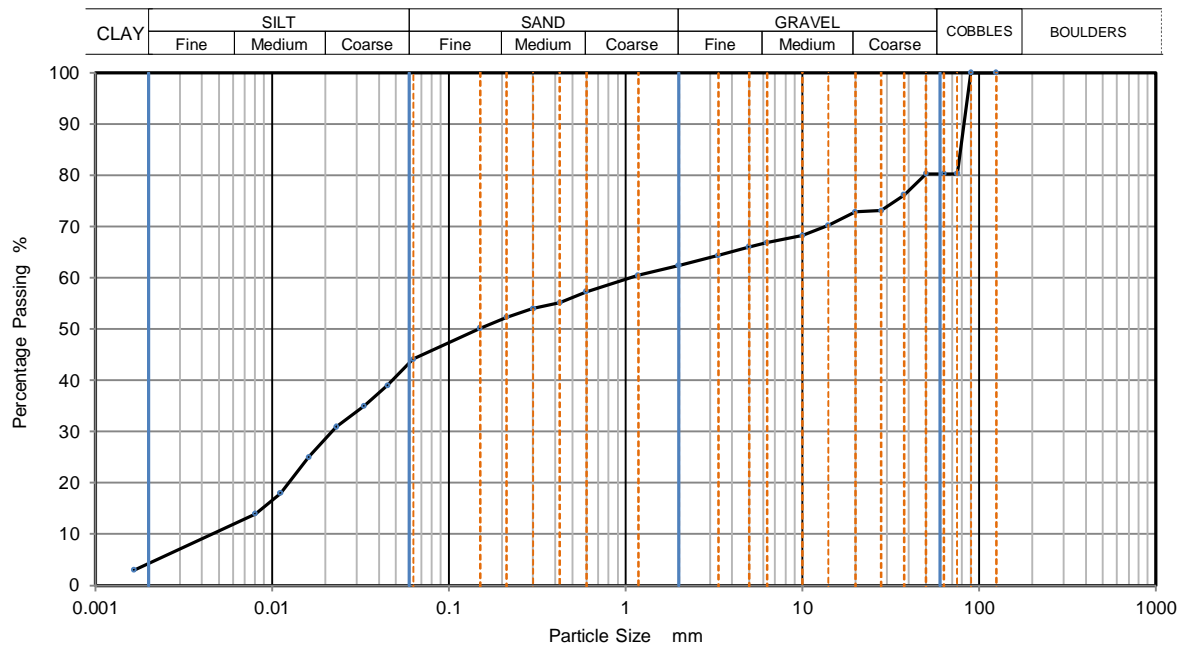
Depth, m **0.60**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1101645**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0451	39
90	100	0.0332	35
75	80	0.0232	31
63	80	0.0161	25
50	80	0.0112	18
37.5	76	0.0080	14
28	73	0.0017	3
20	73		
14	70		
10	68		
6.3	67		
5	66		
3.35	64		
2	62		
1.18	61		
0.6	57	Particle density (assumed) 2.67 Mg/m ³	
0.425	55		
0.3	54		
0.212	52		
0.15	50		
0.063	44		

Dry Mass of sample, g. 4776

Sample Proportions	% dry mass
Very coarse	20
Gravel	18
Sand	18
Silt	40
Clay	4

Grading Analysis	
D100	mm
D60	mm 1.07
D30	mm 0.0222
D10	mm 0.0046
Uniformity Coefficient	230
Curvature Coefficient	0.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH07**

Site Name **New Deer 2**

Sample No. **3**

Soil Description **Brown silty gravelly SAND**

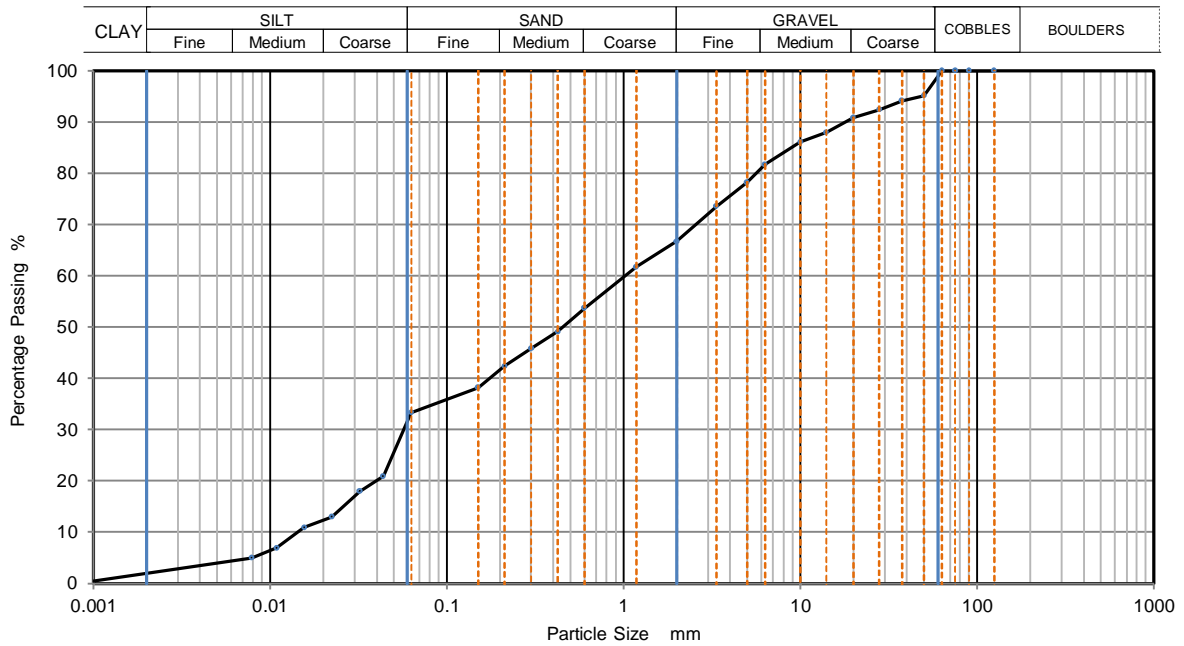
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Wa1039704**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0437	21
90	100	0.0321	18
75	100	0.0223	13
63	100	0.0156	11
50	95	0.0109	7
37.5	94	0.0079	5
28	92	0.0008	0
20	91		
14	88		
10	86		
6.3	82		
5	78		
3.35	74		
2	67		
1.18	62		
0.6	54	Particle density (assumed) 2.67 Mg/m ³	
0.425	49		
0.3	46		
0.212	42		
0.15	38		
0.063	33		

Dry Mass of sample, g. 9383

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	33
Silt	31
Clay	2

Grading Analysis	
D100	mm
D60	mm 1.02
D30	mm 0.0572
D10	mm 0.0138
Uniformity Coefficient	74
Curvature Coefficient	0.23

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH10**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown clayey sandy GRAVEL with cobble**

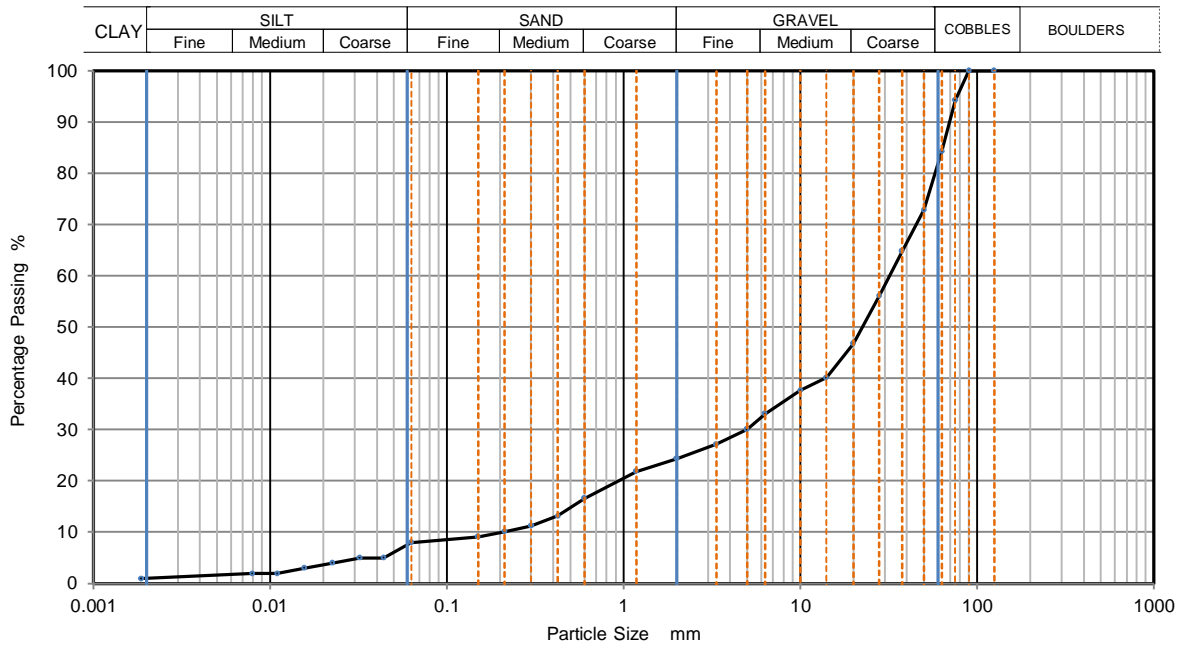
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1099935**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	5
90	100	0.0322	5
75	94	0.0225	4
63	84	0.0156	3
50	73	0.0110	2
37.5	65	0.0079	2
28	56	0.0019	1
20	47		
14	40		
10	38		
6.3	33		
5	30		
3.35	27		
2	24		
1.18	22		
0.6	17	Particle density (assumed) 2.67 Mg/m ³	
0.425	13		
0.3	11		
0.212	10		
0.15	9		
0.063	8		

Dry Mass of sample, g. 17147

Sample Proportions	% dry mass
Very coarse	16
Gravel	60
Sand	16
Silt	7
Clay	1

Grading Analysis	
D100	mm
D60	mm 31.9
D30	mm 4.93
D10	mm 0.201
Uniformity Coefficient	160
Curvature Coefficient	3.8

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH12**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown clayey SAND + GRAVEL**

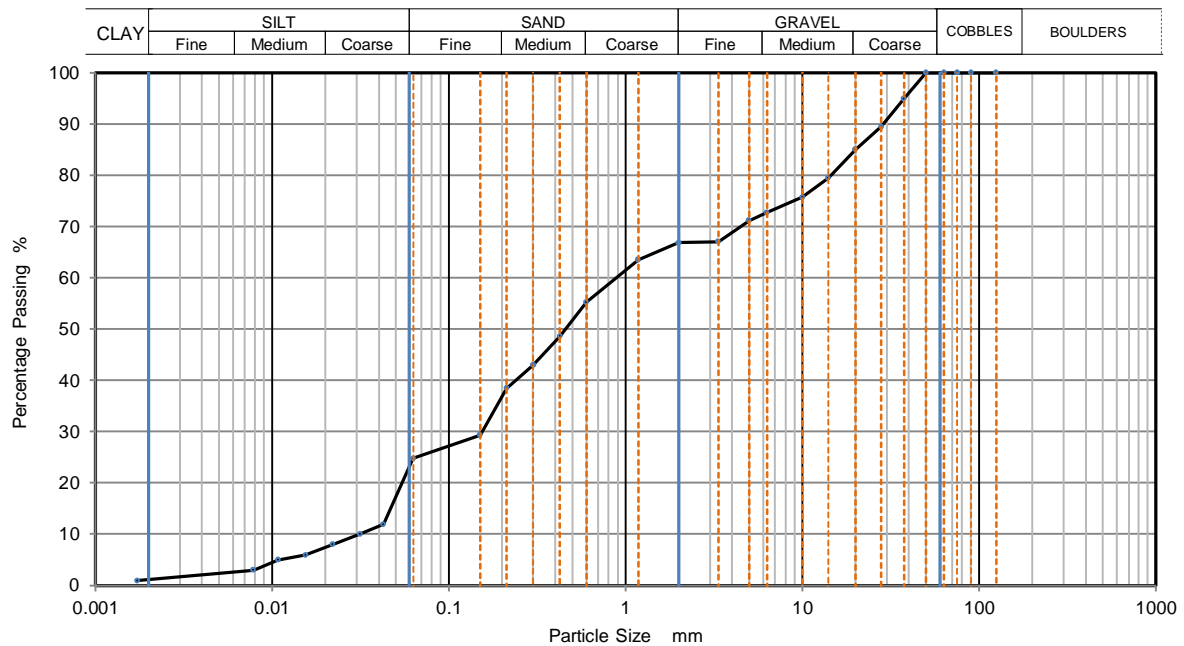
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1096691**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0428	12
90	100	0.0316	10
75	100	0.0220	8
63	100	0.0154	6
50	100	0.0108	5
37.5	95	0.0078	3
28	90	0.0017	1
20	85		
14	80		
10	76		
6.3	73		
5	71		
3.35	67		
2	67		
1.18	64		
0.6	55	Particle density (assumed) 2.67 Mg/m ³	
0.425	49		
0.3	43		
0.212	39		
0.15	29		
0.063	25		

Dry Mass of sample, g. 5599

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	42
Silt	24
Clay	1

Grading Analysis	
D100	mm
D60	mm 0.885
D30	mm 0.154
D10	mm 0.0315
Uniformity Coefficient	28
Curvature Coefficient	0.85

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH13**

Site Name **New Deer 2**

Sample No. **K1101634**

Soil Description **Brown organic sandy gravelly CLAY**

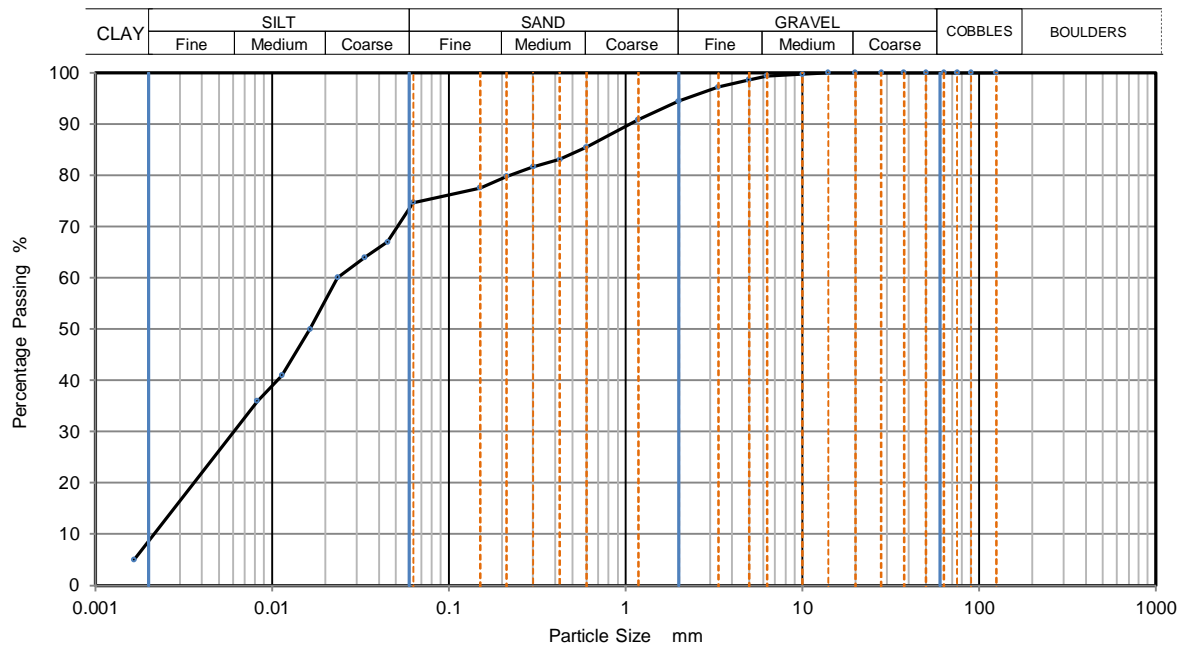
Depth, m **0.30**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1101634**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0451	67
90	100	0.0334	64
75	100	0.0234	60
63	100	0.0163	50
50	100	0.0114	41
37.5	100	0.0082	36
28	100	0.0017	5
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	97		
2	95		
1.18	91		
0.6	86	Particle density (assumed) 2.67 Mg/m ³	
0.425	83		
0.3	82		
0.212	80		
0.15	78		
0.063	75		

Dry Mass of sample, g. 2720

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	20
Silt	66
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.0241
D30	mm	0.00609
D10	mm	0.00217
Uniformity Coefficient		11
Curvature Coefficient		0.71

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH15**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown clayey sandy GRAVEL**

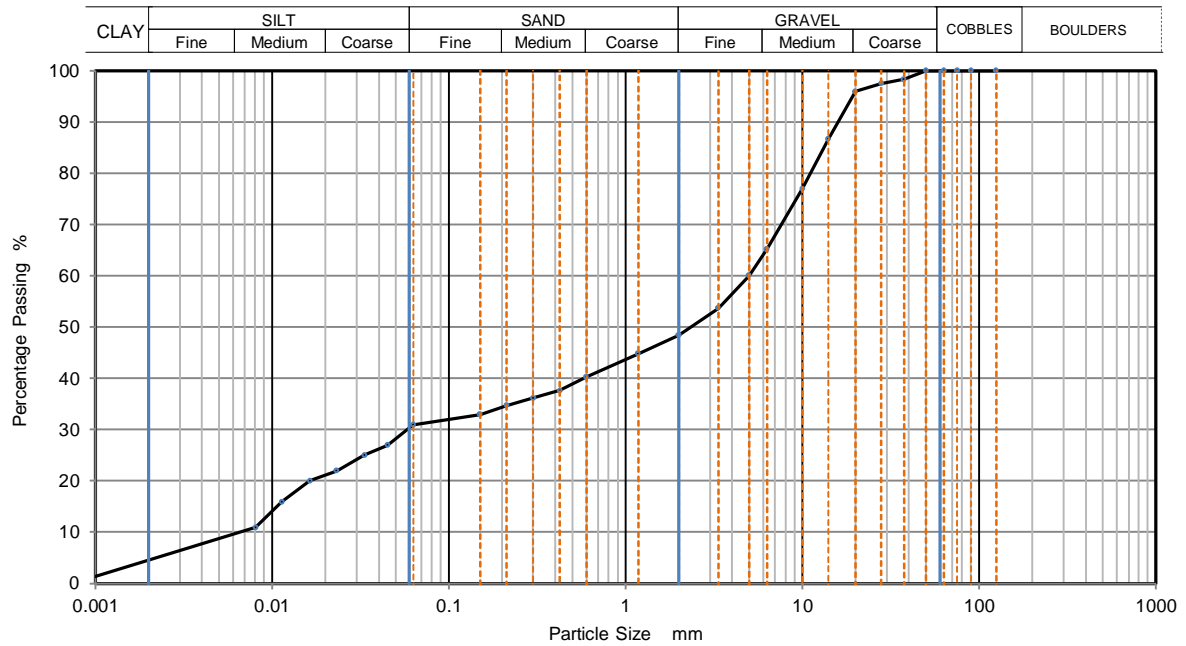
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Ki099942**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0451	27
90	100	0.0333	25
75	100	0.0233	22
63	100	0.0163	20
50	100	0.0114	16
37.5	98	0.0081	11
28	98	0.0009	1
20	96		
14	87		
10	77		
6.3	65		
5	60		
3.35	54		
2	48		
1.18	45		
0.6	40	Particle density (assumed) 2.67 Mg/m ³	
0.425	38		
0.3	36		
0.212	35		
0.15	33		
0.063	31		

Dry Mass of sample, g. 5213

Sample Proportions	% dry mass
Very coarse	0
Gravel	52
Sand	17
Silt	27
Clay	4

Grading Analysis		
D100	mm	
D60	mm	5.01
D30	mm	0.0584
D10	mm	0.0072
Uniformity Coefficient		700
Curvature Coefficient		0.095

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH16**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown silty sandy GRAVEL**

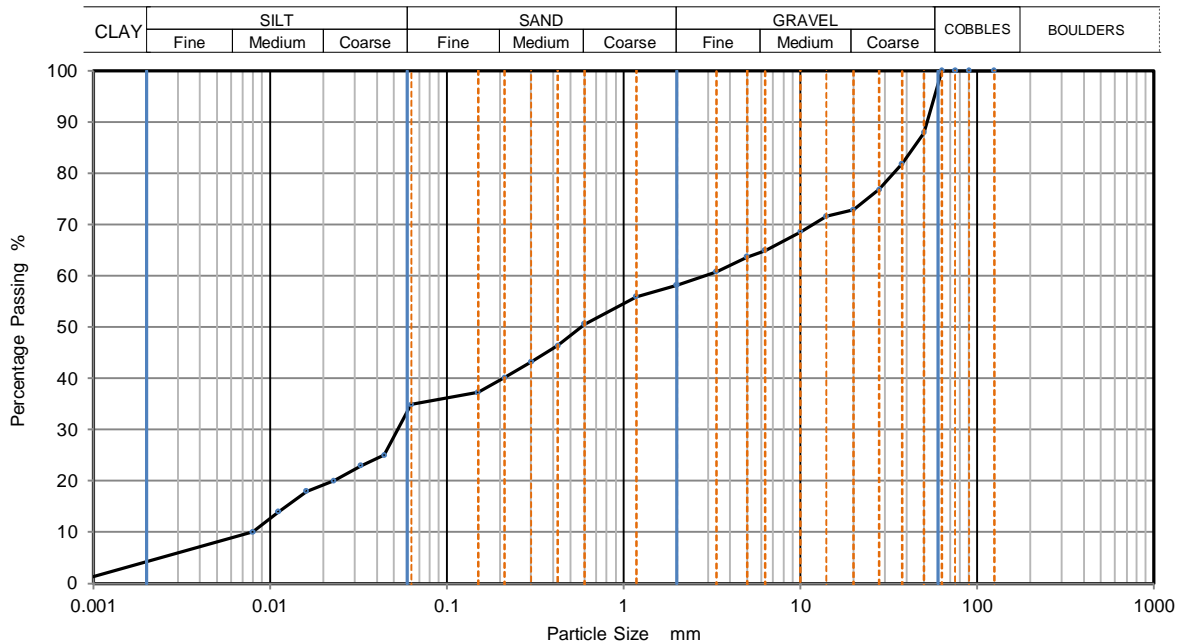
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1096136**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	25
90	100	0.0326	23
75	100	0.0229	20
63	100	0.0161	18
50	88	0.0112	14
37.5	82	0.0080	10
28	77	0.0009	1
20	73		
14	72		
10	69		
6.3	65		
5	64		
3.35	61		
2	58		
1.18	56		
0.6	51	Particle density (assumed) 2.67 Mg/m ³	
0.425	46		
0.3	43		
0.212	40		
0.15	37		
0.063	35		

Dry Mass of sample, g. 4175

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	23
Silt	31
Clay	4

Grading Analysis	
D100	mm
D60	mm 2.87
D30	mm 0.0531
D10	mm 0.00821
Uniformity Coefficient	350
Curvature Coefficient	0.12

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH17**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy clayey GRAVEL**

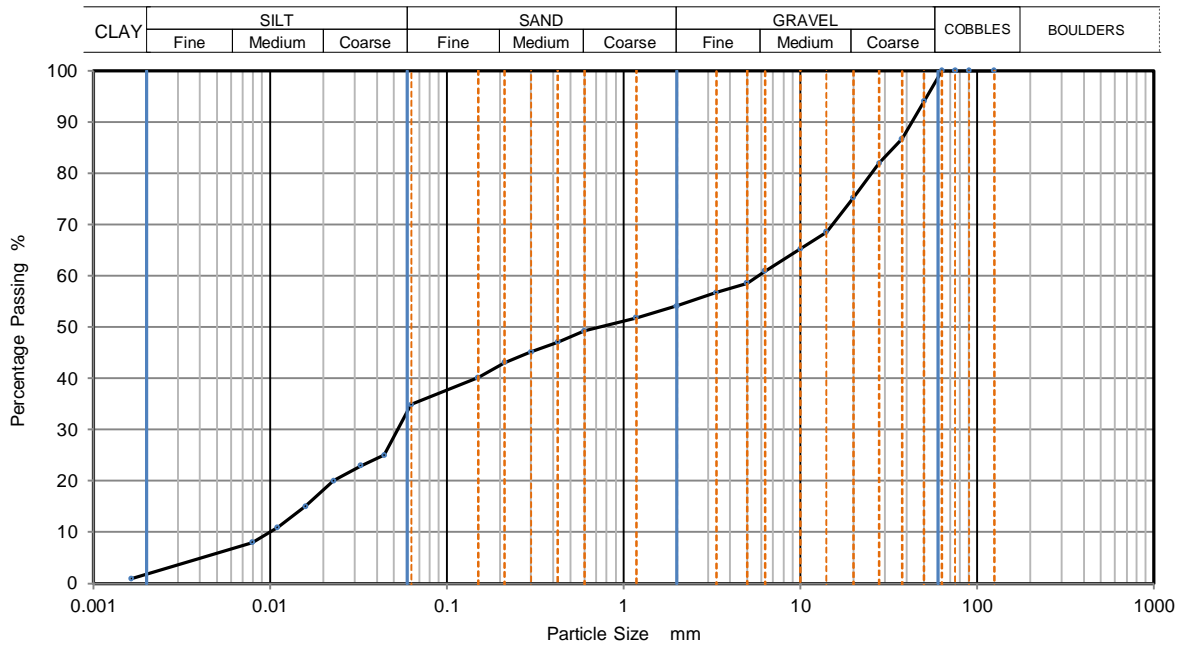
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1101667**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	25
90	100	0.0326	23
75	100	0.0228	20
63	100	0.0159	15
50	94	0.0110	11
37.5	87	0.0079	8
28	82	0.0016	1
20	75		
14	69		
10	65		
6.3	61		
5	59		
3.35	57		
2	54		
1.18	52		
0.6	49	Particle density (assumed) 2.67 Mg/m ³	
0.425	47		
0.3	45		
0.212	43		
0.15	40		
0.063	35		

Dry Mass of sample, g. 5974

Sample Proportions	% dry mass
Very coarse	0
Gravel	46
Sand	19
Silt	33
Clay	2

Grading Analysis	
D100	mm
D60	mm 5.75
D30	mm 0.0525
D10	mm 0.00993
Uniformity Coefficient	580
Curvature Coefficient	0.048

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH18**

Site Name **New Deer 2**

Sample No. **3**

Soil Description **Brown gravelly sandy SILT**

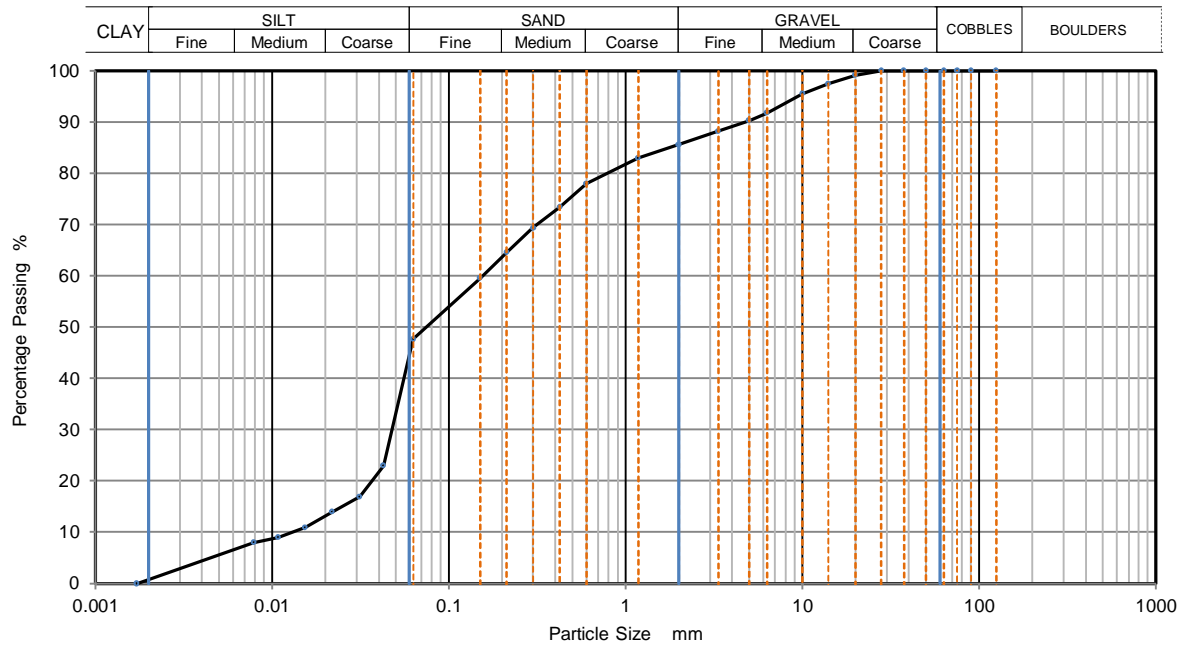
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102568**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0428	23
90	100	0.0313	17
75	100	0.0219	14
63	100	0.0154	11
50	100	0.0108	9
37.5	100	0.0079	8
28	100	0.0017	0
20	99		
14	97		
10	96		
6.3	92		
5	90		
3.35	88		
2	86		
1.18	83		
0.6	78		
0.425	73	Particle density (assumed)	
0.3	69	2.67	Mg/m3
0.212	65		
0.15	60		
0.063	48		

Dry Mass of sample, g. 4869

Sample Proportions	% dry mass
Very coarse	0
Gravel	14
Sand	38
Silt	47
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.154
D30	mm	0.048
D10	mm	0.0135
Uniformity Coefficient		11
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH19**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey sandy GRAVEL**

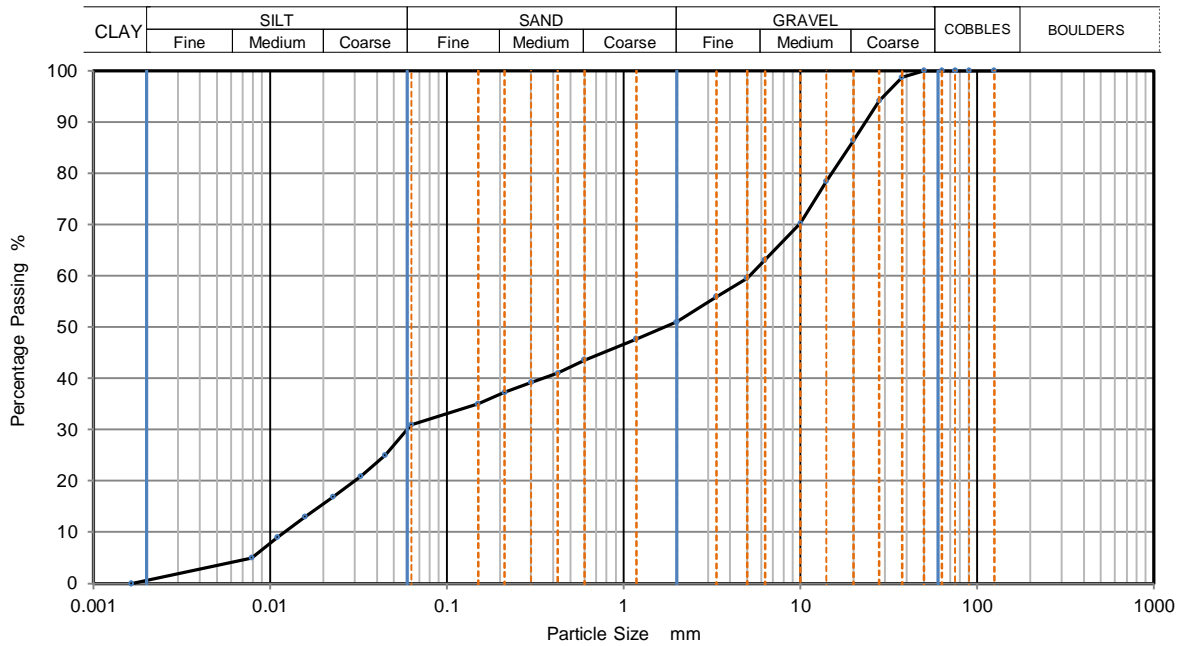
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K102573**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	25
90	100	0.0326	21
75	100	0.0227	17
63	100	0.0158	13
50	100	0.0110	9
37.5	99	0.0079	5
28	94	0.0016	0
20	86		
14	78		
10	70		
6.3	63		
5	60		
3.35	56		
2	51		
1.18	48		
0.6	44	Particle density (assumed) 2.67 Mg/m ³	
0.425	41		
0.3	39		
0.212	37		
0.15	35		
0.063	31		

Dry Mass of sample, g. 4573

Sample Proportions	% dry mass
Very coarse	0
Gravel	49
Sand	20
Silt	30
Clay	1

Grading Analysis	
D100	mm
D60	mm 5.13
D30	mm 0.0599
D10	mm 0.0122
Uniformity Coefficient	420
Curvature Coefficient	0.057

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH19**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown clayey gravelly SAND**

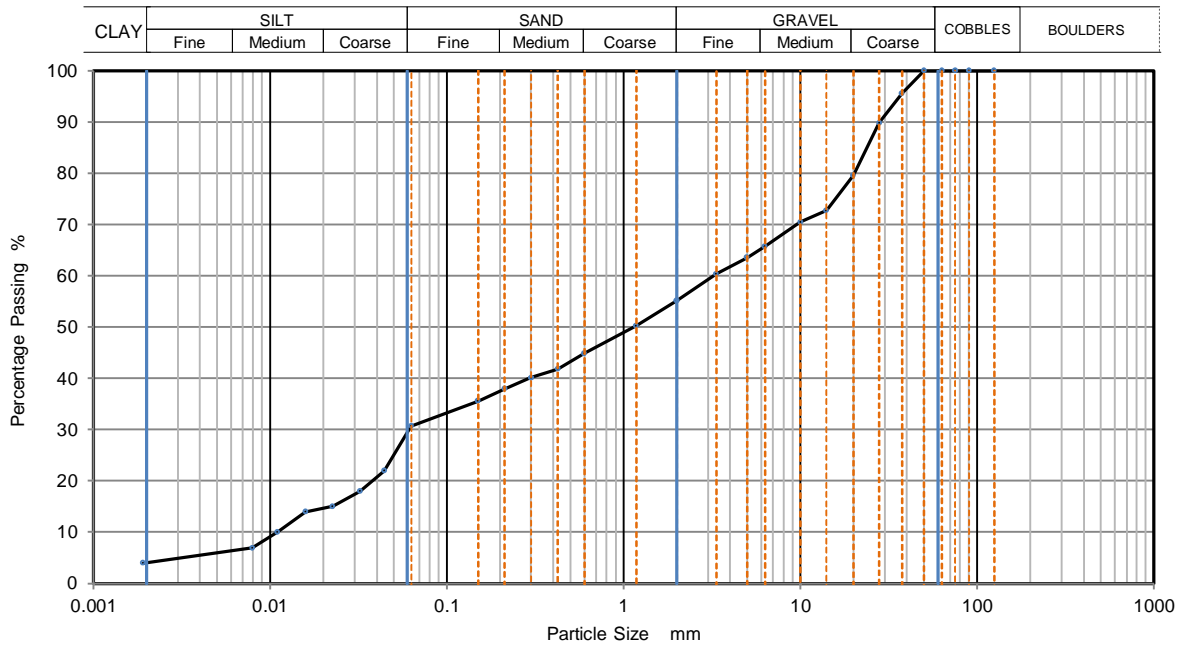
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K102575**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	22
90	100	0.0324	18
75	100	0.0226	15
63	100	0.0159	14
50	100	0.0110	10
37.5	96	0.0079	7
28	90	0.0019	4
20	80		
14	73		
10	71		
6.3	66		
5	64		
3.35	60		
2	55		
1.18	50		
0.6	45	Particle density (assumed) 2.67 Mg/m ³	
0.425	42		
0.3	40		
0.212	38		
0.15	36		
0.063	31		

Dry Mass of sample, g. 5226

Sample Proportions	% dry mass
Very coarse	0
Gravel	45
Sand	24
Silt	27
Clay	4

Grading Analysis	
D100	mm
D60	mm 3.22
D30	mm 0.0611
D10	mm 0.0113
Uniformity Coefficient	280
Curvature Coefficient	0.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH22**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown clayey gravelly SAND + cobble**

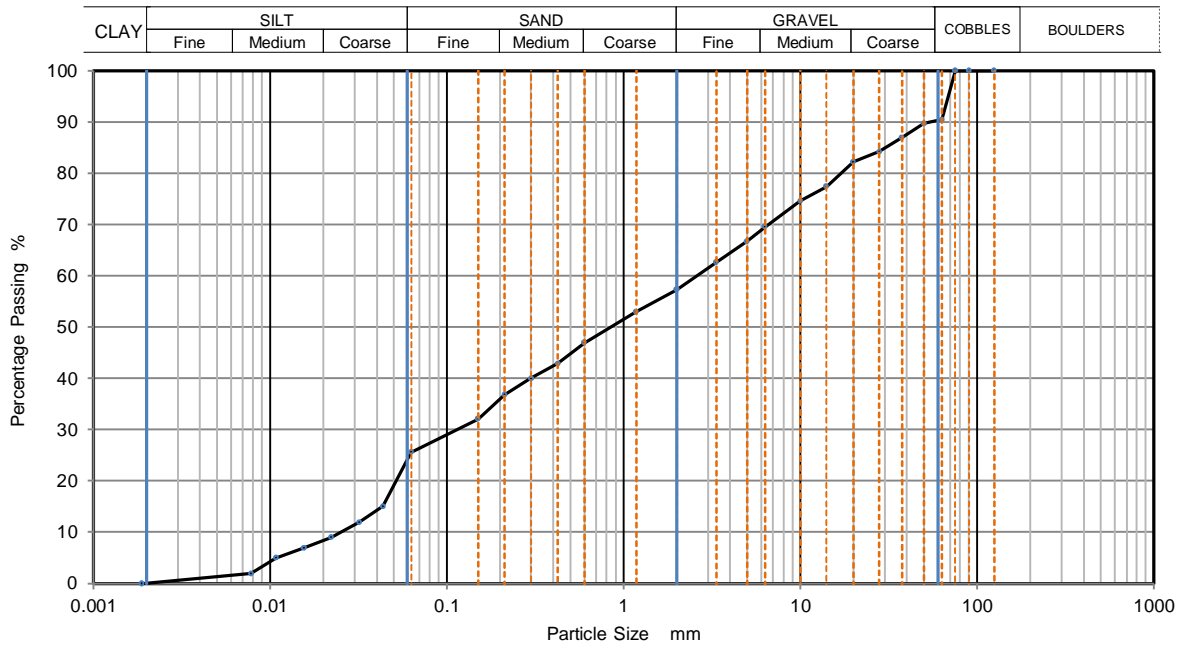
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1099882**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0435	15
90	100	0.0318	12
75	100	0.0221	9
63	91	0.0155	7
50	90	0.0108	5
37.5	87	0.0078	2
28	84	0.0019	0
20	82		
14	77		
10	75		
6.3	70		
5	67		
3.35	63		
2	57		
1.18	53		
0.6	47		
0.425	43	Particle density (assumed) 2.67 Mg/m ³	
0.3	40		
0.212	37		
0.15	32		
0.063	26		

Dry Mass of sample, g. 17229

Sample Proportions	% dry mass
Very coarse	10
Gravel	33
Sand	32
Silt	26
Clay	0

Grading Analysis		
D100	mm	
D60	mm	2.6
D30	mm	0.114
D10	mm	0.0254
Uniformity Coefficient		100
Curvature Coefficient		0.2

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH24**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown silty gravelly SAND**

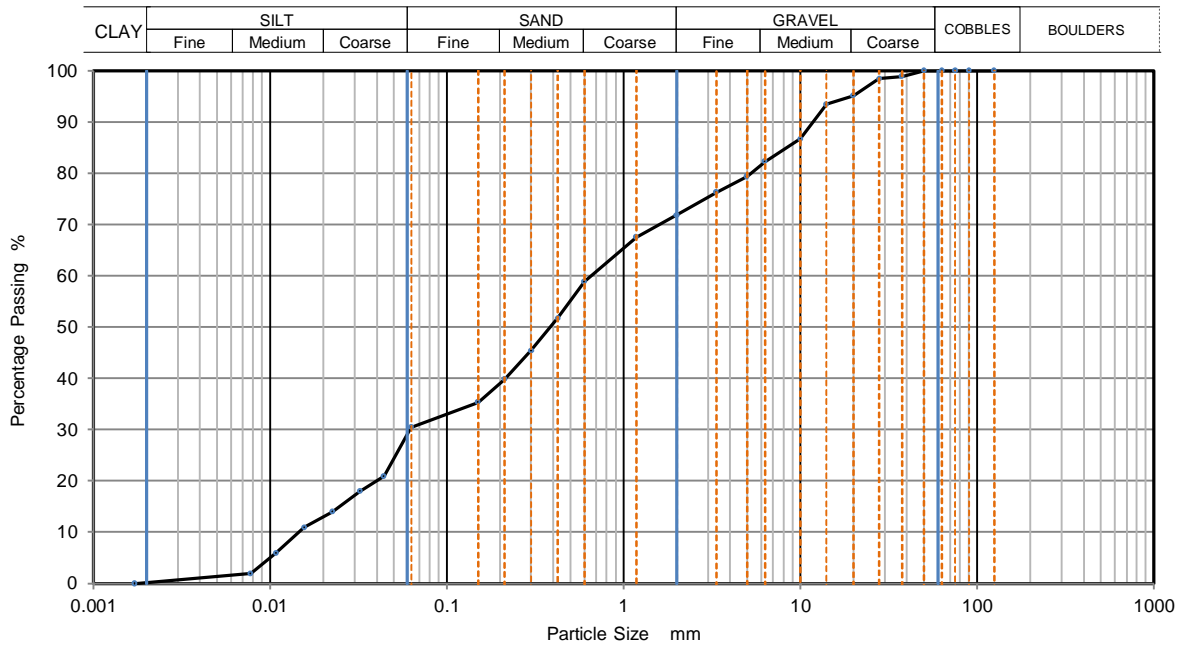
Depth, m **0.40**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1099913**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	21
90	100	0.0324	18
75	100	0.0225	14
63	100	0.0156	11
50	100	0.0108	6
37.5	99	0.0078	2
28	98	0.0017	0
20	95		
14	93		
10	87		
6.3	82		
5	79		
3.35	76		
2	72		
1.18	68		
0.6	59		
0.425	52	Particle density (assumed)	
0.3	45	2.67	Mg/m3
0.212	40		
0.15	35		
0.063	31		

Dry Mass of sample, g. 7306

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	41
Silt	30
Clay	0

Grading Analysis		
D100	mm	
D60	mm	0.653
D30	mm	0.0618
D10	mm	0.015
Uniformity Coefficient		44
Curvature Coefficient		0.39

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH24**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown silty SAND**

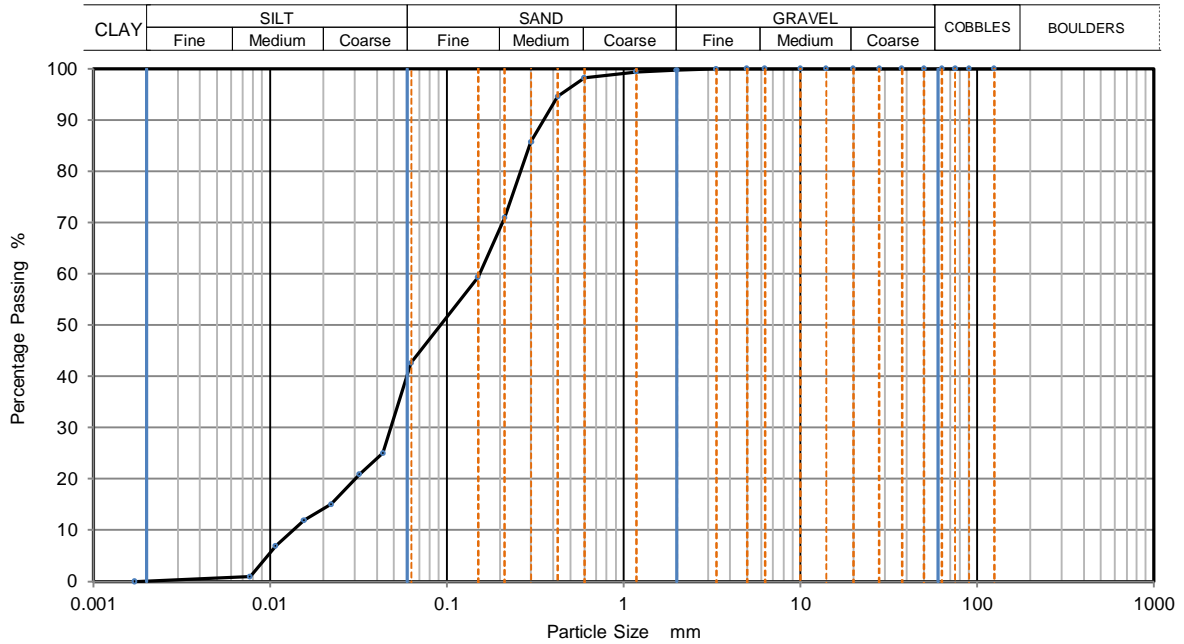
Depth, m **6.60**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1099922**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0435	25
90	100	0.0320	21
75	100	0.0221	15
63	100	0.0155	12
50	100	0.0108	7
37.5	100	0.0077	1
28	100	0.0017	0
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98	Particle density (assumed) 2.67 Mg/m ³	
0.425	95		
0.3	86		
0.212	71		
0.15	59		
0.063	43		

Dry Mass of sample, g. 4355

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	57
Silt	42
Clay	0

Grading Analysis		
D100	mm	
D60	mm	0.153
D30	mm	0.0483
D10	mm	0.0136
Uniformity Coefficient		11
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH25**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown sandy gravelly SILT**

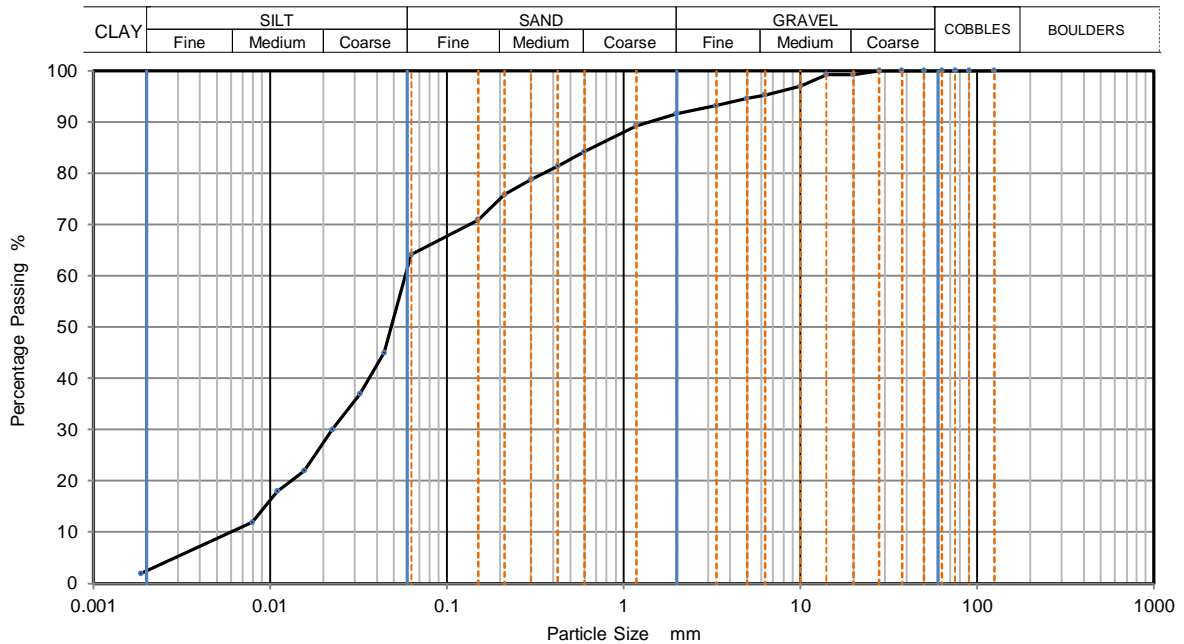
Depth, m **0.50**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093876**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	45
90	100	0.0324	37
75	100	0.0225	30
63	100	0.0156	22
50	100	0.0110	18
37.5	100	0.0079	12
28	100	0.0019	2
20	99		
14	99		
10	97		
6.3	95		
5	95		
3.35	93		
2	92		
1.18	89		
0.6	84	Particle density (assumed) 2.67 Mg/m ³	
0.425	81		
0.3	79		
0.212	76		
0.15	71		
0.063	64		

Dry Mass of sample, g. 4558

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	28
Silt	62
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.0584
D30	mm	0.023
D10	mm	0.00604
Uniformity Coefficient		9.7
Curvature Coefficient		1.5

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH25**

Site Name **New Deer 2**

Sample No. **3**

Soil Description **Brown gravelly sandy CLAY**

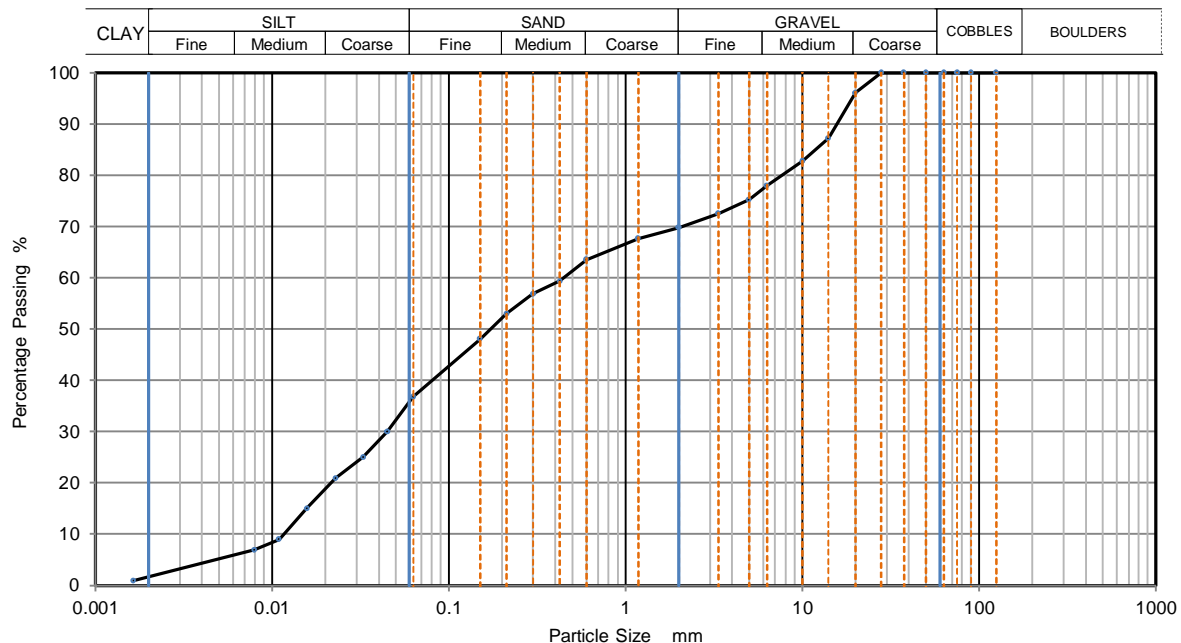
Depth, m **0.90**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093878**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0448	30
90	100	0.0328	25
75	100	0.0228	21
63	100	0.0158	15
50	100	0.0109	9
37.5	100	0.0079	7
28	100	0.0016	1
20	96		
14	87		
10	83		
6.3	78		
5	75		
3.35	73		
2	70		
1.18	68		
0.6	64	Particle density (assumed) 2.67 Mg/m ³	
0.425	59		
0.3	57		
0.212	53		
0.15	48		
0.063	37		

Dry Mass of sample, g. 4213

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	33
Silt	35
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.449
D30	mm	0.0453
D10	mm	0.0115
Uniformity Coefficient		39
Curvature Coefficient		0.4

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH25**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown clayey gravelly SAND**

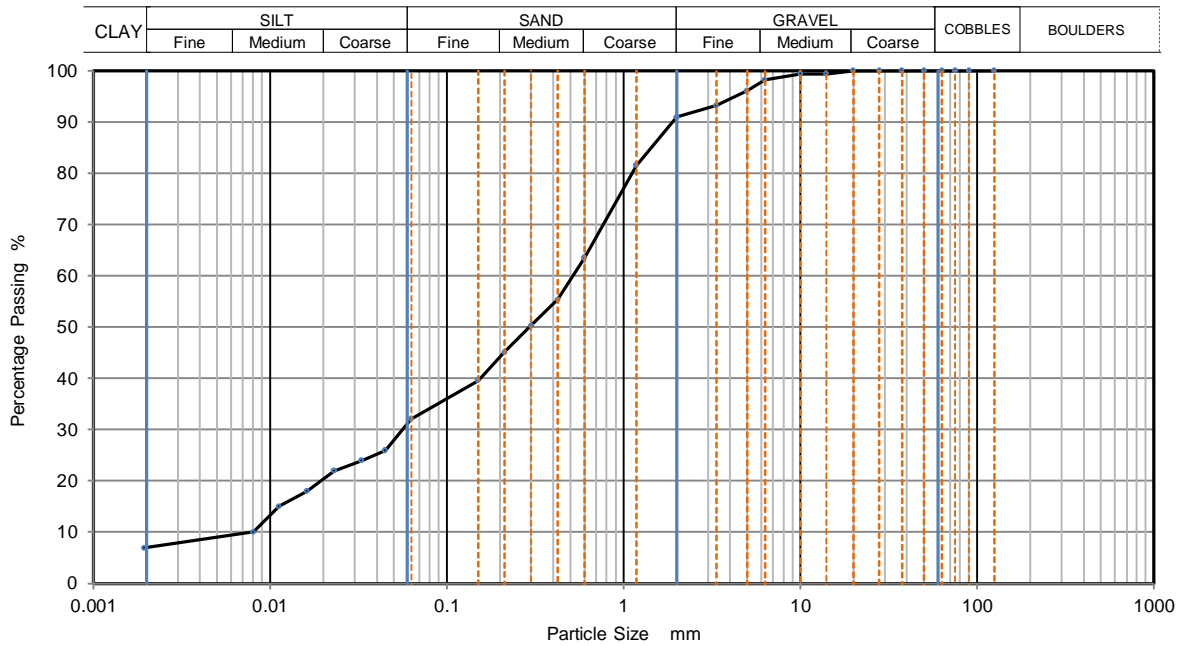
Depth, m **5.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093883**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	26
90	100	0.0329	24
75	100	0.0231	22
63	100	0.0161	18
50	100	0.0113	15
37.5	100	0.0080	10
28	100	0.0019	7
20	100		
14	99		
10	99		
6.3	98		
5	96		
3.35	93		
2	91		
1.18	82		
0.6	64	Particle density (assumed)	
0.425	55	2.67	Mg/m ³
0.3	50		
0.212	45		
0.15	40		
0.063	32		

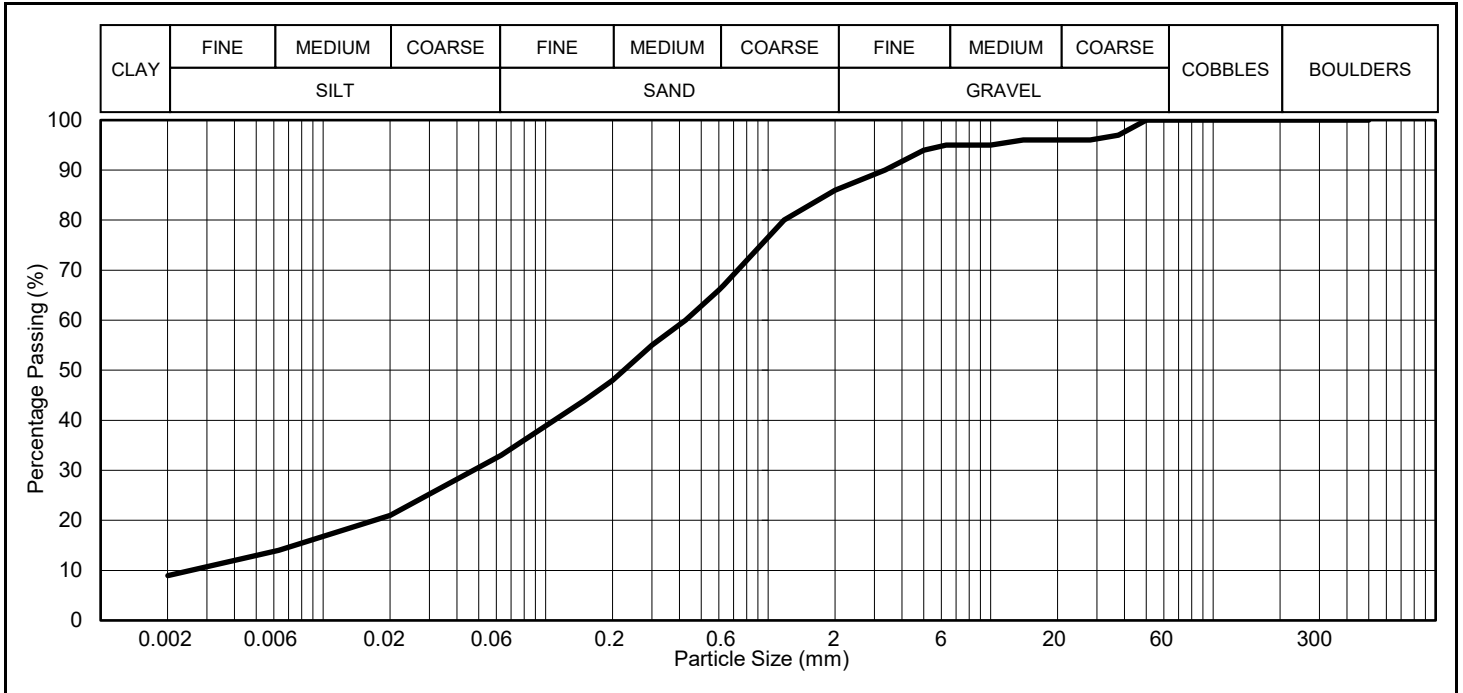
Dry Mass of sample, g. 6073

Sample Proportions	% dry mass
Very coarse	0
Gravel	9
Sand	59
Silt	25
Clay	7

Grading Analysis	
D100	mm
D60	mm 0.517
D30	mm 0.0563
D10	mm 0.00712
Uniformity Coefficient	73
Curvature Coefficient	0.86

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Borehole	BH25
Sample	K1093884
Depth (m)	7.00-7.45



SIEVING				SEDIMENTATION (Assumed ps of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification		Particle Size (mm)	Percentage Passing (%)
		Not Applicable			
		Lower %	Upper %		
500.0	100	-	-	0.0200	21
300.0	100	-	-	0.0063	14
125.0	100	-	-	0.0020	9
90.0	100	-	-		
75.0	100	-	-		
63.0	100	-	-		
50.0	100	-	-		
37.5	97	-	-		
28.0	96	-	-		
20.0	96	-	-		
14.0	96	-	-		
10.0	95	-	-		
6.3	95	-	-		
5.0	94	-	-		
3.350	90	-	-		
2.000	86	-	-		
1.180	80	-	-		
0.630	67	-	-		
0.600	66	-	-		
0.425	60	-	-		
0.300	55	-	-		
0.200	48	-	-		
0.150	44	-	-		
0.063	33	-	-		

GRADING CLASSIFICATION (SHW TABLE 6/2)					
-					
Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.					

PERCENTAGE SOIL TYPES					
CLAY	SILT †	SAND	GRAVEL	COBBLES	
9	24	53	14	0	

UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)			
D10	D60	Specification	
-	-		
UNIFORMITY COEFFICIENT			

Remarks

† Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH26**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown silty sandy GRAVEL**

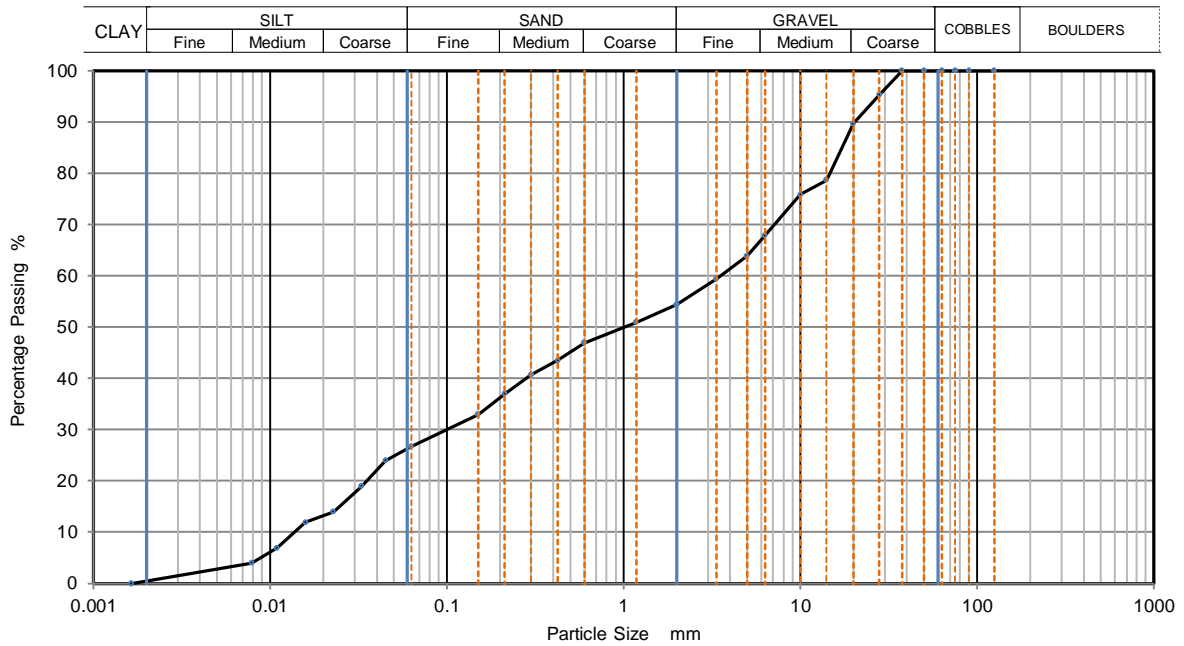
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100735**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0451	24
90	100	0.0329	19
75	100	0.0227	14
63	100	0.0159	12
50	100	0.0109	7
37.5	100	0.0079	4
28	95	0.0016	0
20	90		
14	79		
10	76		
6.3	68		
5	64		
3.35	59		
2	54		
1.18	51		
0.6	47		
0.425	44	Particle density (assumed)	
0.3	41	2.67	Mg/m3
0.212	37		
0.15	33		
0.063	27		

Dry Mass of sample, g. 4876

Sample Proportions	% dry mass
Very coarse	0
Gravel	46
Sand	28
Silt	26
Clay	1

Grading Analysis		
D100	mm	
D60	mm	3.53
D30	mm	0.0998
D10	mm	0.0139
Uniformity Coefficient		260
Curvature Coefficient		0.2

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH26**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown gravelly clayey SAND**

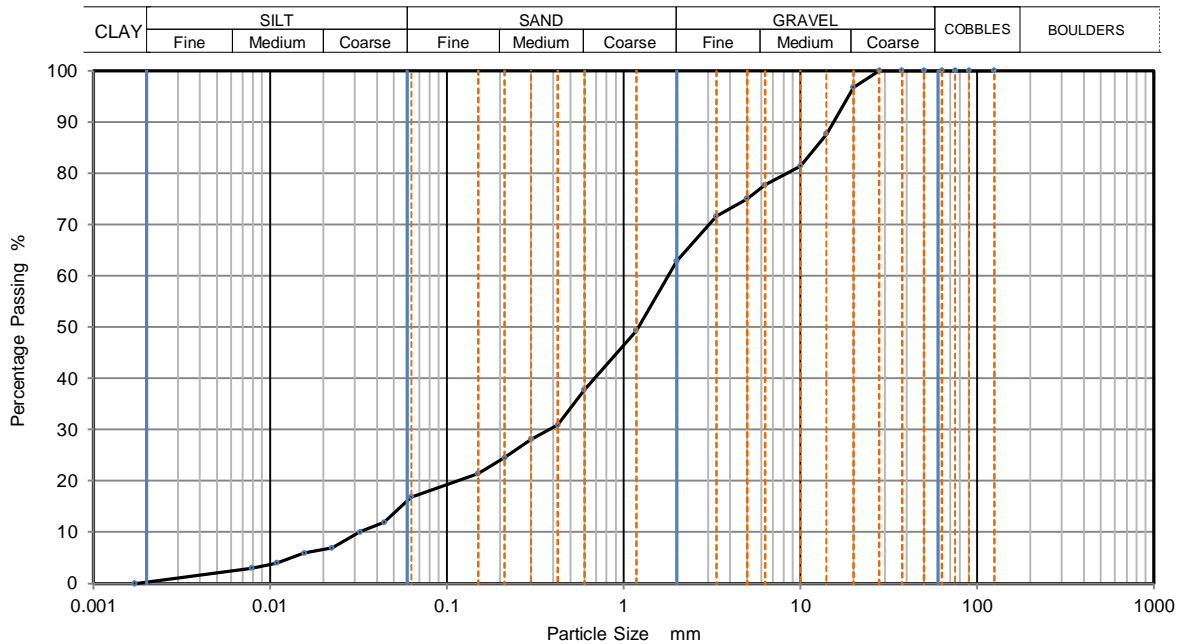
Depth, m **4.70**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100740**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	12
90	100	0.0324	10
75	100	0.0224	7
63	100	0.0156	6
50	100	0.0109	4
37.5	100	0.0079	3
28	100	0.0017	0
20	97		
14	88		
10	81		
6.3	78		
5	75		
3.35	72		
2	63		
1.18	49		
0.6	38		
0.425	31	Particle density (assumed)	
0.3	28	2.67	Mg/m ³
0.212	25		
0.15	21		
0.063	17		

Dry Mass of sample, g. 764

Sample Proportions	% dry mass
Very coarse	0
Gravel	37
Sand	46
Silt	17
Clay	0

Grading Analysis	
D100	mm
D60	mm 1.78
D30	mm 0.377
D10	mm 0.0318
Uniformity Coefficient	56
Curvature Coefficient	2.5

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH28**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown clayey sandy GRAVEL**

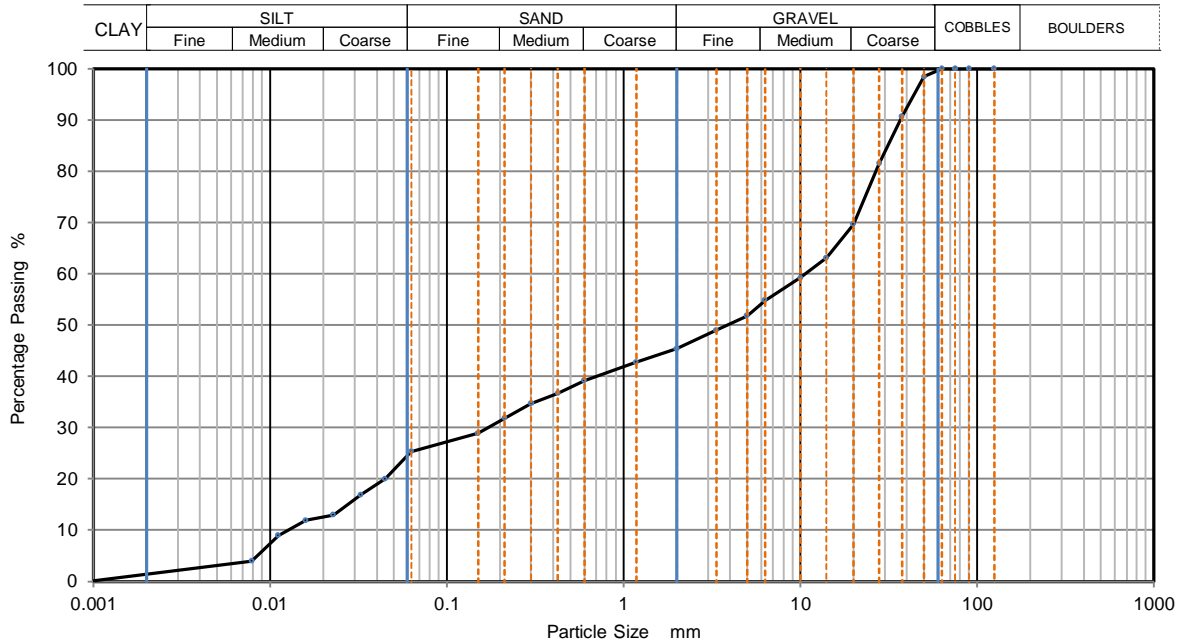
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K110693**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	20
90	100	0.0326	17
75	100	0.0227	13
63	100	0.0159	12
50	98	0.0111	9
37.5	91	0.0079	4
28	82	0.0009	0
20	70		
14	63		
10	59		
6.3	55		
5	52		
3.35	49		
2	45		
1.18	43		
0.6	39	Particle density (assumed) 2.67 Mg/m ³	
0.425	37		
0.3	35		
0.212	32		
0.15	29		
0.063	25		

Dry Mass of sample, g. 6160

Sample Proportions	% dry mass
Very coarse	0
Gravel	55
Sand	20
Silt	24
Clay	1

Grading Analysis	
D100	mm
D60	mm 10.7
D30	mm 0.17
D10	mm 0.0128
Uniformity Coefficient	840
Curvature Coefficient	0.21

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH28**

Site Name **New Deer 2**

Sample No. **3**

Soil Description **Brown clayey sandy GRAVEL**

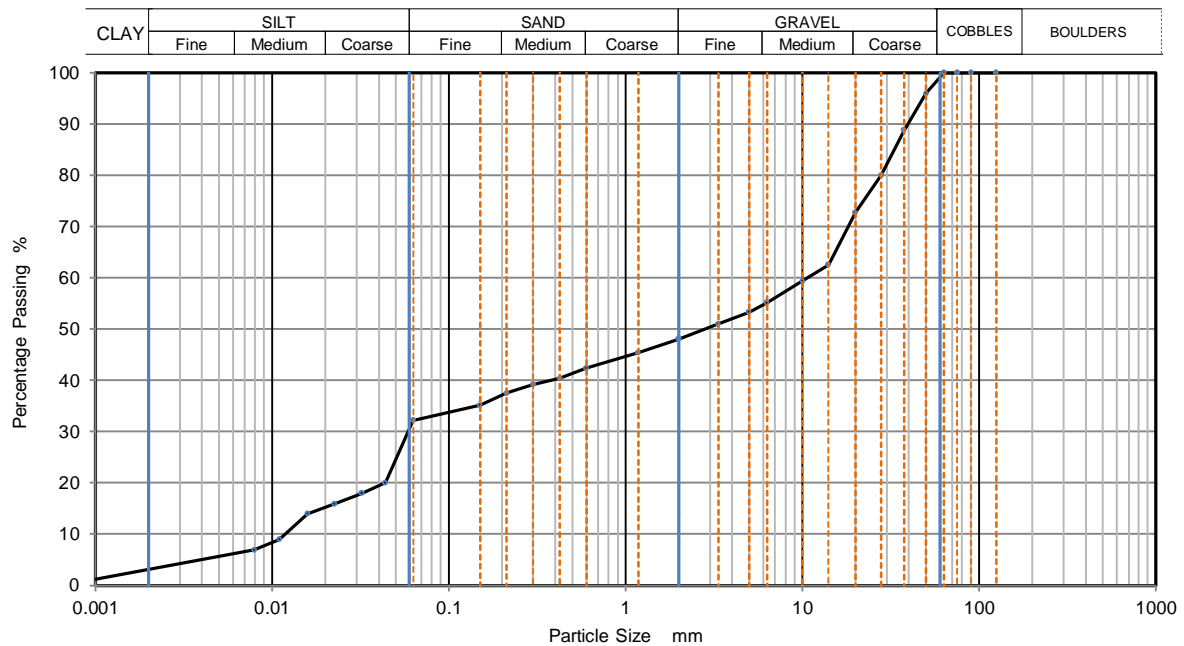
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K110695**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0437	20
90	100	0.0322	18
75	100	0.0226	16
63	100	0.0159	14
50	96	0.0110	9
37.5	89	0.0079	7
28	80	0.0009	1
20	73		
14	63		
10	59		
6.3	55		
5	53		
3.35	51		
2	48		
1.18	45		
0.6	42	Particle density (assumed) 2.67 Mg/m ³	
0.425	40		
0.3	39		
0.212	38		
0.15	35		
0.063	32		

Dry Mass of sample, g. 11744

Sample Proportions	% dry mass
Very coarse	0
Gravel	52
Sand	16
Silt	29
Clay	3

Grading Analysis	
D100	mm
D60	mm 10.8
D30	mm 0.059
D10	mm 0.0117
Uniformity Coefficient	920
Curvature Coefficient	0.028

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH28**

Site Name **New Deer 2**

Sample No. **7**

Soil Description **Brown gravelly sandy CLAY**

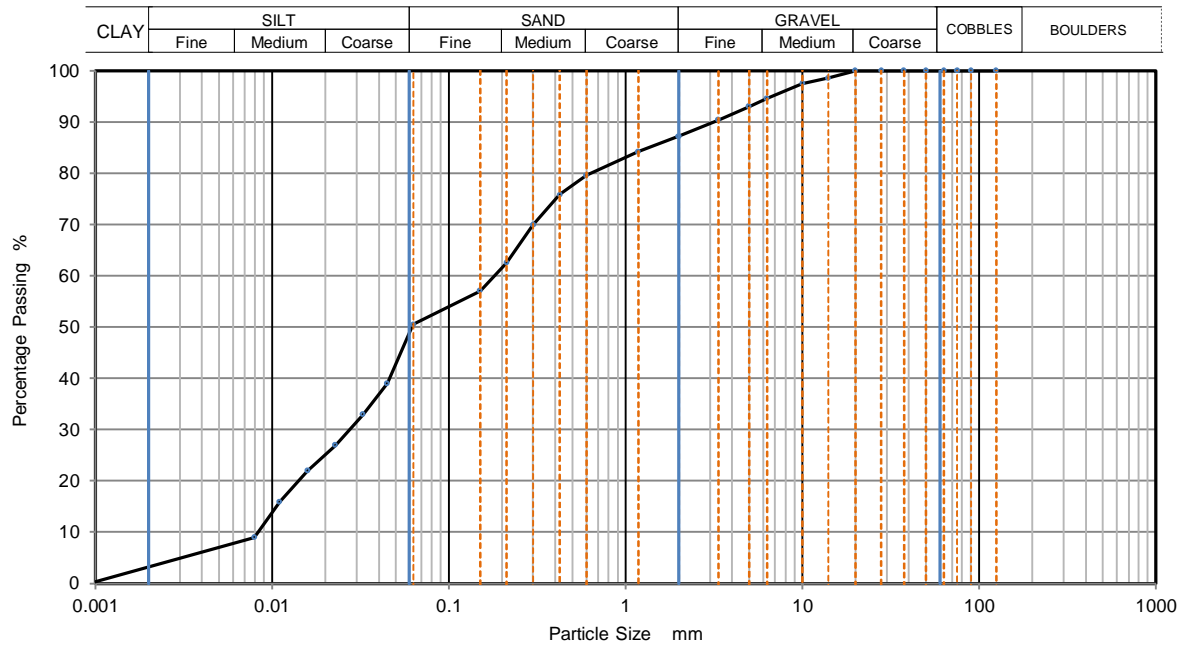
Depth, m **3.20**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K110699**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	39
90	100	0.0326	33
75	100	0.0227	27
63	100	0.0159	22
50	100	0.0110	16
37.5	100	0.0079	9
28	100	0.0009	0
20	100		
14	99		
10	98		
6.3	95		
5	93		
3.35	90		
2	87		
1.18	84		
0.6	80	Particle density (assumed)	
0.425	76	2.67	Mg/m ³
0.3	70		
0.212	63		
0.15	57		
0.063	51		

Dry Mass of sample, g. 3550

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	37
Silt	47
Clay	3

Grading Analysis	
D100	mm
D60	mm 0.18
D30	mm 0.0275
D10	mm 0.00815
Uniformity Coefficient	22
Curvature Coefficient	0.51

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH28**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy clayey GRAVEL**

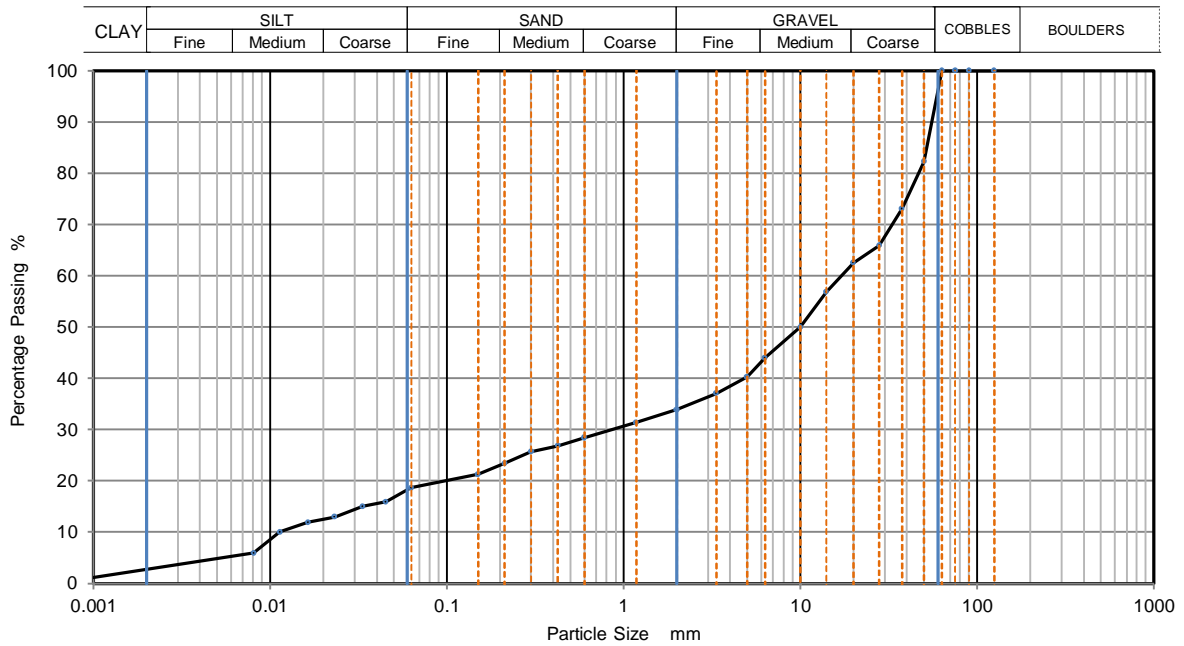
Depth, m **4.20**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K110701**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0453	16
90	100	0.0334	15
75	100	0.0233	13
63	100	0.0163	12
50	82	0.0114	10
37.5	73	0.0081	6
28	66	0.0009	1
20	63		
14	57		
10	50		
6.3	44		
5	40		
3.35	37		
2	34		
1.18	31		
0.6	29	Particle density (assumed) 2.67 Mg/m ³	
0.425	27		
0.3	26		
0.212	24		
0.15	21		
0.063	19		

Dry Mass of sample, g. 3074

Sample Proportions	% dry mass
Very coarse	0
Gravel	66
Sand	15
Silt	16
Clay	3

Grading Analysis	
D100	mm
D60	mm 17.1
D30	mm 0.855
D10	mm 0.0122
Uniformity Coefficient	1400
Curvature Coefficient	3.5

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH29**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown sandy gravelly SILT**

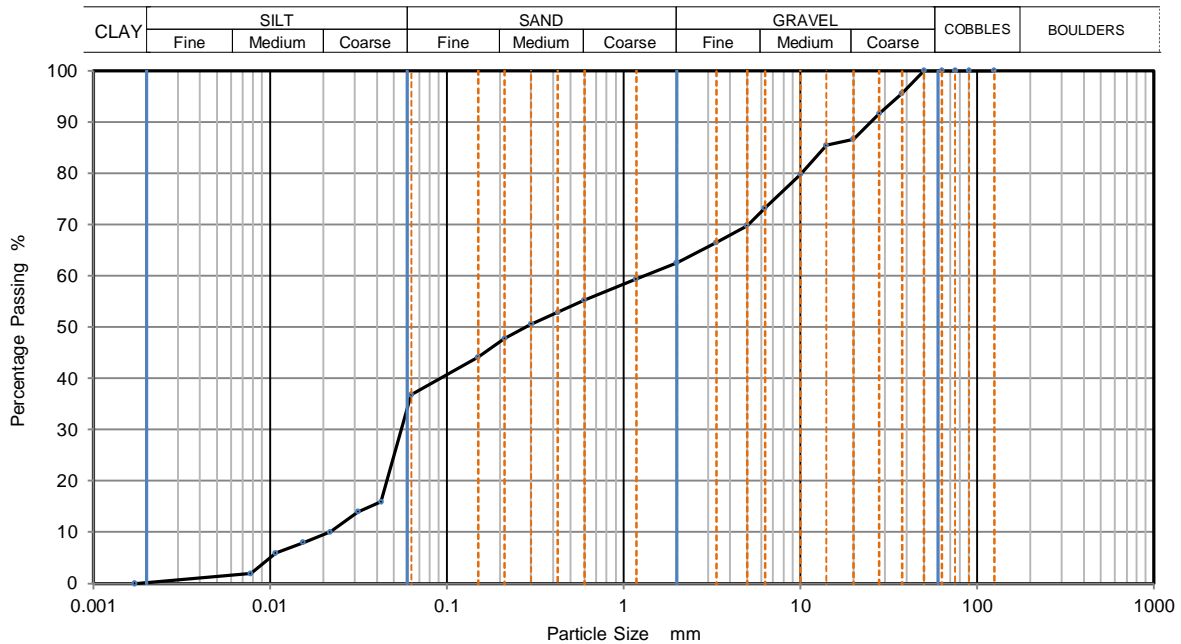
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100702**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0426	16
90	100	0.0314	14
75	100	0.0219	10
63	100	0.0154	8
50	100	0.0108	6
37.5	96	0.0078	2
28	92	0.0017	0
20	87		
14	86		
10	80		
6.3	73		
5	70		
3.35	67		
2	63		
1.18	59		
0.6	55	Particle density (assumed) 2.67 Mg/m ³	
0.425	53		
0.3	51		
0.212	48		
0.15	44		
0.063	37		

Dry Mass of sample, g. 6645

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	26
Silt	37
Clay	0

Grading Analysis	
D100	mm
D60	mm 1.31
D30	mm 0.0554
D10	mm 0.0209
Uniformity Coefficient	63
Curvature Coefficient	0.11

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH29**

Site Name **New Deer 2**

Sample No. **5**

Soil Description **Brown clayey sandy GRAVEL with cobble**

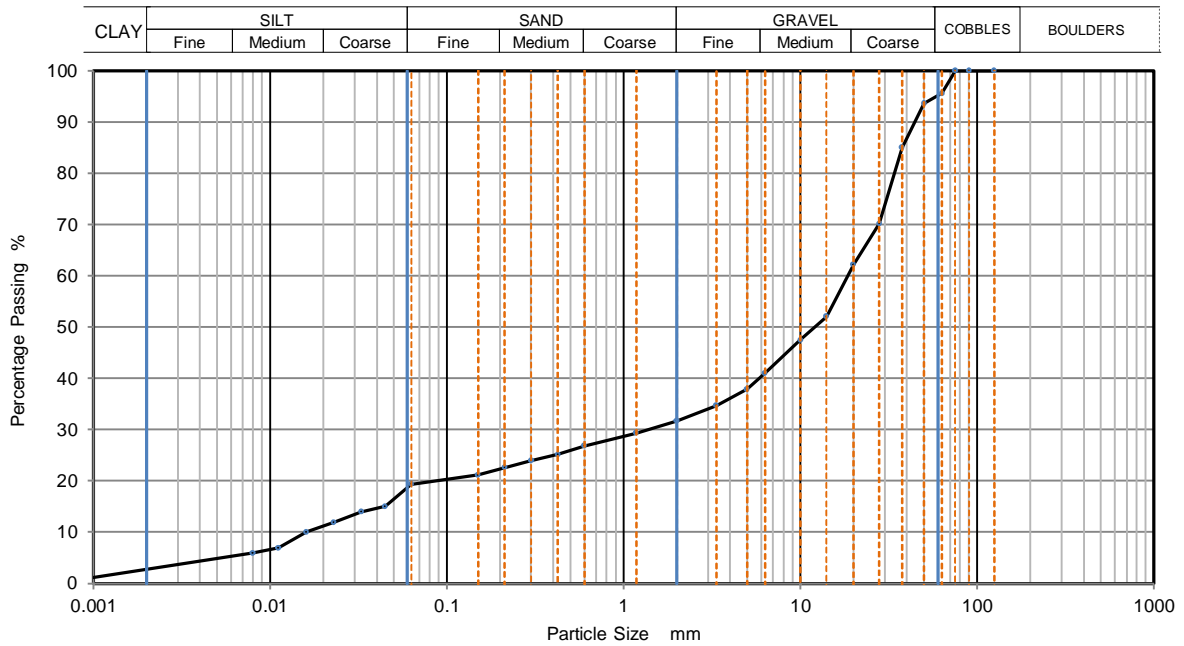
Depth, m **1.20**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100706**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	15
90	100	0.0328	14
75	100	0.0229	12
63	96	0.0161	10
50	94	0.0111	7
37.5	85	0.0080	6
28	70	0.0009	1
20	62		
14	52		
10	48		
6.3	41		
5	38		
3.35	35		
2	32		
1.18	29		
0.6	27	Particle density (assumed) 2.67 Mg/m ³	
0.425	25		
0.3	24		
0.212	23		
0.15	21		
0.063	19		

Dry Mass of sample, g. 7886

Sample Proportions	% dry mass
Very coarse	4
Gravel	64
Sand	12
Silt	17
Clay	2

Grading Analysis	
D100	mm
D60	mm 18.5
D30	mm 1.36
D10	mm 0.0152
Uniformity Coefficient	1200
Curvature Coefficient	6.5

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH30**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown silty sandy GRAVEL**

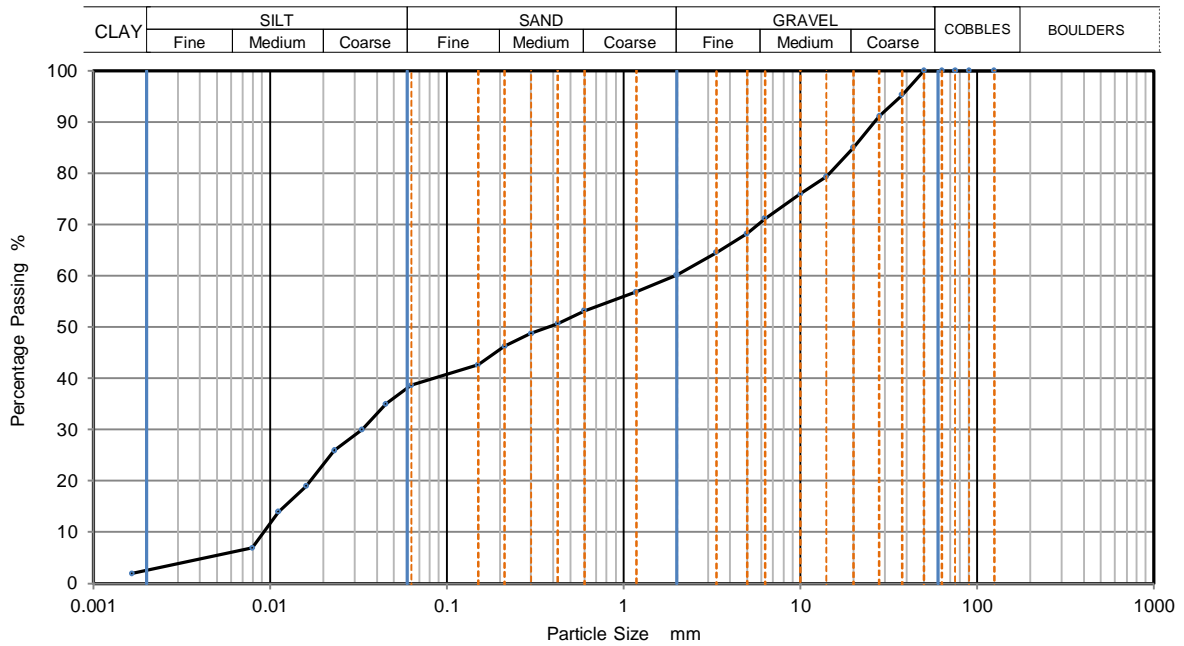
Depth, m **0.40**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100717**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0453	35
90	100	0.0332	30
75	100	0.0232	26
63	100	0.0160	19
50	100	0.0111	14
37.5	95	0.0079	7
28	91	0.0017	2
20	85		
14	79		
10	76		
6.3	71		
5	68		
3.35	65		
2	60		
1.18	57		
0.6	53	Particle density (assumed) 2.67 Mg/m ³	
0.425	51		
0.3	49		
0.212	46		
0.15	43		
0.063	39		

Dry Mass of sample, g. 5107

Sample Proportions	% dry mass
Very coarse	0
Gravel	40
Sand	22
Silt	36
Clay	3

Grading Analysis		
D100	mm	
D60	mm	1.93
D30	mm	0.0337
D10	mm	0.00906
Uniformity Coefficient		210
Curvature Coefficient		0.065

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH30**

Site Name **New Deer 2**

Sample No. **3**

Soil Description **Brown silty sandy GRAVEL**

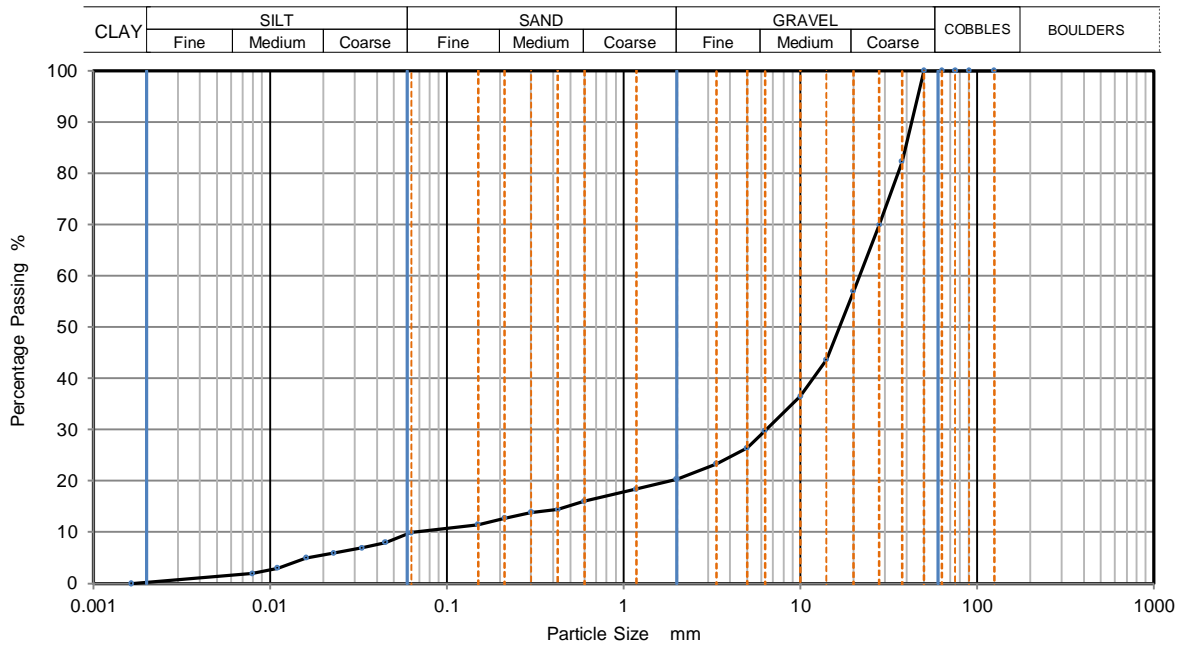
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100719**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	8
90	100	0.0330	7
75	100	0.0229	6
63	100	0.0160	5
50	100	0.0110	3
37.5	82	0.0079	2
28	70	0.0016	0
20	57		
14	44		
10	37		
6.3	30		
5	26		
3.35	23		
2	20		
1.18	18		
0.6	16		
0.425	15	Particle density (assumed) 2.67 Mg/m ³	
0.3	14		
0.212	13		
0.15	12		
0.063	10		

Dry Mass of sample, g. 2379

Sample Proportions	% dry mass
Very coarse	0
Gravel	80
Sand	11
Silt	10
Clay	0

Grading Analysis		
D100	mm	
D60	mm	21.6
D30	mm	6.39
D10	mm	0.0664
Uniformity Coefficient		330
Curvature Coefficient		28

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH31**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown silty gravelly SAND with cobble**

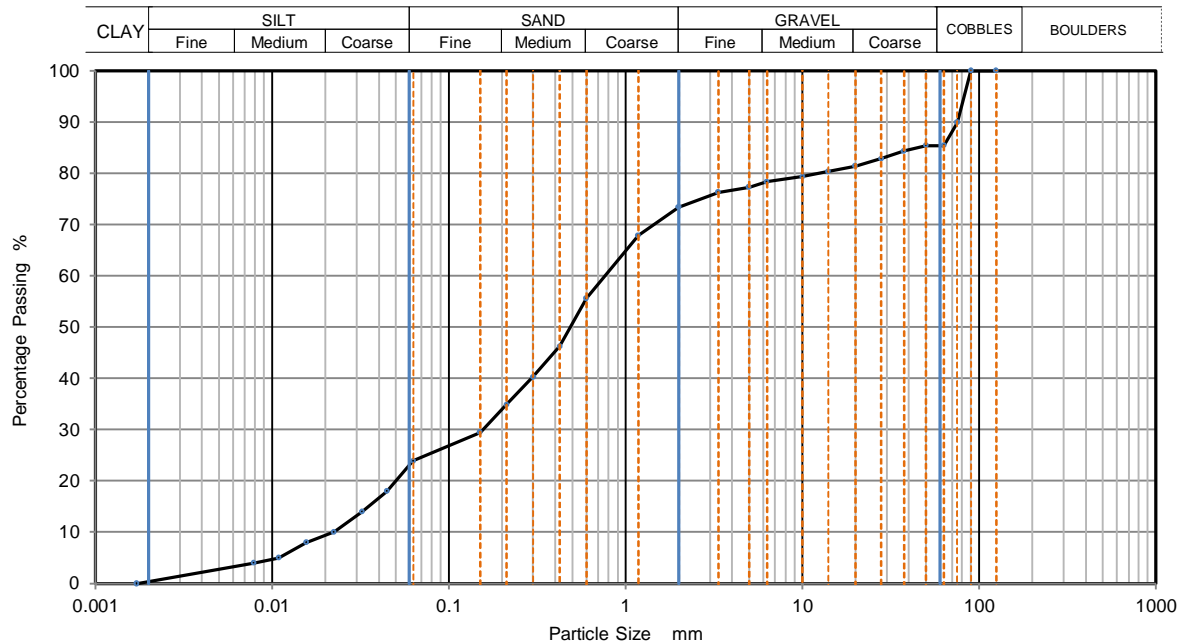
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100722**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	18
90	100	0.0324	14
75	90	0.0224	10
63	85	0.0156	8
50	85	0.0109	5
37.5	84	0.0079	4
28	83	0.0017	0
20	81		
14	80		
10	79		
6.3	78		
5	77		
3.35	76		
2	73		
1.18	68		
0.6	56	Particle density (assumed) 2.67 Mg/m ³	
0.425	46		
0.3	40		
0.212	35		
0.15	30		
0.063	24		

Dry Mass of sample, g. 11513

Sample Proportions	% dry mass
Very coarse	15
Gravel	12
Sand	50
Silt	24
Clay	0

Grading Analysis		
D100	mm	
D60	mm	0.765
D30	mm	0.155
D10	mm	0.0208
Uniformity Coefficient		37
Curvature Coefficient		1.5

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH31**

Site Name **New Deer 2**

Sample No. **5**

Soil Description **Brown silty gravelly SAND**

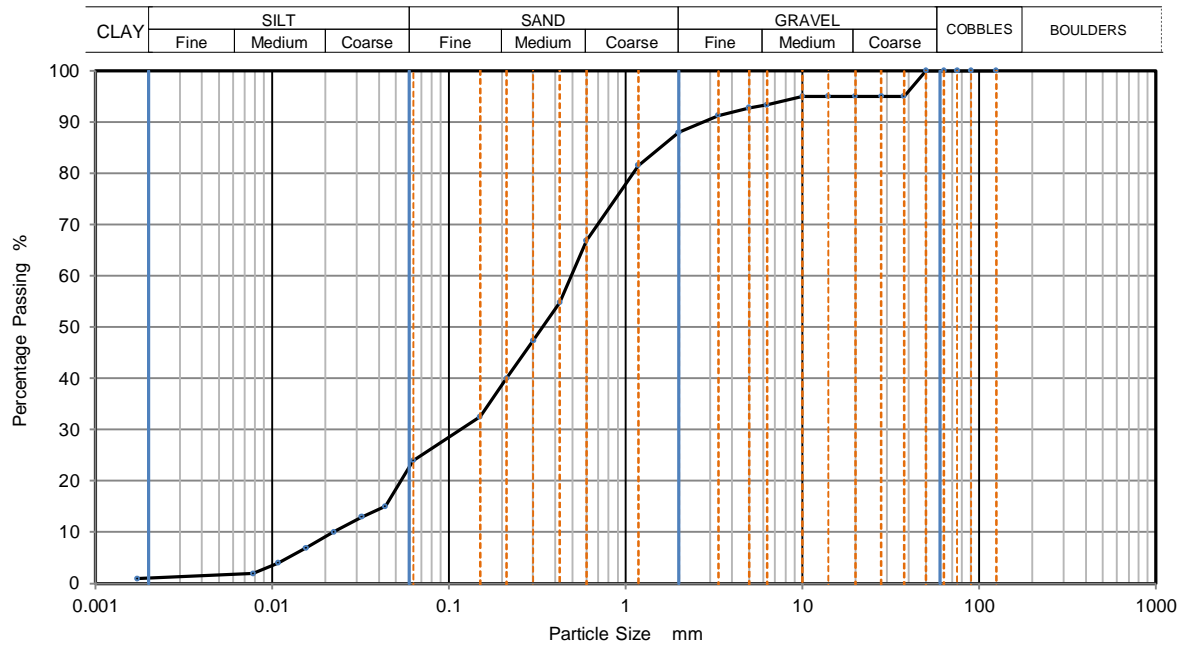
Depth, m **1.70**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100726**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0437	15
90	100	0.0321	13
75	100	0.0223	10
63	100	0.0155	7
50	100	0.0108	4
37.5	95	0.0078	2
28	95	0.0017	1
20	95		
14	95		
10	95		
6.3	93		
5	93		
3.35	91		
2	88		
1.18	82		
0.6	67	Particle density (assumed) 2.67 Mg/m ³	
0.425	55		
0.3	47		
0.212	40		
0.15	33		
0.063	24		

Dry Mass of sample, g. 4332

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	64
Silt	23
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.493
D30	mm	0.116
D10	mm	0.0232
Uniformity Coefficient		21
Curvature Coefficient		1.2

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH31**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown silty SAND & GRAVEL with cobble**

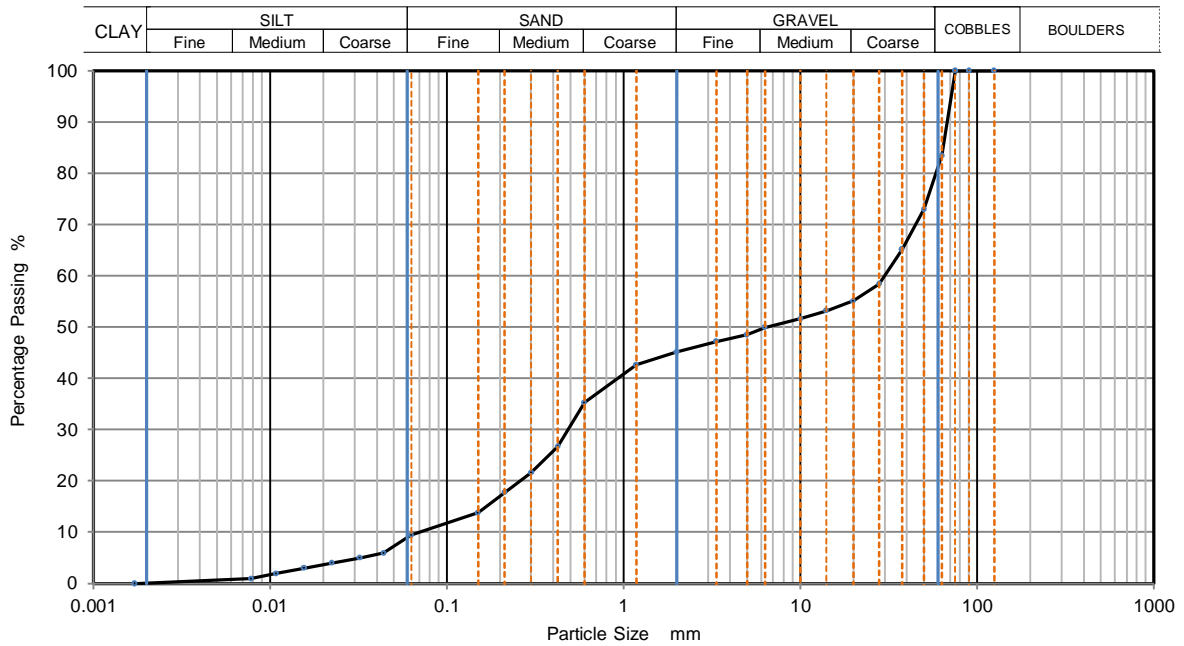
Depth, m **4.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K11007229**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	6
90	100	0.0321	5
75	100	0.0223	4
63	83	0.0155	3
50	73	0.0108	2
37.5	65	0.0078	1
28	58	0.0017	0
20	55		
14	53		
10	52		
6.3	50		
5	49		
3.35	47		
2	45		
1.18	43		
0.6	35	Particle density (assumed) 2.67 Mg/m ³	
0.425	27		
0.3	22		
0.212	18		
0.15	14		
0.063	10		

Dry Mass of sample, g. 3714

Sample Proportions	% dry mass
Very coarse	17
Gravel	38
Sand	36
Silt	9
Clay	0

Grading Analysis		
D100	mm	
D60	mm	30
D30	mm	0.485
D10	mm	0.0692
Uniformity Coefficient		430
Curvature Coefficient		0.11

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH31**

Site Name **New Deer 2**

Sample No. **11**

Soil Description **Brown gravelly silty SAND**

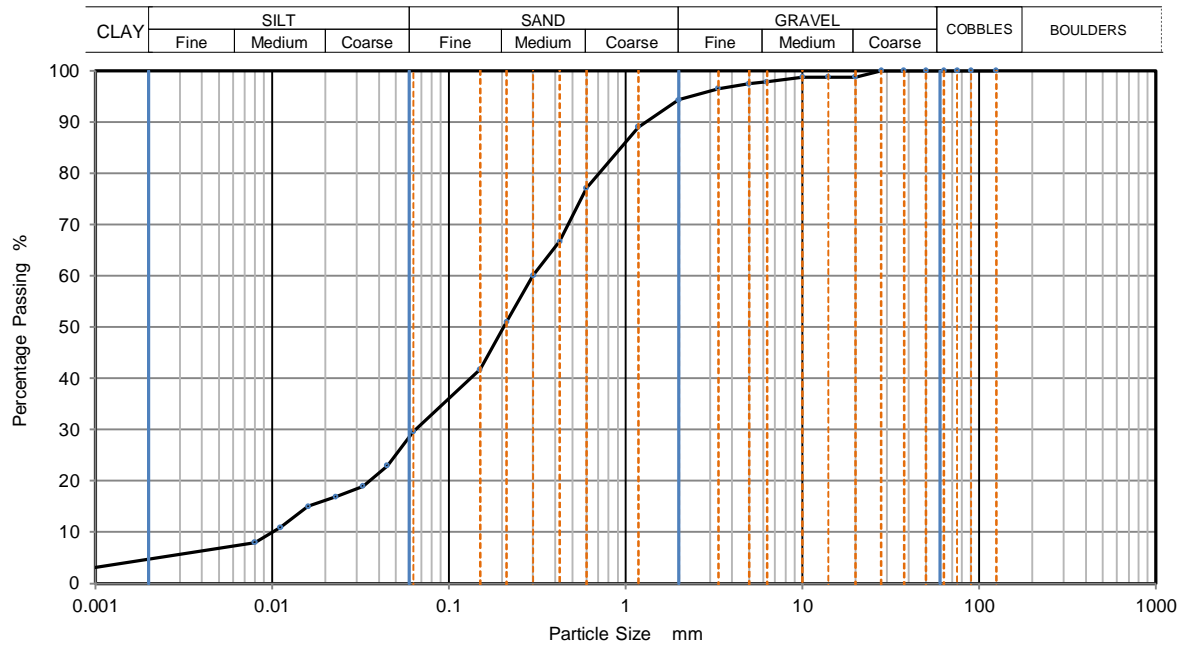
Depth, m **6.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100732**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	23
90	100	0.0326	19
75	100	0.0229	17
63	100	0.0160	15
50	100	0.0111	11
37.5	100	0.0080	8
28	100	0.0009	3
20	99		
14	99		
10	99		
6.3	98		
5	97		
3.35	97		
2	94		
1.18	89		
0.6	77	Particle density (assumed) 2.67 Mg/m ³	
0.425	67		
0.3	60		
0.212	51		
0.15	42		
0.063	30		

Dry Mass of sample, g. 1336

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	65
Silt	25
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.3
D30	mm	0.065
D10	mm	0.00994
Uniformity Coefficient		30
Curvature Coefficient		1.4

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH32**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown gravelly sandy CLAY**

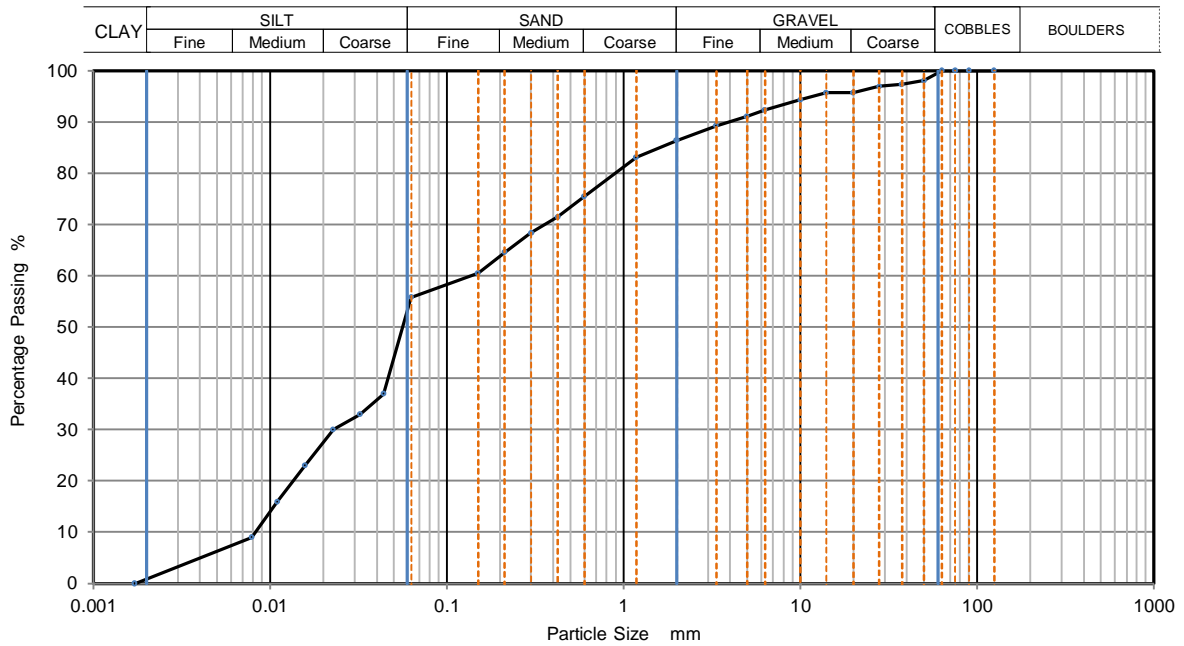
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100742**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	37
90	100	0.0324	33
75	100	0.0227	30
63	100	0.0158	23
50	98	0.0110	16
37.5	97	0.0079	9
28	97	0.0017	0
20	96		
14	96		
10	94		
6.3	92		
5	91		
3.35	89		
2	86		
1.18	83		
0.6	76	Particle density (assumed) 2.67 Mg/m ³	
0.425	72		
0.3	68		
0.212	65		
0.15	61		
0.063	56		

Dry Mass of sample, g. 12223

Sample Proportions	% dry mass
Very coarse	0
Gravel	14
Sand	31
Silt	55
Clay	1

Grading Analysis	
D100	mm
D60	mm 0.137
D30	mm 0.0232
D10	mm 0.00834
Uniformity Coefficient	16
Curvature Coefficient	0.47

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH32**

Site Name **New Deer 2**

Sample No. **3**

Soil Description **Brown gravelly silty SAND**

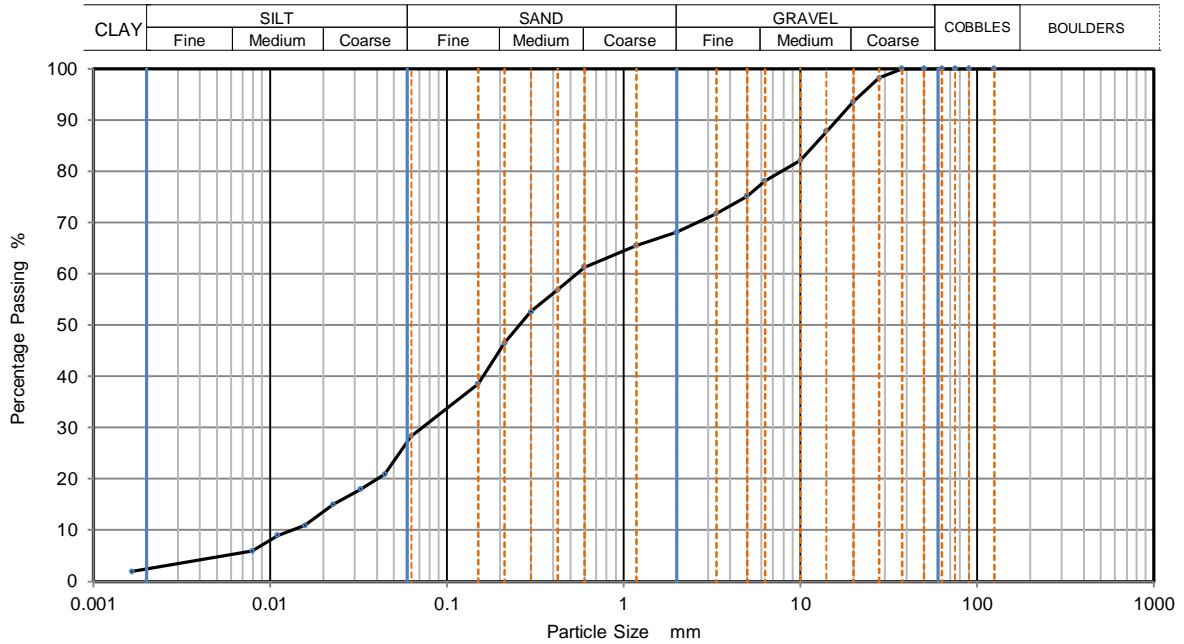
Depth, m **0.90**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100744**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	21
90	100	0.0325	18
75	100	0.0227	15
63	100	0.0158	11
50	100	0.0110	9
37.5	100	0.0079	6
28	98	0.0017	2
20	94		
14	88		
10	82		
6.3	78		
5	75		
3.35	72		
2	68		
1.18	66		
0.6	61	Particle density (assumed) 2.67 Mg/m ³	
0.425	57		
0.3	53		
0.212	47		
0.15	39		
0.063	28		

Dry Mass of sample, g. 5526

Sample Proportions	% dry mass
Very coarse	0
Gravel	32
Sand	40
Silt	26
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.54
D30	mm	0.0727
D10	mm	0.013
Uniformity Coefficient		41
Curvature Coefficient		0.75

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH32**

Site Name **New Deer 2**

Sample No. **5**

Soil Description **Brown clayey sandy GRAVEL**

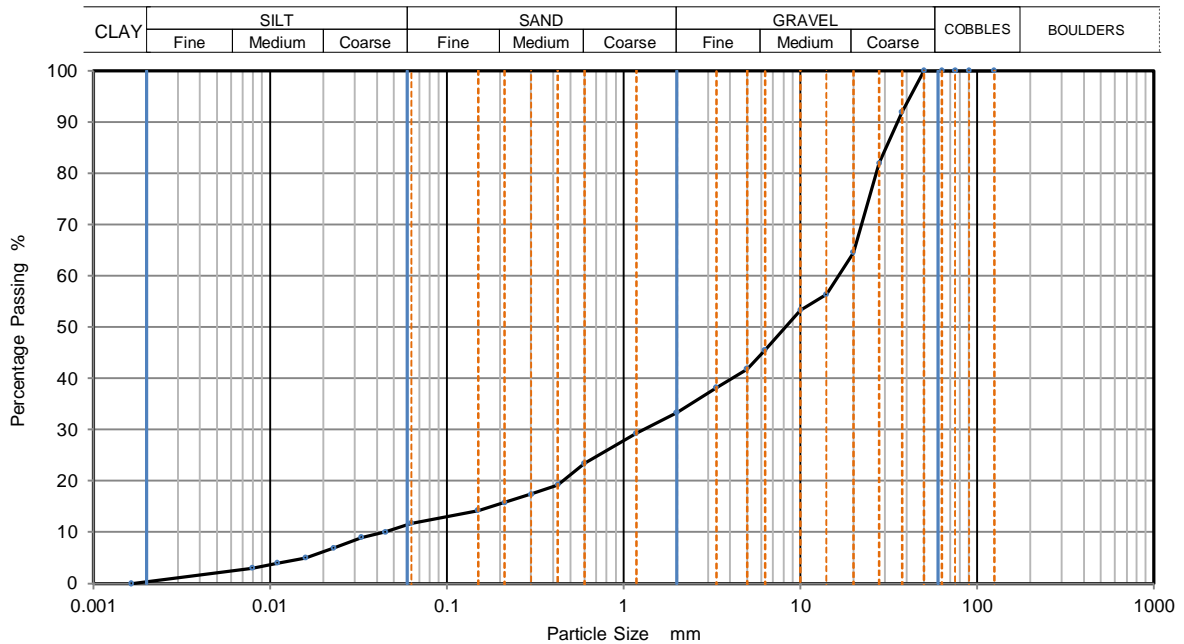
Depth, m **2.35**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1100746**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0448	10
90	100	0.0329	9
75	100	0.0229	7
63	100	0.0159	5
50	100	0.0110	4
37.5	92	0.0079	3
28	82	0.0016	0
20	65		
14	56		
10	53		
6.3	46		
5	42		
3.35	38		
2	33		
1.18	29		
0.6	24	Particle density (assumed) 2.67 Mg/m ³	
0.425	19		
0.3	17		
0.212	16		
0.15	14		
0.063	12		

Dry Mass of sample, g. 4149

Sample Proportions	% dry mass
Very coarse	0
Gravel	67
Sand	22
Silt	11
Clay	1

Grading Analysis	
D100	mm
D60	mm 16.4
D30	mm 1.29
D10	mm 0.0475
Uniformity Coefficient	340
Curvature Coefficient	2.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH33**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown silty sandy GRAVEL**

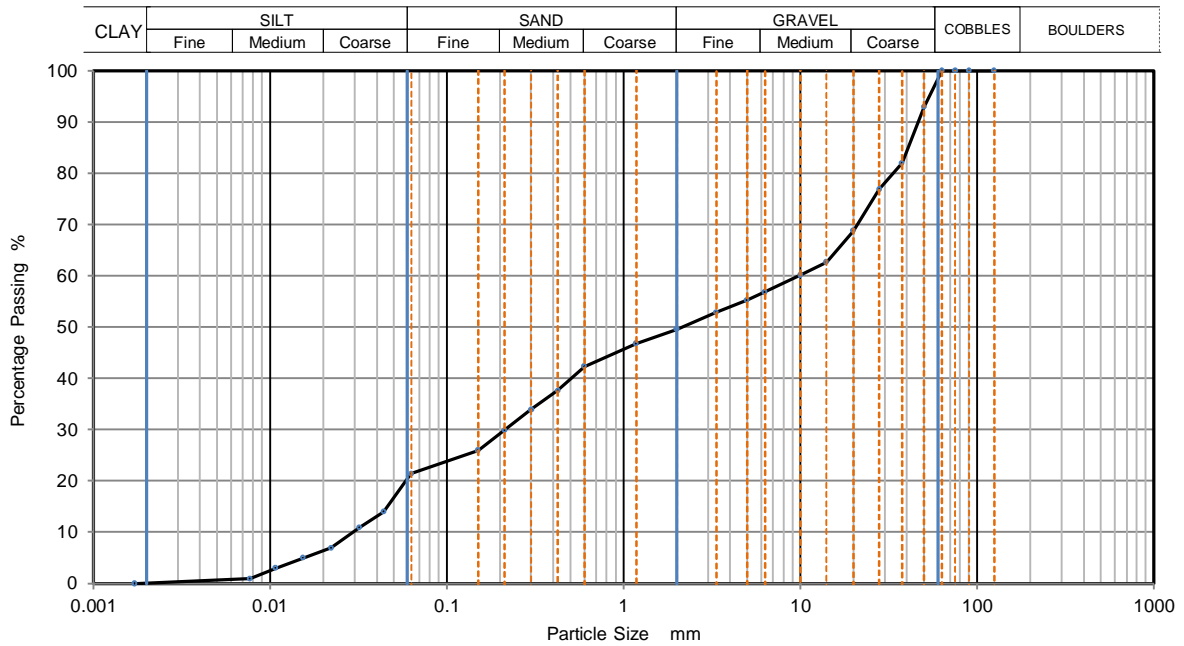
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1099899**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	14
90	100	0.0320	11
75	100	0.0221	7
63	100	0.0154	5
50	93	0.0108	3
37.5	82	0.0077	1
28	77	0.0017	0
20	69		
14	63		
10	60		
6.3	57		
5	55		
3.35	53		
2	50		
1.18	47		
0.6	42		
0.425	38	Particle density (assumed) 2.67 Mg/m ³	
0.3	34		
0.212	30		
0.15	26		
0.063	21		

Dry Mass of sample, g. 5564

Sample Proportions	% dry mass
Very coarse	0
Gravel	50
Sand	28
Silt	21
Clay	0

Grading Analysis	
D100	mm
D60	mm 9.68
D30	mm 0.214
D10	mm 0.029
Uniformity Coefficient	330
Curvature Coefficient	0.16

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH35**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown clayey sandy GRAVEL**

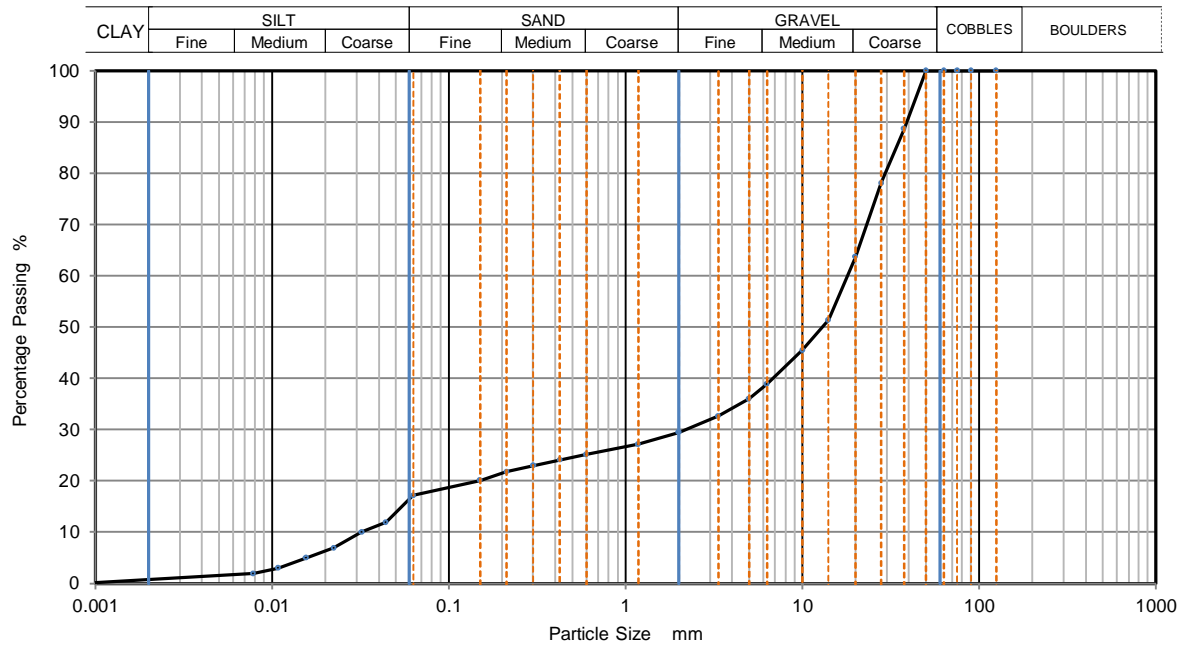
Depth, m **0.40**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1099889**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	12
90	100	0.0322	10
75	100	0.0223	7
63	100	0.0155	5
50	100	0.0108	3
37.5	89	0.0078	2
28	78	0.0008	0
20	64		
14	51		
10	46		
6.3	39		
5	36		
3.35	33		
2	30		
1.18	27		
0.6	25	Particle density (assumed) 2.67 Mg/m ³	
0.425	24		
0.3	23		
0.212	22		
0.15	20		
0.063	17		

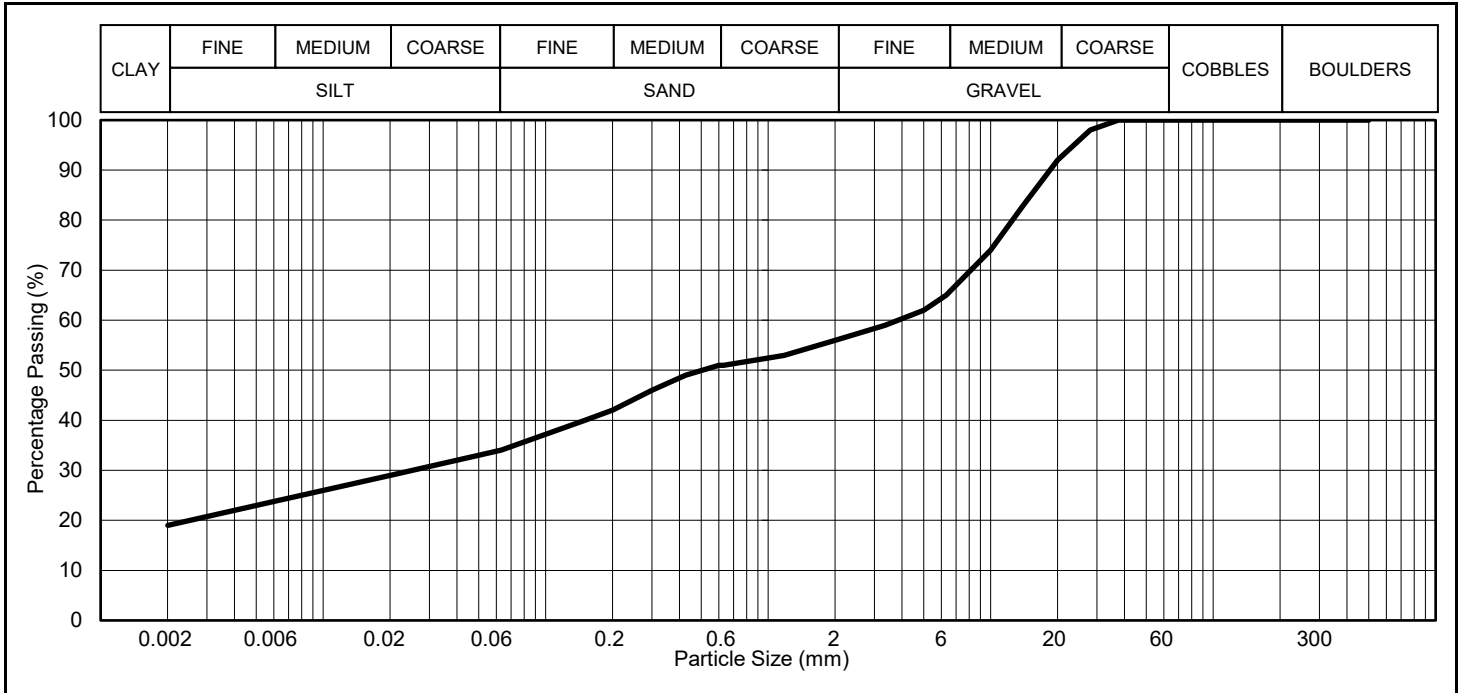
Dry Mass of sample, g. 4819

Sample Proportions	% dry mass
Very coarse	0
Gravel	71
Sand	12
Silt	16
Clay	1

Grading Analysis		
D100	mm	
D60	mm	18
D30	mm	2.18
D10	mm	0.0342
Uniformity Coefficient		520
Curvature Coefficient		7.7

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Borehole	BH36
Sample	K1099893
Depth (m)	1.85-2.20



SIEVING				SEDIMENTATION (Assumed ps of 2.65Mg/m³)				
Sieve Size (mm)	Percentage Passing (%)	Specification		Particle Size (mm)	Percentage Passing (%)			
		Not Applicable						
		Lower %	Upper %					
500.0	100	-	-	0.0200	29			
300.0	100	-	-	0.0063	24			
125.0	100	-	-	0.0020	19			
90.0	100	-	-	GRADING CLASSIFICATION (SHW TABLE 6/2) -				
75.0	100	-	-					
63.0	100	-	-					
50.0	100	-	-					
37.5	100	-	-					
28.0	98	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.				
20.0	92	-	-					
14.0	83	-	-					
10.0	74	-	-					
6.3	65	-	-	PERCENTAGE SOIL TYPES				
5.0	62	-	-	CLAY	SILT †	SAND	GRAVEL	COBBLES
3.350	59	-	-	19	15	22	44	0
2.000	56	-	-	UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)				
1.180	53	-	-	D10		D60		Specification
0.630	51	-	-	-		-		
0.600	51	-	-	-		-		
0.425	49	-	-	UNIFORMITY COEFFICIENT				-
0.300	46	-	-					-
0.200	42	-	-					-
0.150	40	-	-					-
0.063	34	-	-					-

Remarks

† Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH37**

Site Name **New Deer 2**

Sample No. **1**

Soil Description **Brown sandy clayey GRAVEL**

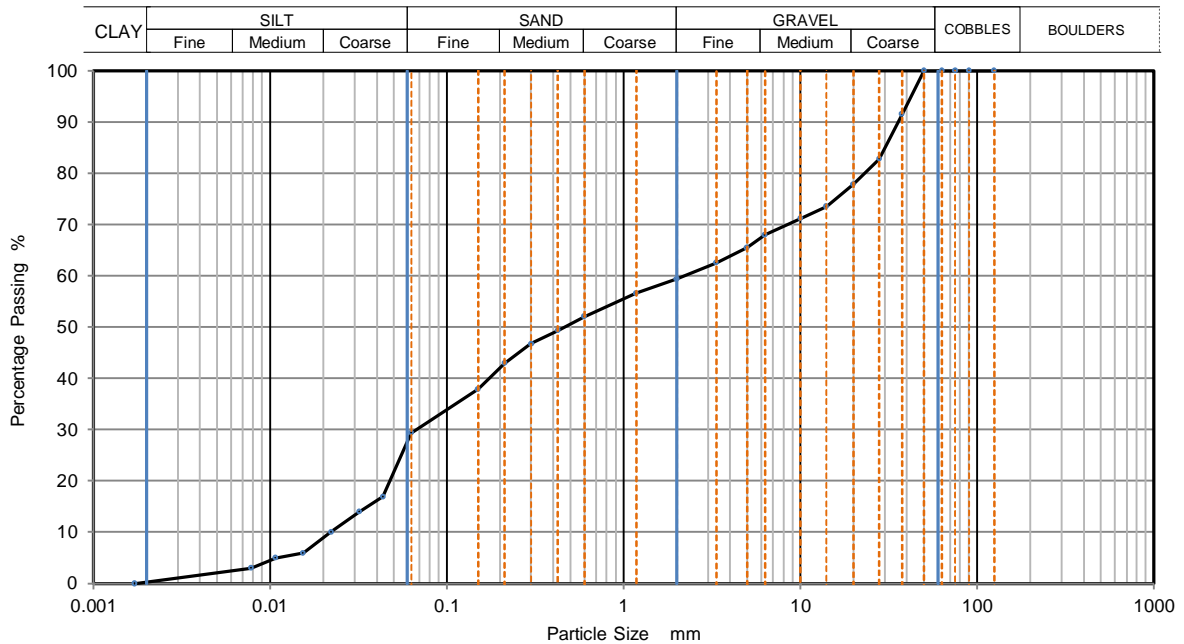
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1099894**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0435	17
90	100	0.0318	14
75	100	0.0221	10
63	100	0.0154	6
50	100	0.0108	5
37.5	92	0.0078	3
28	83	0.0017	0
20	78		
14	74		
10	71		
6.3	68		
5	66		
3.35	63		
2	59		
1.18	57		
0.6	52	Particle density (assumed) 2.67 Mg/m ³	
0.425	49		
0.3	47		
0.212	43		
0.15	38		
0.063	29		

Dry Mass of sample, g. 4251

Sample Proportions	% dry mass
Very coarse	0
Gravel	41
Sand	30
Silt	29
Clay	0

Grading Analysis	
D100	mm
D60	mm 2.22
D30	mm 0.0672
D10	mm 0.0218
Uniformity Coefficient	100
Curvature Coefficient	0.093

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH38**

Site Name **New Deer 2**

Sample No. **3**

Soil Description **Brown clayey sandy GRAVEL**

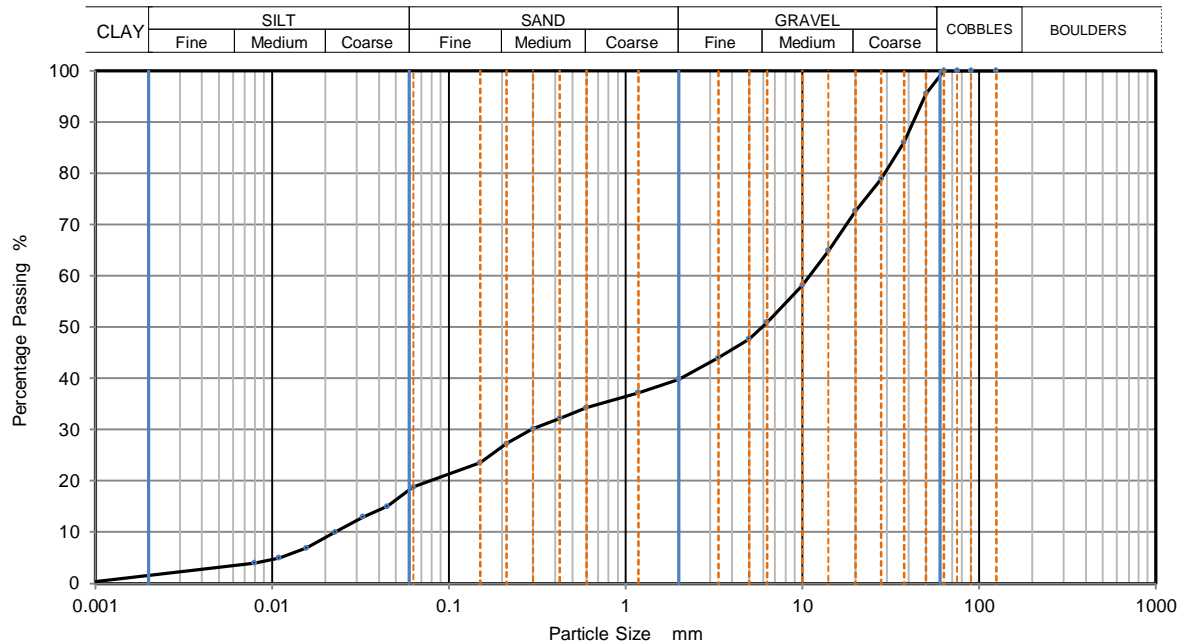
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1099905**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	15
90	100	0.0326	13
75	100	0.0227	10
63	100	0.0157	7
50	96	0.0109	5
37.5	86	0.0079	4
28	79	0.0008	0
20	73		
14	65		
10	58		
6.3	51		
5	48		
3.35	44		
2	40		
1.18	37		
0.6	34	Particle density (assumed) 2.67 Mg/m ³	
0.425	32		
0.3	30		
0.212	27		
0.15	24		
0.063	19		

Dry Mass of sample, g. 11259

Sample Proportions	% dry mass
Very coarse	0
Gravel	60
Sand	21
Silt	17
Clay	2

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH38**

Site Name **New Deer 2**

Sample No. **5**

Soil Description **Brown silty sandy GRAVEL**

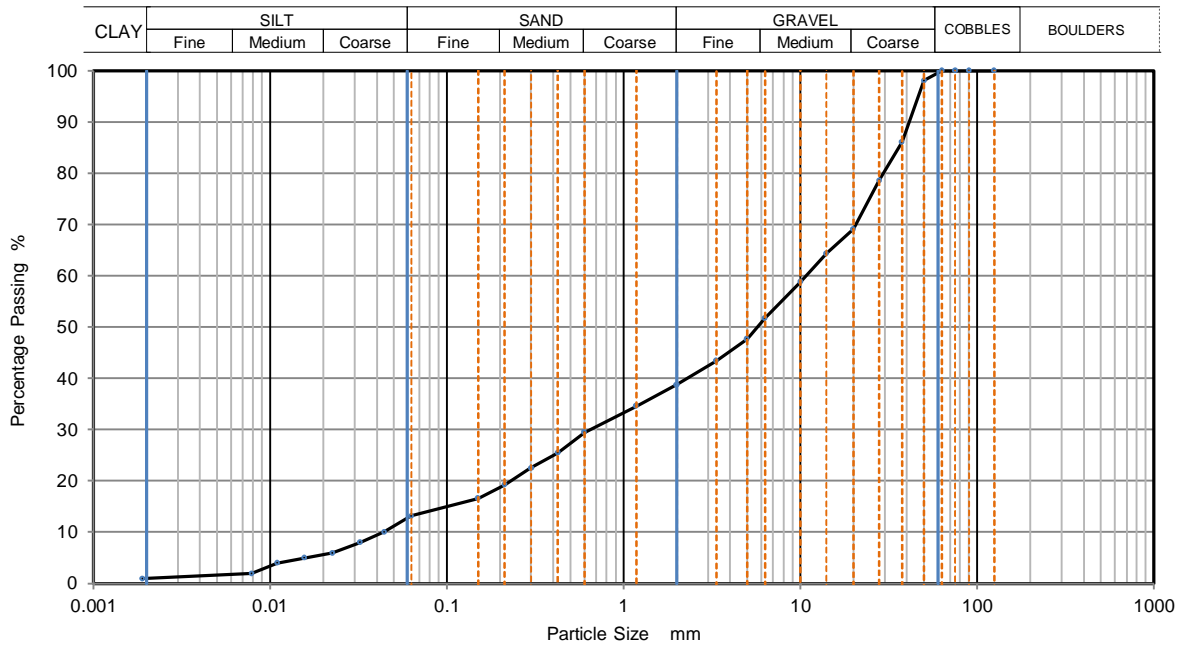
Depth, m **1.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1099907**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	10
90	100	0.0324	8
75	100	0.0225	6
63	100	0.0157	5
50	98	0.0110	4
37.5	86	0.0079	2
28	79	0.0019	1
20	69		
14	64		
10	59		
6.3	52		
5	48		
3.35	43		
2	39		
1.18	35		
0.6	30	Particle density (assumed) 2.67 Mg/m ³	
0.425	26		
0.3	23		
0.212	19		
0.15	17		
0.063	13		

Dry Mass of sample, g. 7800

Sample Proportions	% dry mass
Very coarse	0
Gravel	61
Sand	26
Silt	12
Clay	1

Grading Analysis	
D100	mm
D60	mm 10.7
D30	mm 0.641
D10	mm 0.0463
Uniformity Coefficient	230
Curvature Coefficient	0.83

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH41**

Site Name **New Deer 2**

Sample No. **K1091837**

Soil Description **Brown clayey sandy GRAVEL**

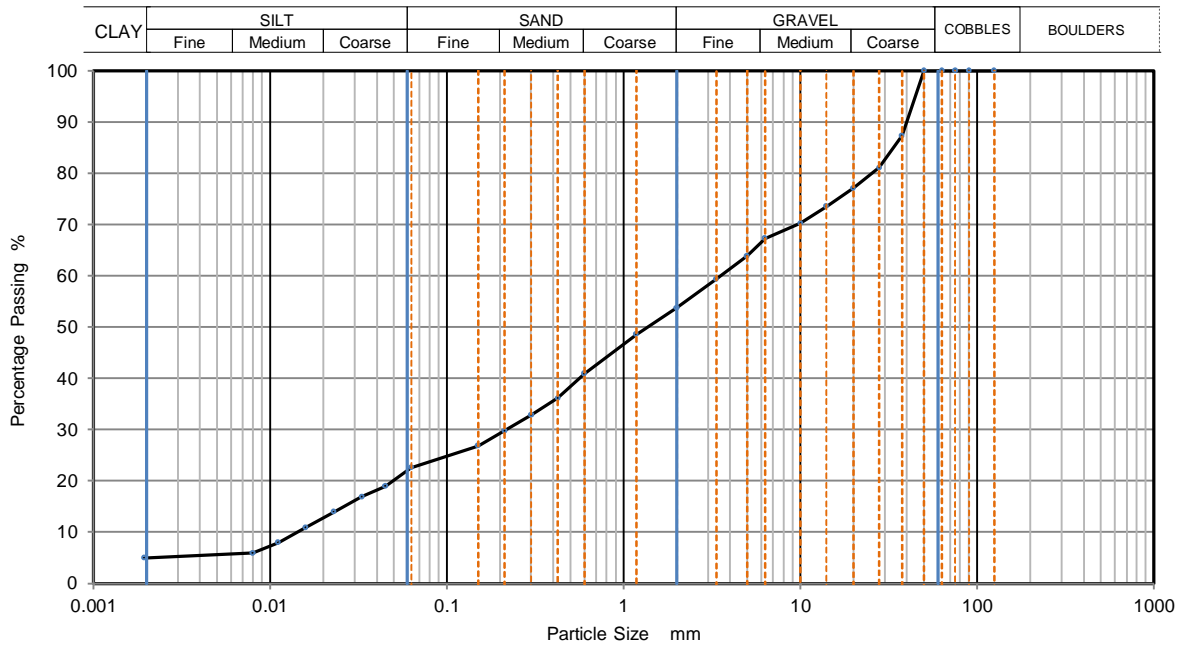
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1091837**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	19
90	100	0.0330	17
75	100	0.0229	14
63	100	0.0159	11
50	100	0.0111	8
37.5	87	0.0080	6
28	81	0.0019	5
20	77		
14	74		
10	70		
6.3	67		
5	64		
3.35	59		
2	54		
1.18	49		
0.6	41	Particle density (assumed) 2.67 Mg/m ³	
0.425	36		
0.3	33		
0.212	30		
0.15	27		
0.063	23		

Dry Mass of sample, g. 5952

Sample Proportions	% dry mass
Very coarse	0
Gravel	46
Sand	31
Silt	18
Clay	5

Grading Analysis		
D100	mm	
D60	mm	3.54
D30	mm	0.216
D10	mm	0.0144
Uniformity Coefficient		250
Curvature Coefficient		0.92

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH41**

Site Name **New Deer 2**

Sample No. **K1091841**

Soil Description **Brown clayey sandy GRAVEL**

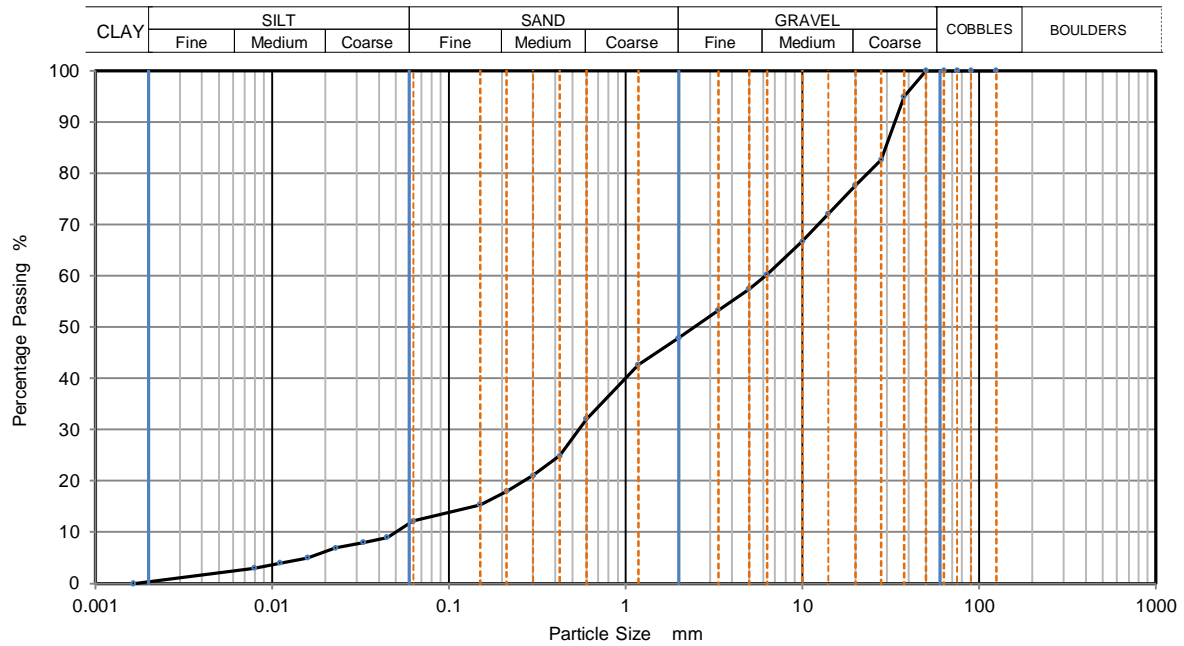
Depth, m **1.20**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1091841**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	9
90	100	0.0328	8
75	100	0.0228	7
63	100	0.0159	5
50	100	0.0111	4
37.5	95	0.0079	3
28	83	0.0016	0
20	78		
14	72		
10	67		
6.3	60		
5	57		
3.35	53		
2	48		
1.18	43		
0.6	32		
0.425	25		
0.3	21		
0.212	18		
0.15	15		
0.063	12		

Particle density (assumed)	
2.67	Mg/m ³

Dry Mass of sample, g. 5935

Sample Proportions	% dry mass
Very coarse	0
Gravel	52
Sand	36
Silt	11
Clay	1

Grading Analysis		
D100	mm	
D60	mm	6.17
D30	mm	0.542
D10	mm	0.0476
Uniformity Coefficient		130
Curvature Coefficient		1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH42**

Site Name **New Deer 2**

Sample No. **K1095773**

Soil Description **Grey sandy gravelly SILT**

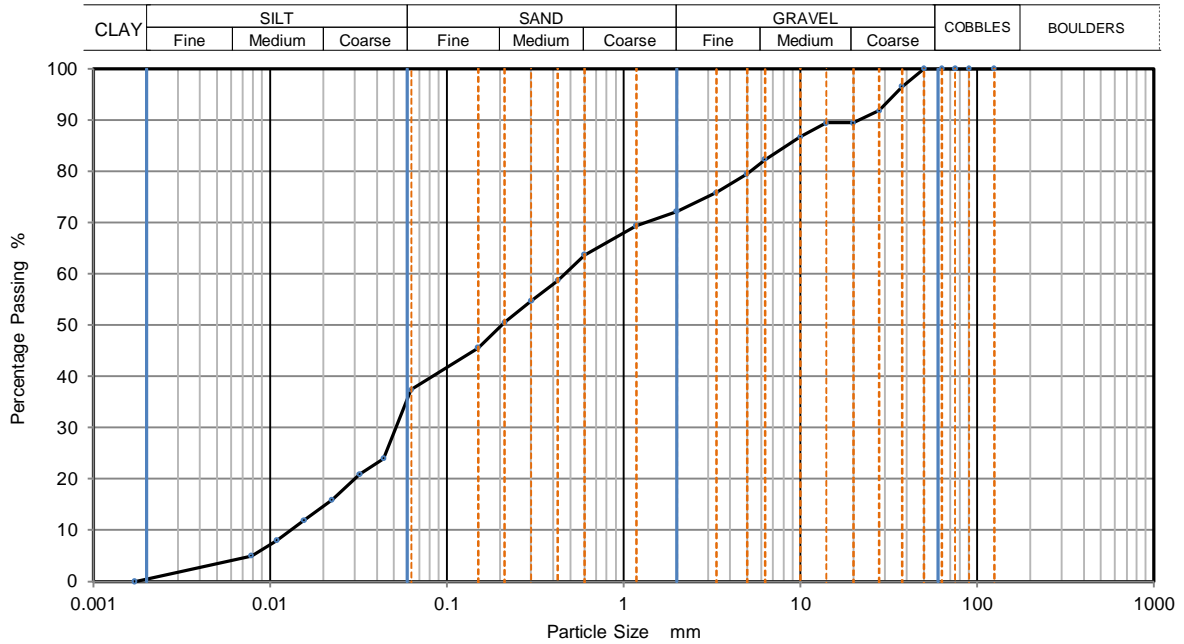
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1095773**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	24
90	100	0.0322	21
75	100	0.0224	16
63	100	0.0156	12
50	100	0.0109	8
37.5	97	0.0078	5
28	92	0.0017	0
20	89		
14	89		
10	87		
6.3	82		
5	80		
3.35	76		
2	72		
1.18	69		
0.6	64		
0.425	59	Particle density (assumed)	
0.3	55	2.67	Mg/m3
0.212	51		
0.15	46		
0.063	37		

Dry Mass of sample, g. 5213

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	35
Silt	37
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.465
D30	mm	0.0512
D10	mm	0.0132
Uniformity Coefficient		35
Curvature Coefficient		0.43

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH42**

Site Name **New Deer 2**

Sample No. **K1095777**

Soil Description **Brown gravelly sandy SILT**

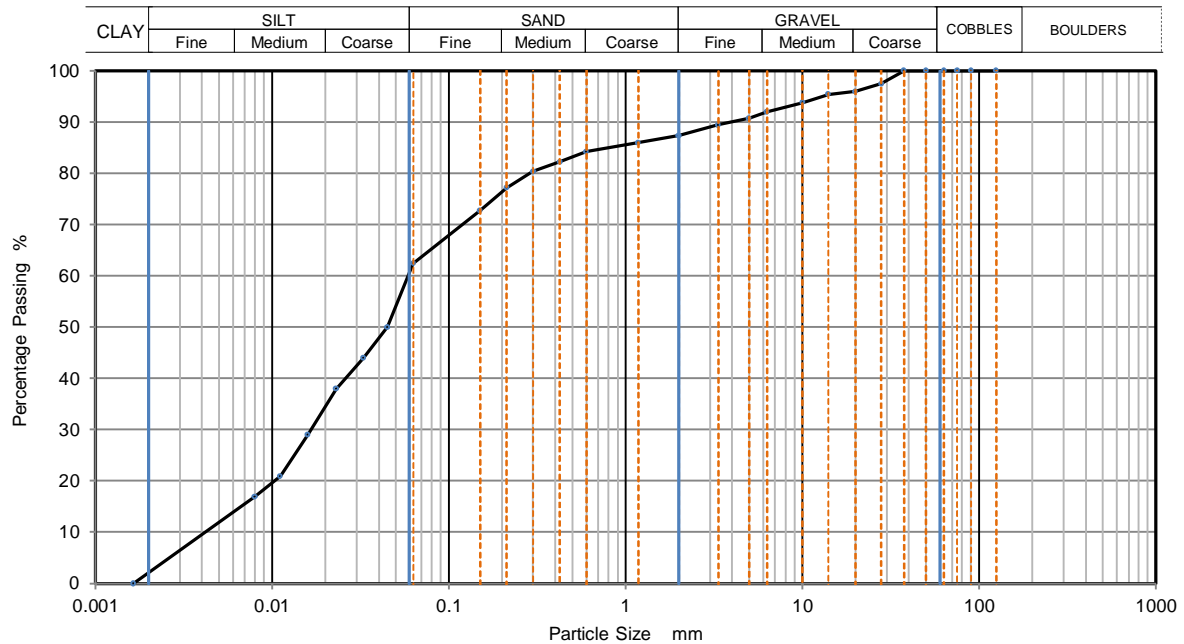
Depth, m **1.20**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1095777**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0448	50
90	100	0.0329	44
75	100	0.0230	38
63	100	0.0159	29
50	100	0.0111	21
37.5	100	0.0080	17
28	97	0.0016	0
20	96		
14	95		
10	94		
6.3	92		
5	91		
3.35	89		
2	87		
1.18	86		
0.6	84	Particle density (assumed) 2.67 Mg/m ³	
0.425	82		
0.3	80		
0.212	77		
0.15	73		
0.063	62		

Dry Mass of sample, g. 3699

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	25
Silt	60
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.0589
D30	mm	0.0167
D10	mm	0.0041
Uniformity Coefficient		14
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH42**

Site Name **New Deer 2**

Sample No. **K1095779**

Soil Description **Brown sandy SILT**

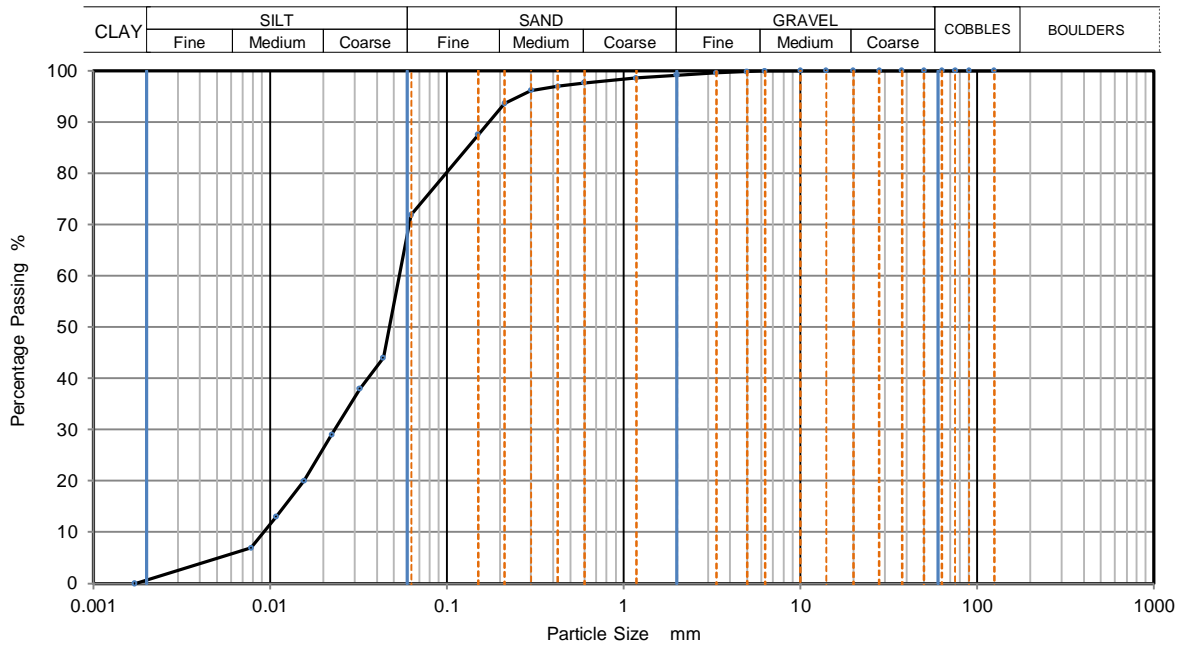
Depth, m **2.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1095779**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0437	44
90	100	0.0321	38
75	100	0.0223	29
63	100	0.0155	20
50	100	0.0108	13
37.5	100	0.0078	7
28	100	0.0017	0
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98	Particle density (assumed) 2.67 Mg/m ³	
0.425	97		
0.3	96		
0.212	94		
0.15	88		
0.063	72		

Dry Mass of sample, g. 2642

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	27
Silt	71
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.0538
D30	mm	0.0233
D10	mm	0.00918
Uniformity Coefficient		5.9
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH42**

Site Name **New Deer 2**

Sample No. **K1095783**

Soil Description **Brown gravelly sandy SILT**

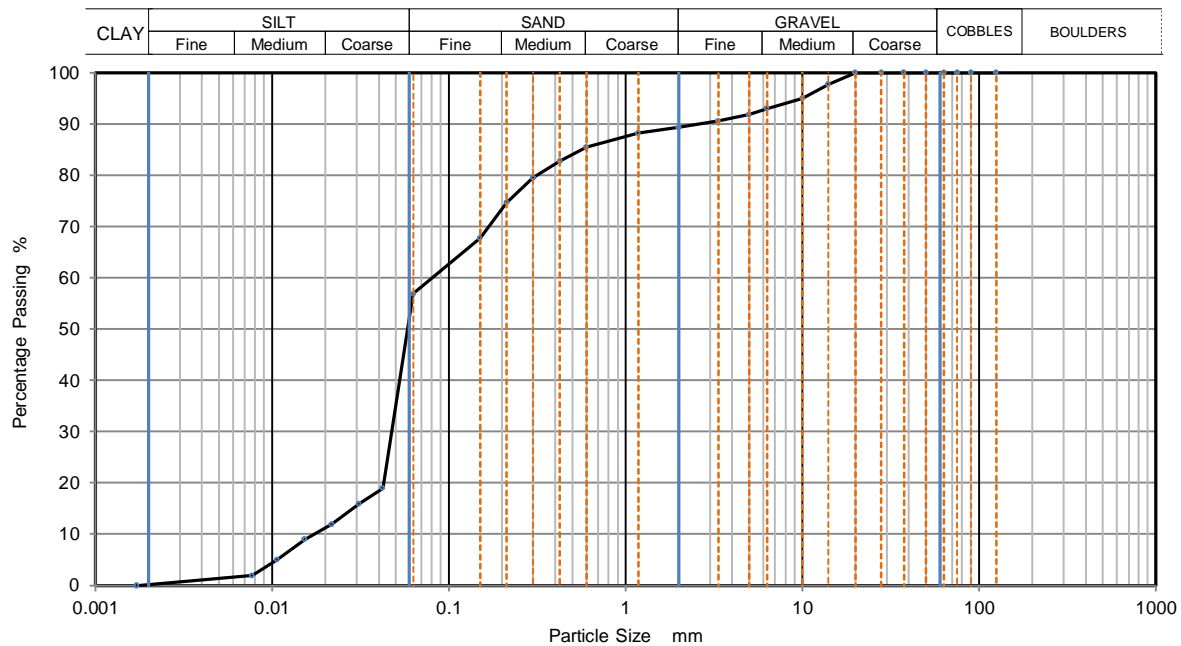
Depth, m **5.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1095783**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0421	19
90	100	0.0310	16
75	100	0.0217	12
63	100	0.0152	9
50	100	0.0107	5
37.5	100	0.0077	2
28	100	0.0017	0
20	100		
14	98		
10	95		
6.3	93		
5	92		
3.35	91		
2	89		
1.18	88		
0.6	86		
0.425	83	Particle density (assumed)	
0.3	80	2.67	Mg/m ³
0.212	75		
0.15	68		
0.063	57		

Dry Mass of sample, g. **2606**

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	32
Silt	57
Clay	0

Grading Analysis		
D100	mm	
D60	mm	0.0806
D30	mm	0.0472
D10	mm	0.0172
Uniformity Coefficient		4.7
Curvature Coefficient		1.6

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

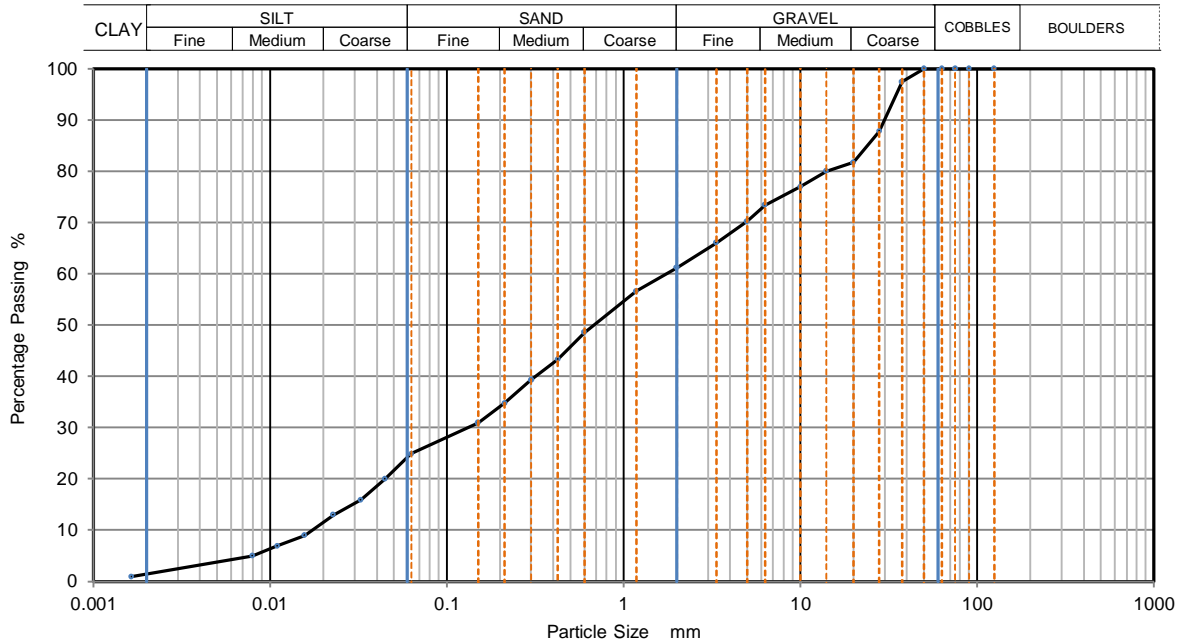
Borehole/Pit No. **BH43**

Site Name **New Deer 2** Sample No. **K1091833**

Soil Description **Brown sandy clayey GRAVEL** Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m** Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5** KeyLAB ID **K1091833**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	20
90	100	0.0326	16
75	100	0.0227	13
63	100	0.0157	9
50	100	0.0110	7
37.5	97	0.0079	5
28	88	0.0016	1
20	82		
14	80		
10	77		
6.3	73		
5	70		
3.35	66		
2	61		
1.18	57		
0.6	49	Particle density (assumed) 2.67 Mg/m ³	
0.425	43		
0.3	39		
0.212	35		
0.15	31		
0.063	25		

Dry Mass of sample, g. 7262

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	36
Silt	24
Clay	1

Grading Analysis		
D100	mm	
D60	mm	1.74
D30	mm	0.13
D10	mm	0.0166
Uniformity Coefficient		100
Curvature Coefficient		0.58

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH44**

Site Name **New Deer 2**

Sample No. **K1095765**

Soil Description **Brown gravelly silty SAND**

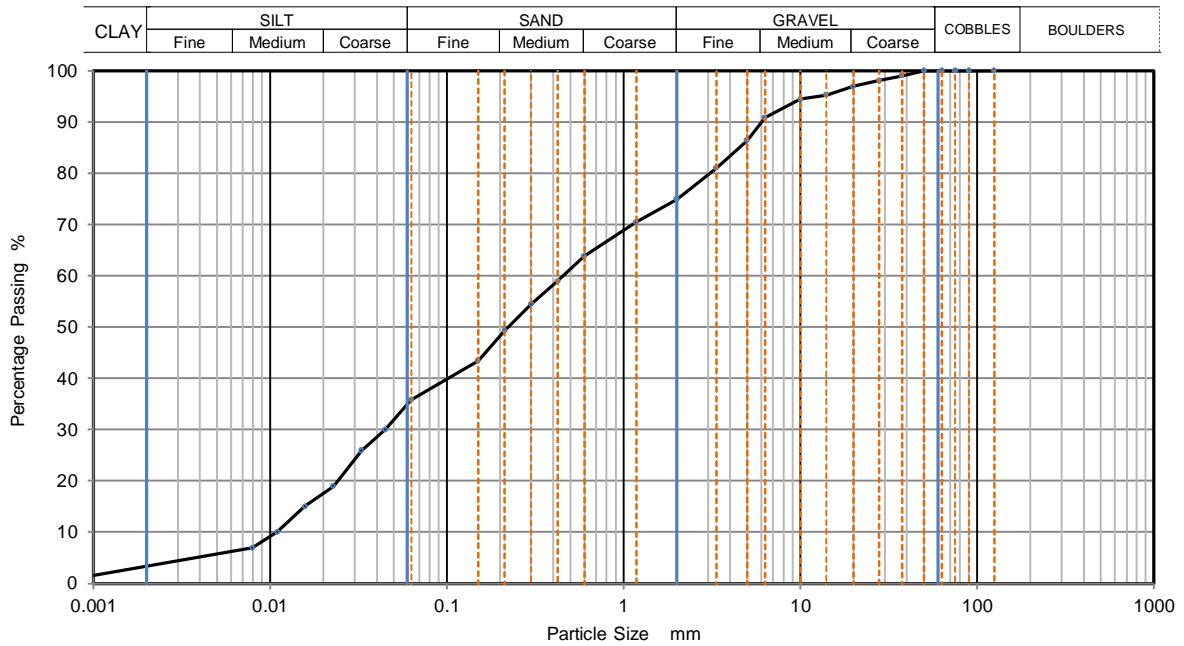
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1095765**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0448	30
90	100	0.0329	26
75	100	0.0227	19
63	100	0.0158	15
50	100	0.0110	10
37.5	99	0.0079	7
28	98	0.0008	1
20	97		
14	95		
10	94		
6.3	91		
5	86		
3.35	81		
2	75		
1.18	71		
0.6	64	Particle density (assumed) 2.67 Mg/m ³	
0.425	59		
0.3	55		
0.212	49		
0.15	43		
0.063	36		

Dry Mass of sample, g. 11703

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	39
Silt	32
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.456
D30	mm	0.0459
D10	mm	0.0107
Uniformity Coefficient		43
Curvature Coefficient		0.43

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH44**

Site Name **New Deer 2**

Sample No. **K1095771**

Soil Description **Brown gravelly silty SAND**

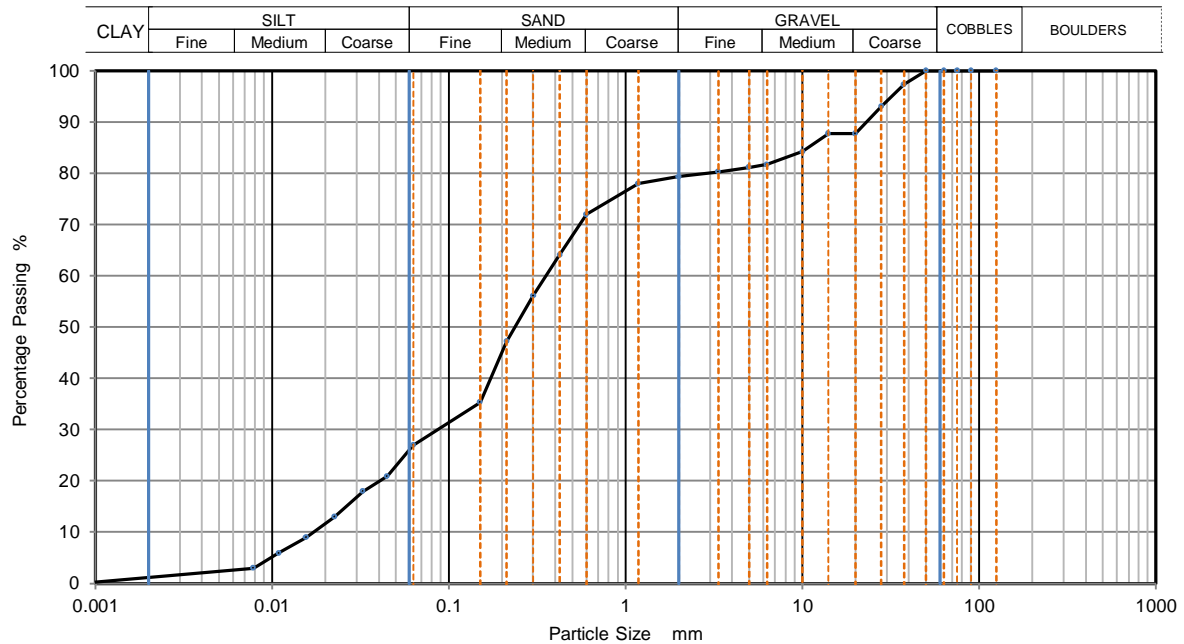
Depth, m **2.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1095771**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	21
90	100	0.0326	18
75	100	0.0225	13
63	100	0.0156	9
50	100	0.0109	6
37.5	97	0.0078	3
28	93	0.0008	0
20	88		
14	88		
10	84		
6.3	82		
5	81		
3.35	80		
2	79		
1.18	78		
0.6	72		
0.425	64	Particle density (assumed) 2.67 Mg/m ³	
0.3	56		
0.212	47		
0.15	35		
0.063	27		

Dry Mass of sample, g. 9005

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	52
Silt	26
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.355
D30	mm	0.0858
D10	mm	0.0176
Uniformity Coefficient		20
Curvature Coefficient		1.2

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH45**

Site Name **New Deer 2**

Sample No. **K1095755**

Soil Description **Brown clayey sandy GRAVEL**

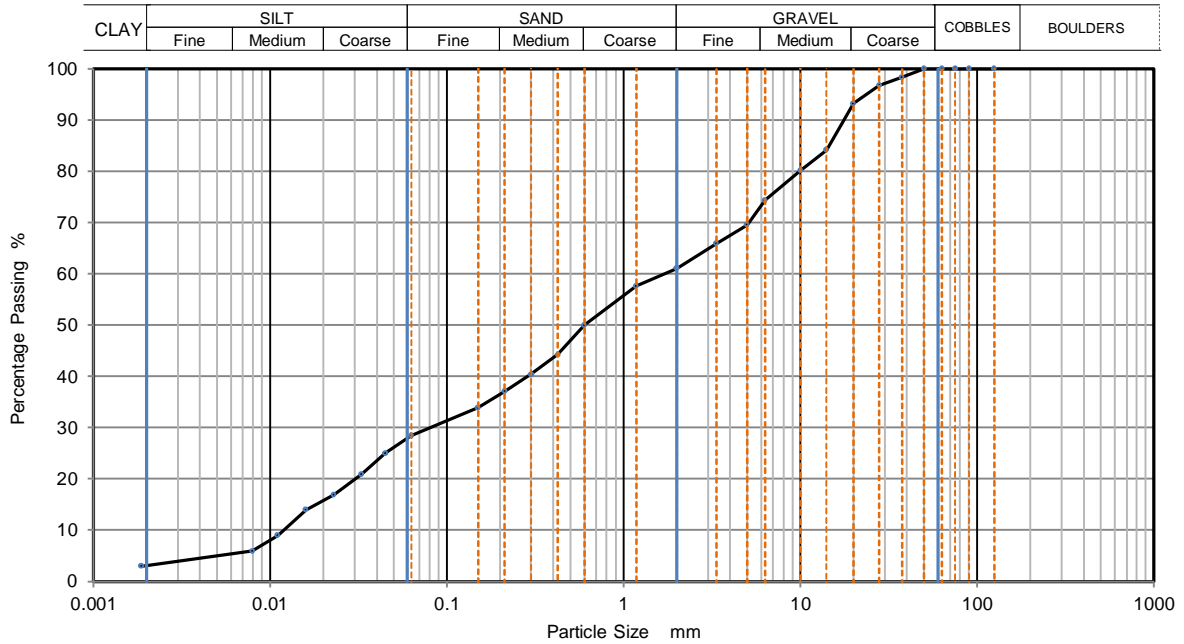
Depth, m **0.50**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1095755**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	25
90	100	0.0329	21
75	100	0.0229	17
63	100	0.0159	14
50	100	0.0110	9
37.5	98	0.0079	6
28	97	0.0019	3
20	93		
14	84		
10	80		
6.3	74		
5	70		
3.35	66		
2	61		
1.18	58		
0.6	50	Particle density (assumed) 2.67 Mg/m ³	
0.425	44		
0.3	40		
0.212	37		
0.15	34		
0.063	29		

Dry Mass of sample, g. 12211

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	33
Silt	26
Clay	3

Grading Analysis		
D100	mm	
D60	mm	1.69
D30	mm	0.0799
D10	mm	0.0119
Uniformity Coefficient		140
Curvature Coefficient		0.32

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

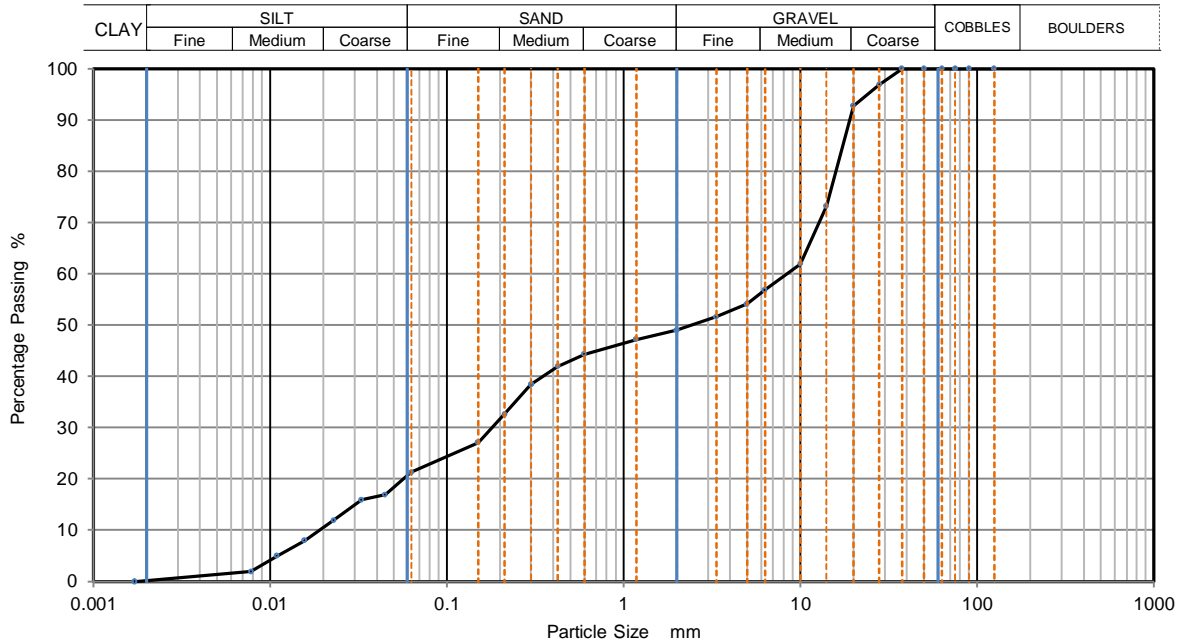
Borehole/Pit No. **BH45**

Site Name **New Deer 2** Sample No. **K1095761**

Soil Description **Brown/ grey sandy silty GRAVEL** Depth, m **2.50**

Specimen Reference **2** Specimen Depth **m** Sample Type **L**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5** KeyLAB ID **K1095761**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	17
90	100	0.0329	16
75	100	0.0228	12
63	100	0.0157	8
50	100	0.0109	5
37.5	100	0.0078	2
28	97	0.0017	0
20	93		
14	73		
10	62		
6.3	57		
5	54		
3.35	52		
2	49		
1.18	47		
0.6	44	Particle density (assumed) 2.67 Mg/m ³	
0.425	42		
0.3	38		
0.212	33		
0.15	27		
0.063	21		

Dry Mass of sample, g. 6607

Sample Proportions	% dry mass
Very coarse	0
Gravel	51
Sand	28
Silt	21
Clay	0

Grading Analysis	
D100	mm
D60	mm 8.37
D30	mm 0.18
D10	mm 0.0186
Uniformity Coefficient	450
Curvature Coefficient	0.21

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **BH46**

Site Name **New Deer 2**

Sample No. **K1096697**

Soil Description **Brown gravelly sandy CLAY**

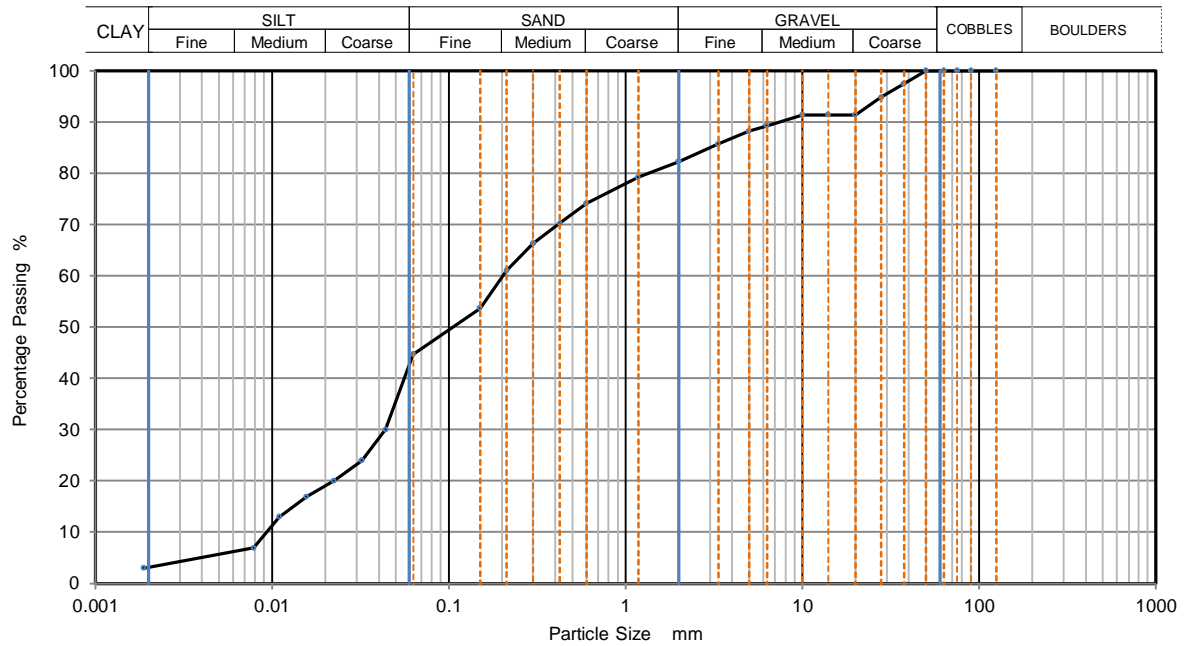
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1096697**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	30
90	100	0.0321	24
75	100	0.0224	20
63	100	0.0157	17
50	100	0.0110	13
37.5	97	0.0079	7
28	95	0.0019	3
20	91		
14	91		
10	91		
6.3	89		
5	88		
3.35	86		
2	82		
1.18	79		
0.6	74		
0.425	70	Particle density (assumed)	
0.3	66	2.67	Mg/m3
0.212	61		
0.15	54		
0.063	45		

Dry Mass of sample, g. 8875

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	38
Silt	42
Clay	3

Grading Analysis	
D100	mm
D60	mm 0.202
D30	mm 0.0442
D10	mm 0.00934
Uniformity Coefficient	22
Curvature Coefficient	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **HP01**

Site Name **New Deer 2**

Sample No. **K1092396**

Soil Description **Brown gravelly silty SAND M/G with cobble**

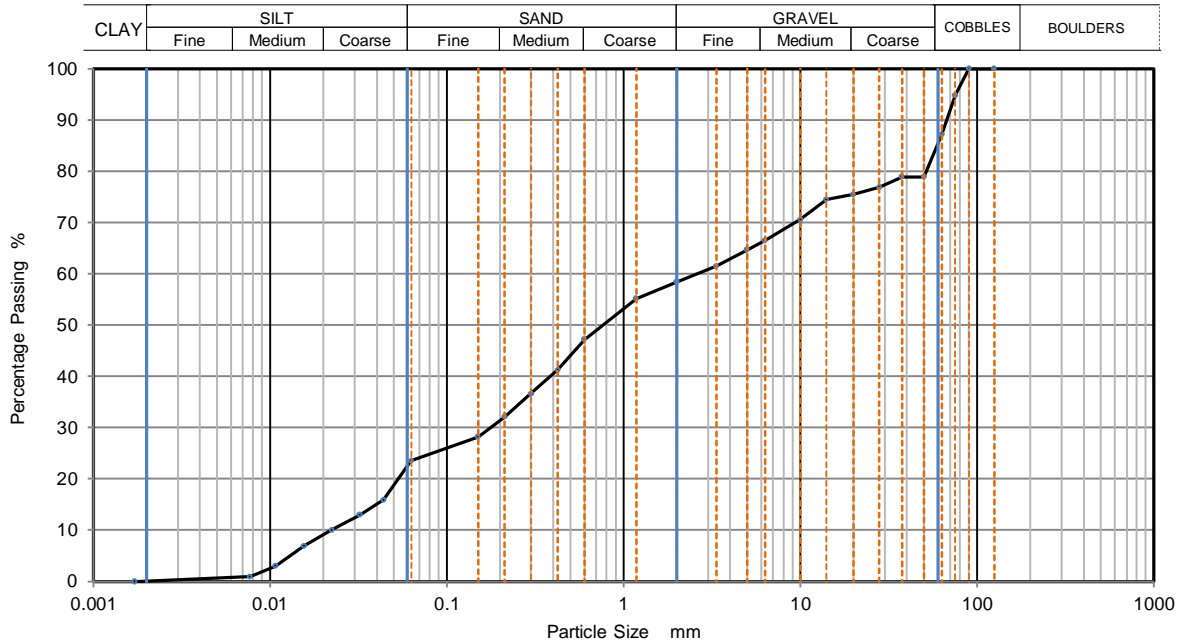
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1092396**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	16
90	100	0.0321	13
75	95	0.0223	10
63	87	0.0155	7
50	79	0.0107	3
37.5	79	0.0077	1
28	77	0.0017	0
20	76		
14	75		
10	71		
6.3	67		
5	65		
3.35	62		
2	58		
1.18	55		
0.6	47	Particle density (assumed) 2.67 Mg/m ³	
0.425	41		
0.3	37		
0.212	32		
0.15	28		
0.063	24		

Dry Mass of sample, g. 9087

Sample Proportions	% dry mass
Very coarse	13
Gravel	29
Sand	35
Silt	24
Clay	0

Grading Analysis		
D100	mm	
D60	mm	2.62
D30	mm	0.176
D10	mm	0.0231
Uniformity Coefficient		110
Curvature Coefficient		0.51

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **HP02**

Site Name **New Deer 2**

Sample No. **K1103090**

Soil Description **Brown gravelly clayey SAND**

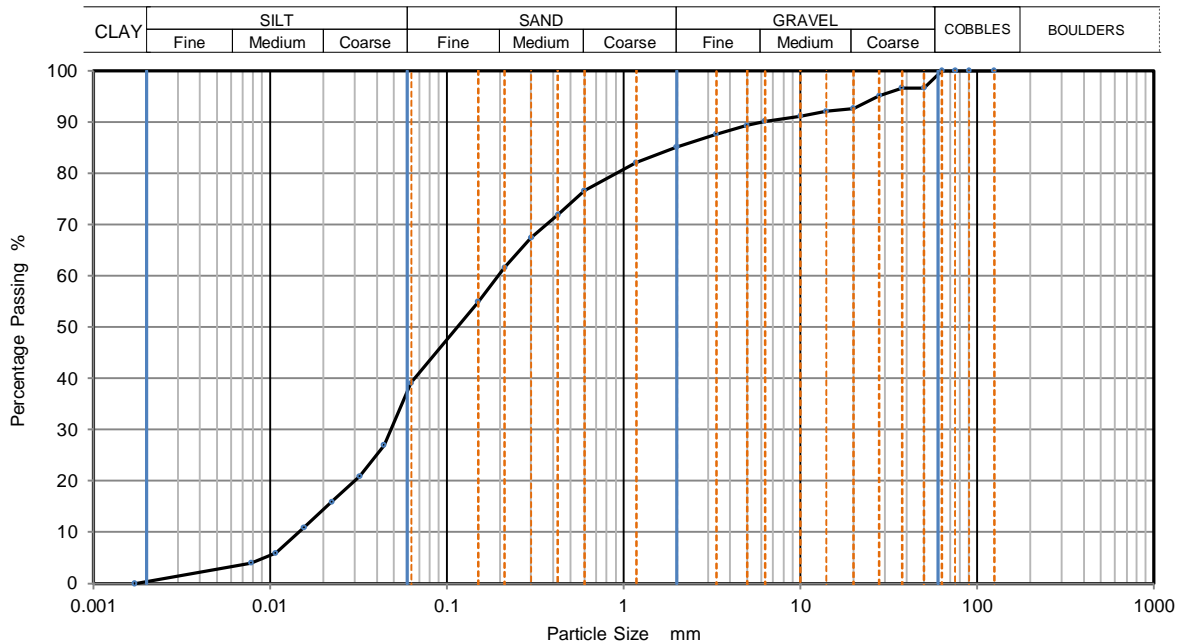
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103090**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	27
90	100	0.0321	21
75	100	0.0223	16
63	100	0.0155	11
50	97	0.0108	6
37.5	97	0.0078	4
28	95	0.0017	0
20	93		
14	92		
10	91		
6.3	90		
5	89		
3.35	88		
2	85		
1.18	82		
0.6	77	Particle density (assumed) 2.67 Mg/m ³	
0.425	72		
0.3	67		
0.212	62		
0.15	55		
0.063	39		

Dry Mass of sample, g. 8913

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	46
Silt	39
Clay	0

Grading Analysis		
D100	mm	
D60	mm	0.195
D30	mm	0.0483
D10	mm	0.0144
Uniformity Coefficient		14
Curvature Coefficient		0.83

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **HP03**

Site Name **New Deer 2**

Sample No. **K1103086**

Soil Description **Brown clayey SAND + GRAVEL with cobble**

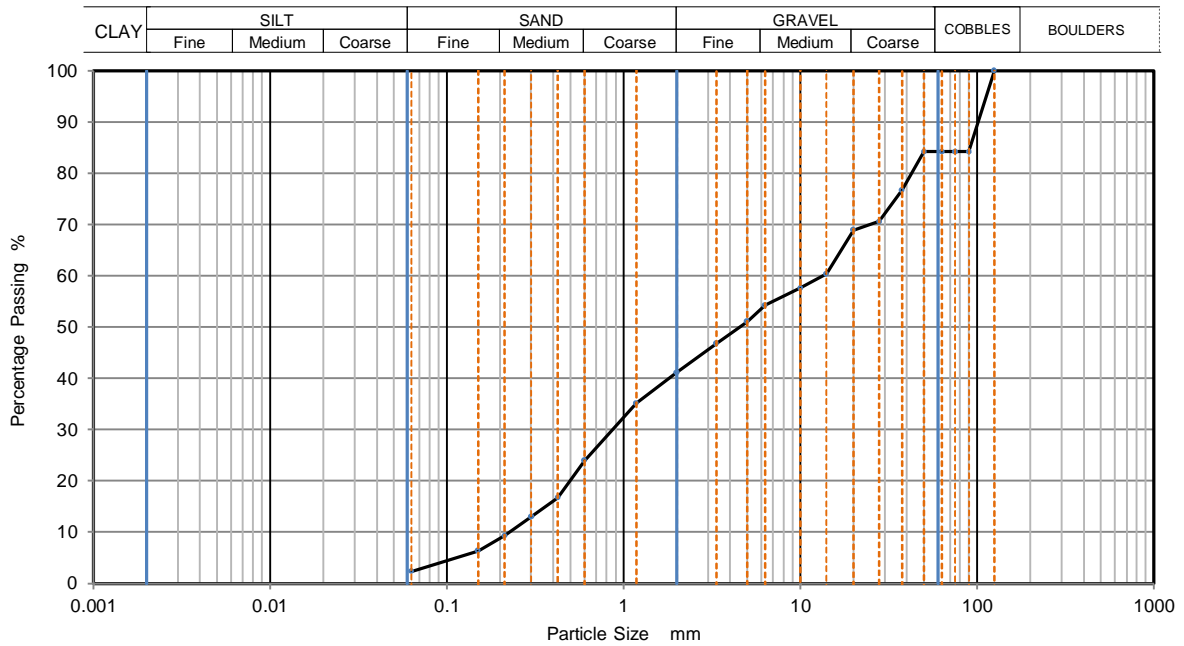
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1103086**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	84		
75	84		
63	84		
50	84		
37.5	77		
28	71		
20	69		
14	60		
10	58		
6.3	54		
5	51		
3.35	47		
2	41		
1.18	35		
0.6	24		
0.425	17		
0.3	13		
0.212	9		
0.15	6		
0.063	2		

Dry Mass of sample, g. 7195

Sample Proportions	% dry mass
Very coarse	16
Gravel	43
Sand	39
Fines <0.063mm	2

Grading Analysis		
D100	mm	125
D60	mm	13.3
D30	mm	0.862
D10	mm	0.224
Uniformity Coefficient		59
Curvature Coefficient		0.25

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **HP04**

Site Name **New Deer 2**

Sample No. **K1103084**

Soil Description **Brown clayey sandy GRAVEL**

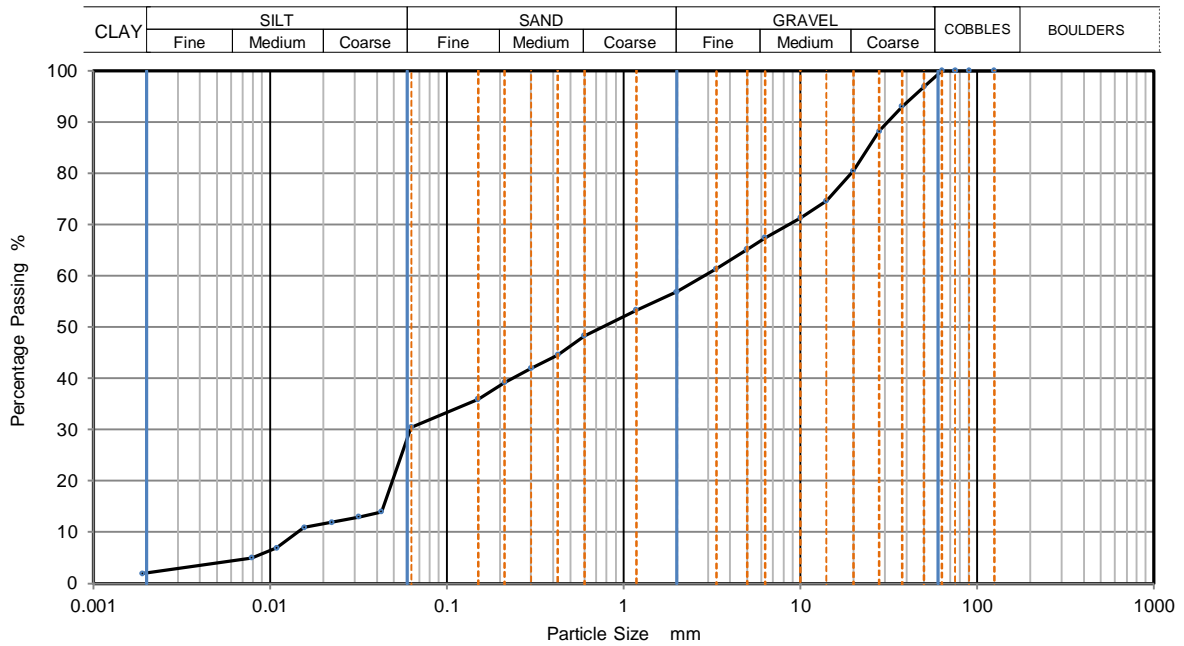
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103084**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0428	14
90	100	0.0317	13
75	100	0.0223	12
63	100	0.0156	11
50	97	0.0109	7
37.5	93	0.0079	5
28	88	0.0019	2
20	81		
14	75		
10	71		
6.3	67		
5	65		
3.35	61		
2	57		
1.18	53		
0.6	48	Particle density (assumed) 2.67 Mg/m ³	
0.425	45		
0.3	42		
0.212	39		
0.15	36		
0.063	31		

Dry Mass of sample, g. 14553

Sample Proportions	% dry mass
Very coarse	0
Gravel	43
Sand	27
Silt	28
Clay	2

Grading Analysis		
D100	mm	
D60	mm	2.86
D30	mm	0.0623
D10	mm	0.0149
Uniformity Coefficient		190
Curvature Coefficient		0.091

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **HP06**

Site Name **New Deer 2**

Sample No. **K1103078**

Soil Description **Brown clayey gravelly SAND**

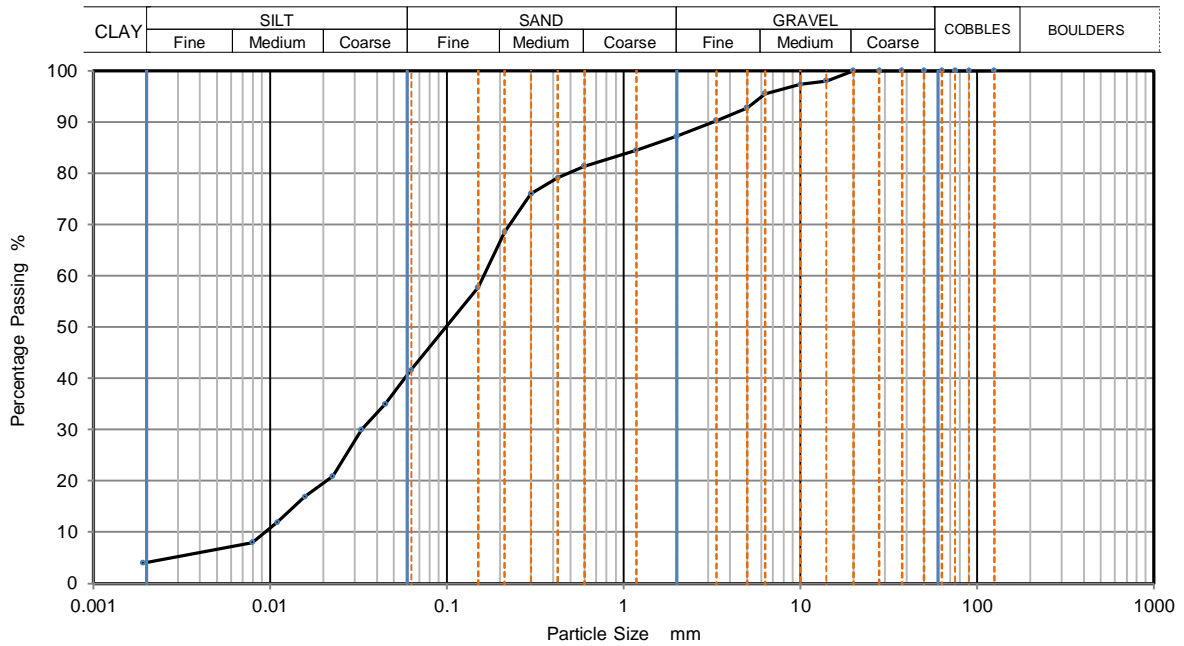
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **D**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103078**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	35
90	100	0.0329	30
75	100	0.0226	21
63	100	0.0158	17
50	100	0.0110	12
37.5	100	0.0079	8
28	100	0.0019	4
20	100		
14	98		
10	97		
6.3	96		
5	93		
3.35	90		
2	87		
1.18	85		
0.6	81		
0.425	79	Particle density (assumed)	
0.3	76	2.67	Mg/m3
0.212	69		
0.15	58		
0.063	42		

Dry Mass of sample, g. 4010

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	46
Silt	38
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.161
D30	mm	0.0333
D10	mm	0.00953
Uniformity Coefficient		17
Curvature Coefficient		0.72

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **HP06**

Site Name **New Deer 2**

Sample No. **K1103080**

Soil Description **Brown clayey gravelly SAND**

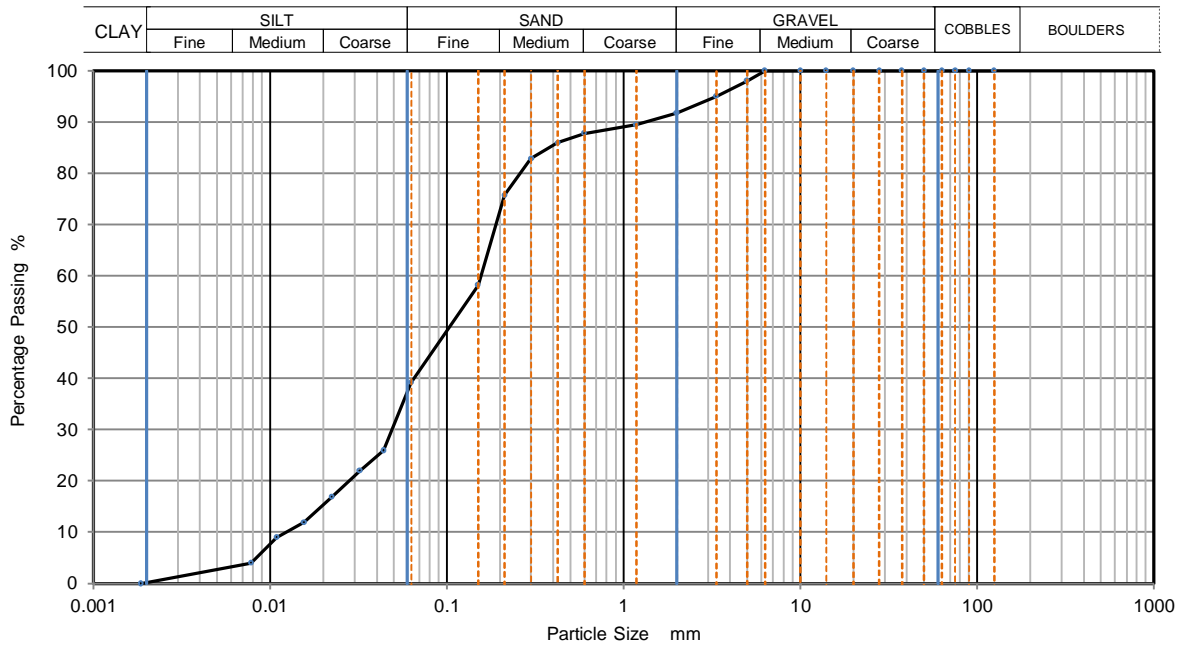
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103080**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	26
90	100	0.0322	22
75	100	0.0224	17
63	100	0.0156	12
50	100	0.0109	9
37.5	100	0.0078	4
28	100	0.0019	0
20	100		
14	100		
10	100		
6.3	100		
5	98		
3.35	95		
2	92		
1.18	90		
0.6	88	Particle density (assumed) 2.67 Mg/m ³	
0.425	86		
0.3	83		
0.212	76		
0.15	58		
0.063	39		

Dry Mass of sample, g. 16057

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	53
Silt	39
Clay	0

Grading Analysis		
D100	mm	
D60	mm	0.155
D30	mm	0.0488
D10	mm	0.0123
Uniformity Coefficient		13
Curvature Coefficient		1.2

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **HP07**

Site Name **New Deer 2**

Sample No. **K1103074**

Soil Description **Brown sandy gravelly SILT**

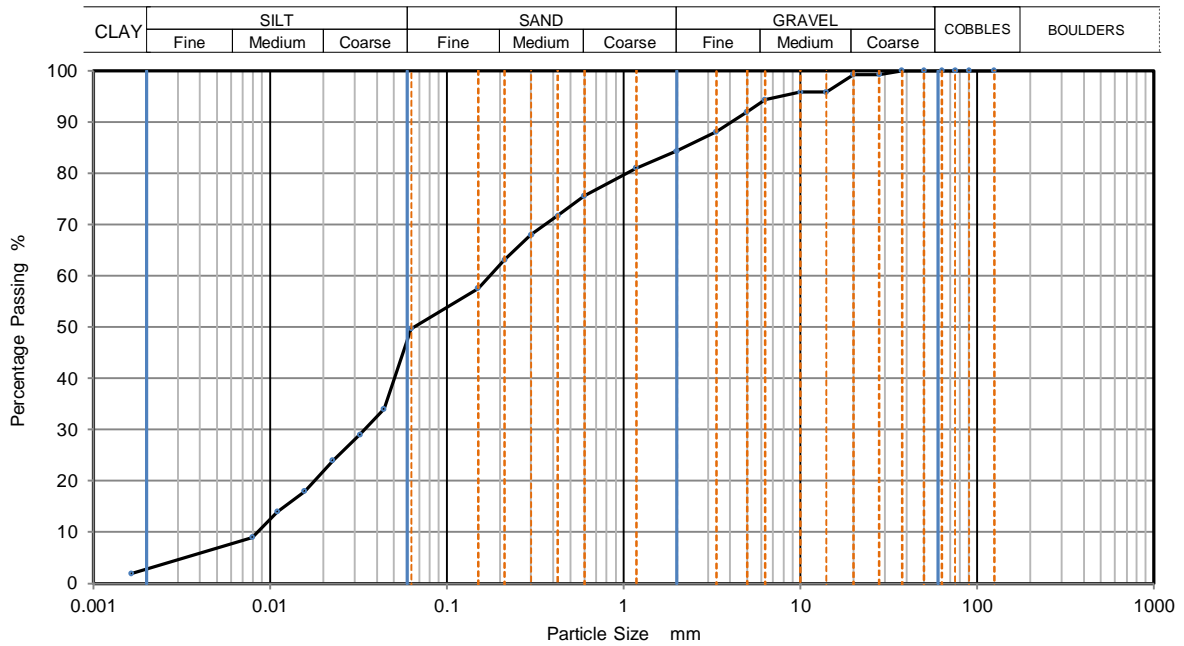
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103074**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	34
90	100	0.0324	29
75	100	0.0226	24
63	100	0.0157	18
50	100	0.0110	14
37.5	100	0.0079	9
28	99	0.0016	2
20	99		
14	96		
10	96		
6.3	94		
5	92		
3.35	88		
2	84		
1.18	81		
0.6	76	Particle density (assumed) 2.67 Mg/m ³	
0.425	72		
0.3	68		
0.212	63		
0.15	58		
0.063	50		

Dry Mass of sample, g. 4255

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	35
Silt	47
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.175
D30	mm	0.0345
D10	mm	0.00838
Uniformity Coefficient		21
Curvature Coefficient		0.81

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP01**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown clayey sandy GRAVEL with cobble**

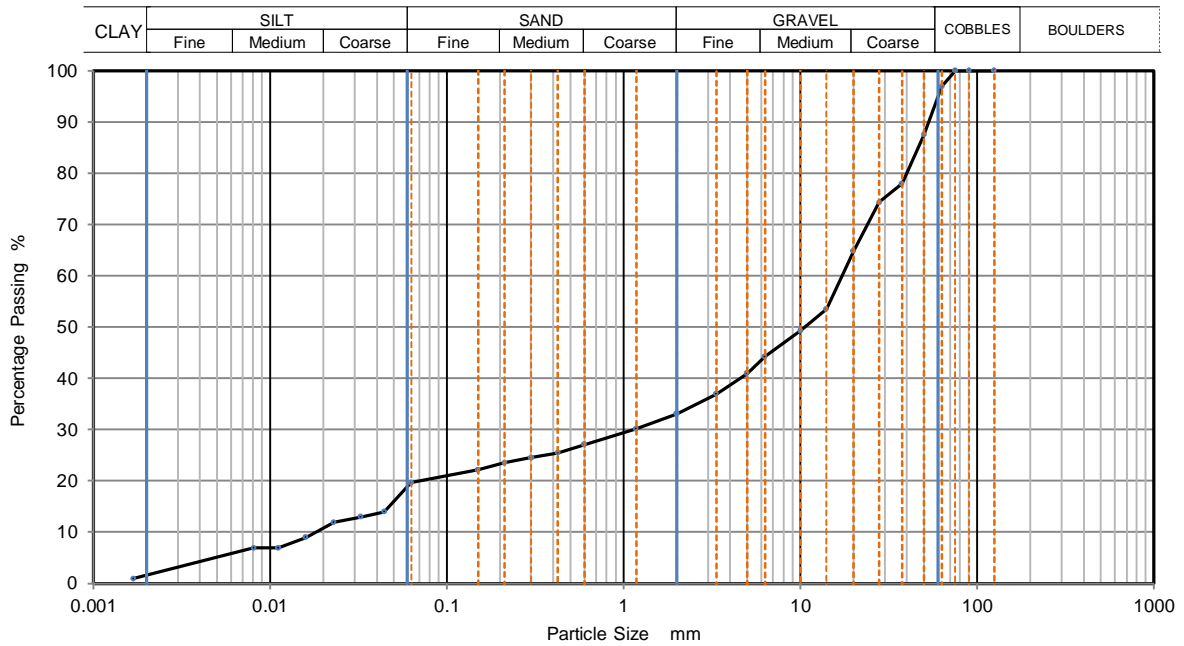
Depth, m **1.00**

Specimen Reference **4** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102869**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	14
90	100	0.0326	13
75	100	0.0229	12
63	97	0.0159	9
50	88	0.0111	7
37.5	78	0.0081	7
28	74	0.0017	1
20	65		
14	54		
10	49		
6.3	44		
5	41		
3.35	37		
2	33		
1.18	30		
0.6	27	Particle density (assumed) 2.67 Mg/m ³	
0.425	26		
0.3	25		
0.212	24		
0.15	22		
0.063	20		

Dry Mass of sample, g. **10541**

Sample Proportions	% dry mass
Very coarse	3
Gravel	64
Sand	13
Silt	18
Clay	1

Grading Analysis	
D100	mm
D60	mm 17.2
D30	mm 1.14
D10	mm 0.0176
Uniformity Coefficient	980
Curvature Coefficient	4.3

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP02**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey sandy GRAVEL with cobble**

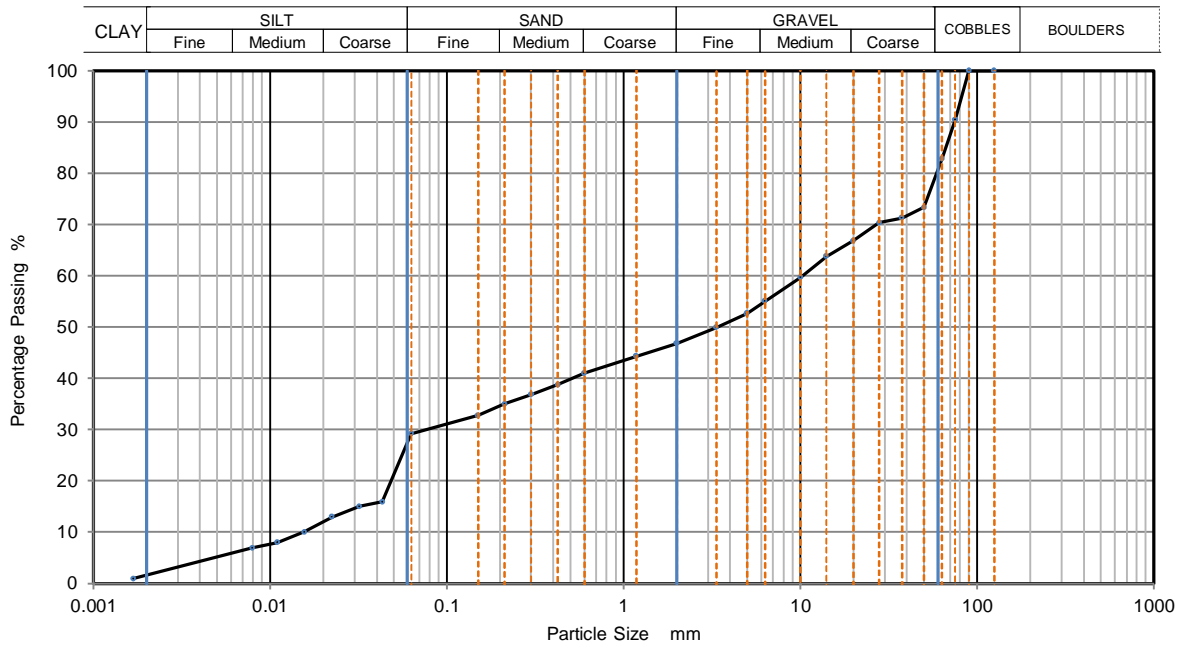
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086099**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0432	16
90	100	0.0320	15
75	91	0.0224	13
63	83	0.0156	10
50	73	0.0110	8
37.5	71	0.0079	7
28	70	0.0017	1
20	67		
14	64		
10	60		
6.3	55		
5	53		
3.35	50		
2	47		
1.18	44		
0.6	41	Particle density (assumed) 2.67 Mg/m ³	
0.425	39		
0.3	37		
0.212	35		
0.15	33		
0.063	29		

Dry Mass of sample, g. 10856

Sample Proportions	% dry mass
Very coarse	17
Gravel	36
Sand	18
Silt	28
Clay	2

Grading Analysis	
D100	mm
D60	mm 10.3
D30	mm 0.077
D10	mm 0.0149
Uniformity Coefficient	690
Curvature Coefficient	0.039

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP02**

Site Name **New Deer 2**

Sample No. **11**

Soil Description **Brown clayey sandy GRAVEL**

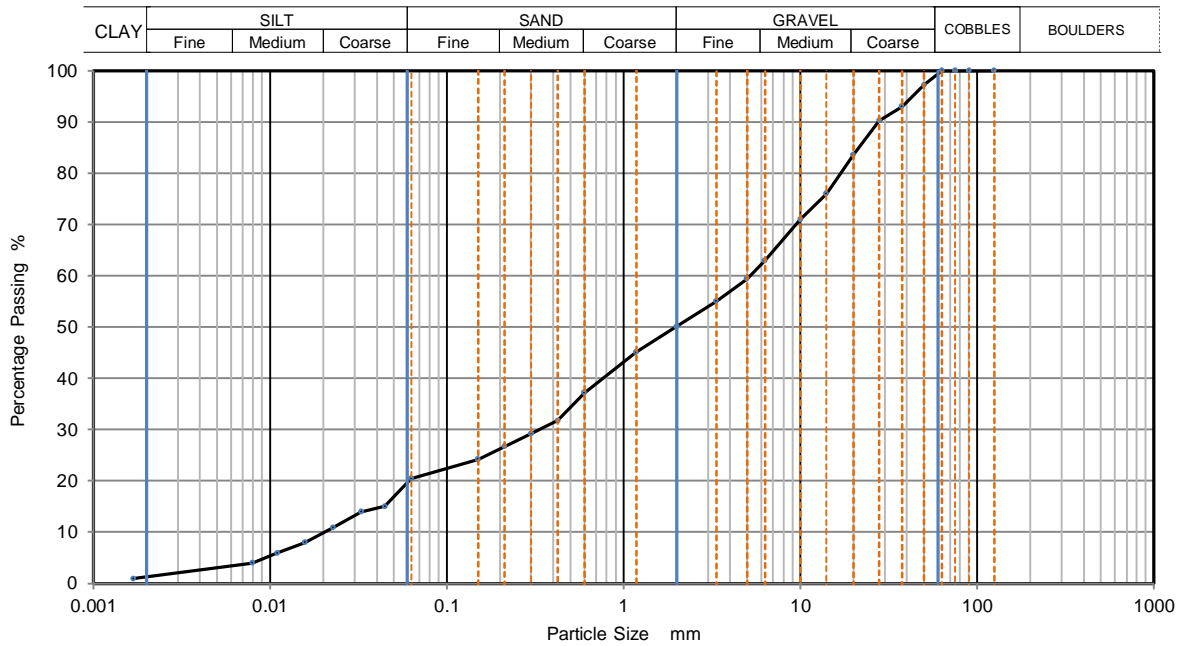
Depth, m **1.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **LB**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086104**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	15
90	100	0.0328	14
75	100	0.0227	11
63	100	0.0158	8
50	97	0.0110	6
37.5	93	0.0079	4
28	90	0.0017	1
20	84		
14	76		
10	71		
6.3	63		
5	60		
3.35	55		
2	50		
1.18	45		
0.6	37		
0.425	32	Particle density (assumed) 2.67 Mg/m ³	
0.3	29		
0.212	27		
0.15	24		
0.063	21		

Dry Mass of sample, g. 8518

Sample Proportions	% dry mass
Very coarse	0
Gravel	50
Sand	30
Silt	19
Clay	1

Grading Analysis		
D100	mm	
D60	mm	5.18
D30	mm	0.334
D10	mm	0.02
Uniformity Coefficient		260
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP02**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown clayey sandy GRAVEL**

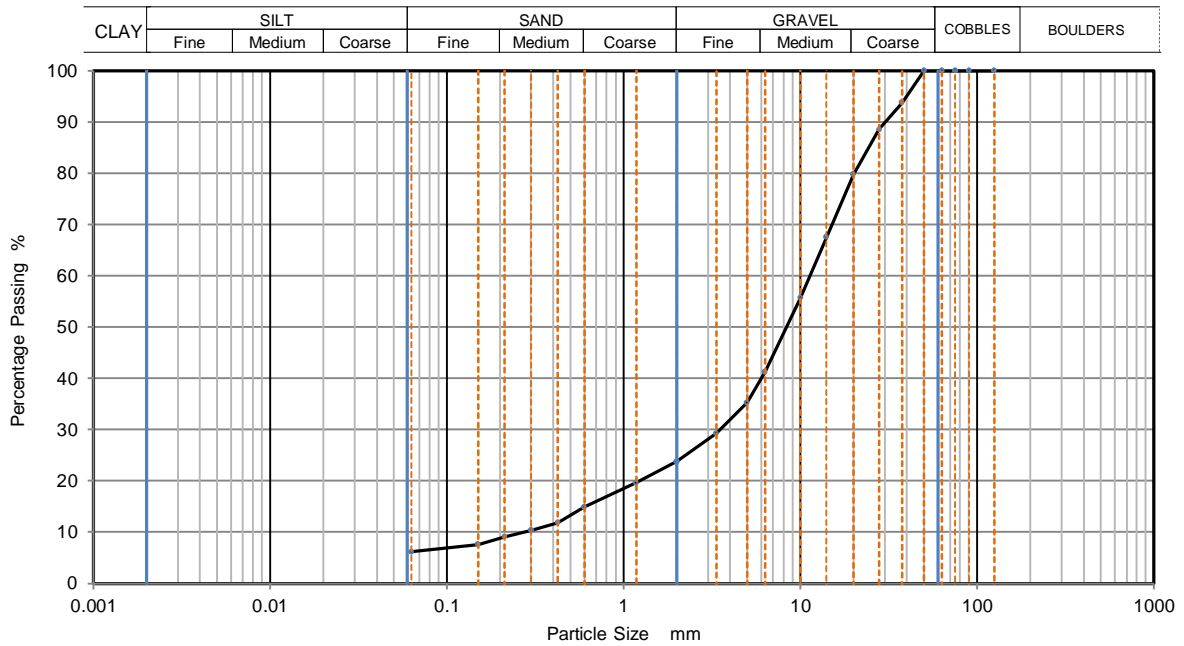
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1086110**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	94		
28	89		
20	80		
14	68		
10	56		
6.3	41		
5	35		
3.35	29		
2	24		
1.18	20		
0.6	15		
0.425	12		
0.3	10		
0.212	9		
0.15	8		
0.063	6		
		Particle density (assumed) 2.67 Mg/m ³	

Dry Mass of sample, g. 11320

Sample Proportions	% dry mass
Very coarse	0
Gravel	76
Sand	18
Fines <0.063mm	6

Grading Analysis	
D100	mm
D60	mm 11.3
D30	mm 3.51
D10	mm 0.268
Uniformity Coefficient	42
Curvature Coefficient	4.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP03**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey sandy GRAVEL with cobble**

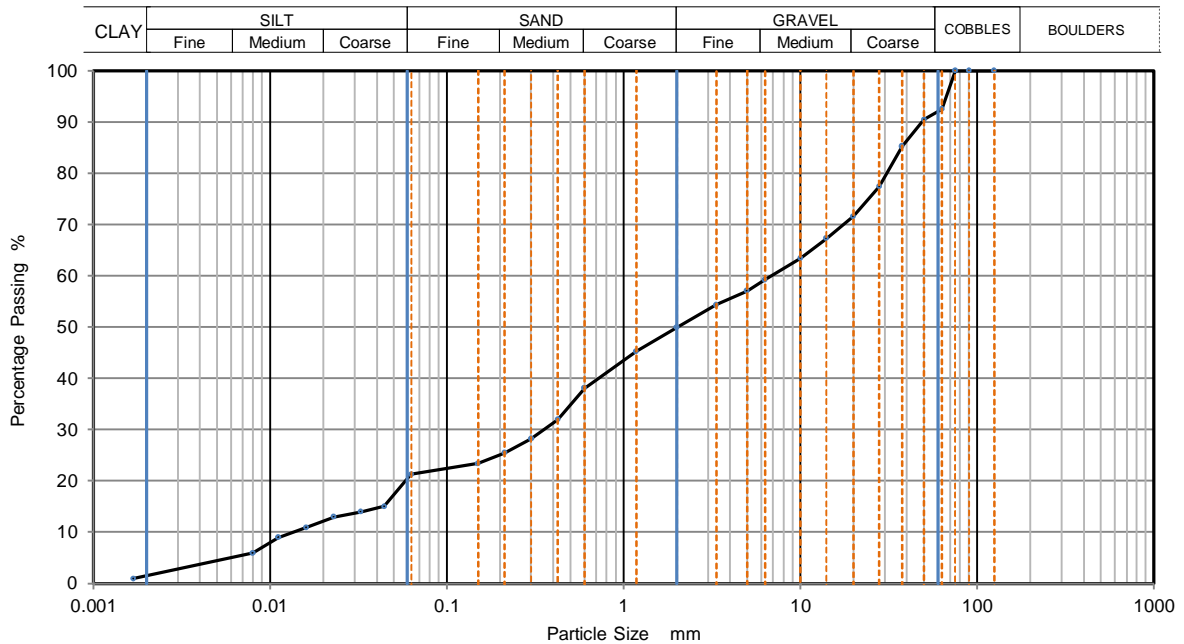
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086086**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	15
90	100	0.0326	14
75	100	0.0229	13
63	93	0.0161	11
50	91	0.0112	9
37.5	85	0.0080	6
28	77	0.0017	1
20	72		
14	67		
10	63		
6.3	59		
5	57		
3.35	54		
2	50		
1.18	45		
0.6	38	Particle density (assumed) 2.67 Mg/m ³	
0.425	32		
0.3	28		
0.212	26		
0.15	23		
0.063	21		

Dry Mass of sample, g. 14009

Sample Proportions	% dry mass
Very coarse	8
Gravel	43
Sand	29
Silt	20
Clay	1

Grading Analysis	
D100	mm
D60	mm 6.85
D30	mm 0.354
D10	mm 0.0136
Uniformity Coefficient	500
Curvature Coefficient	1.3

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP03**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty gravelly SAND**

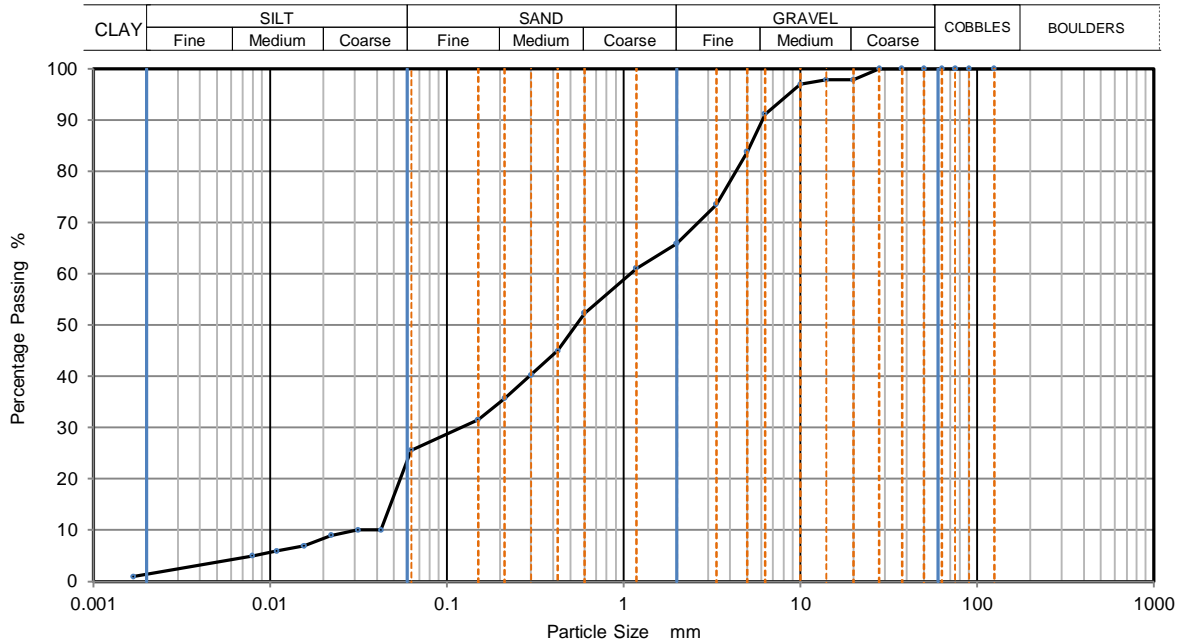
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086095**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0425	10
90	100	0.0314	10
75	100	0.0221	9
63	100	0.0155	7
50	100	0.0109	6
37.5	100	0.0079	5
28	100	0.0017	1
20	98		
14	98		
10	97		
6.3	91		
5	84		
3.35	74		
2	66		
1.18	61		
0.6	52	Particle density (assumed) 2.67 Mg/m ³	
0.425	45		
0.3	40		
0.212	36		
0.15	32		
0.063	26		

Dry Mass of sample, g. 9245

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	40
Silt	24
Clay	1

Grading Analysis		
D100	mm	
D60	mm	1.09
D30	mm	0.121
D10	mm	0.036
Uniformity Coefficient		30
Curvature Coefficient		0.37

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP03**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown clayey gravelly SAND**

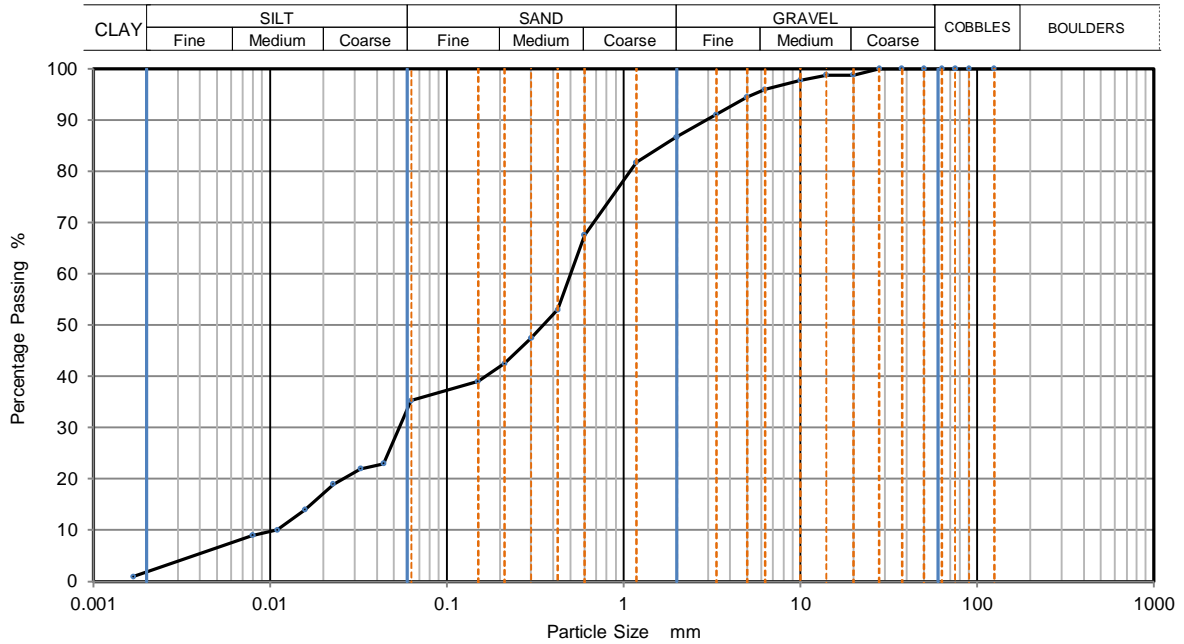
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086097**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	23
90	100	0.0325	22
75	100	0.0227	19
63	100	0.0158	14
50	100	0.0110	10
37.5	100	0.0080	9
28	100	0.0017	1
20	99		
14	99		
10	98		
6.3	96		
5	95		
3.35	91		
2	87		
1.18	82		
0.6	68	Particle density (assumed) 2.67 Mg/m ³	
0.425	53		
0.3	47		
0.212	43		
0.15	39		
0.063	35		

Dry Mass of sample, g. 8830

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	51
Silt	33
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.502
D30	mm	0.0537
D10	mm	0.011
Uniformity Coefficient		46
Curvature Coefficient		0.52

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP04**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown silty sandy GRAVEL**

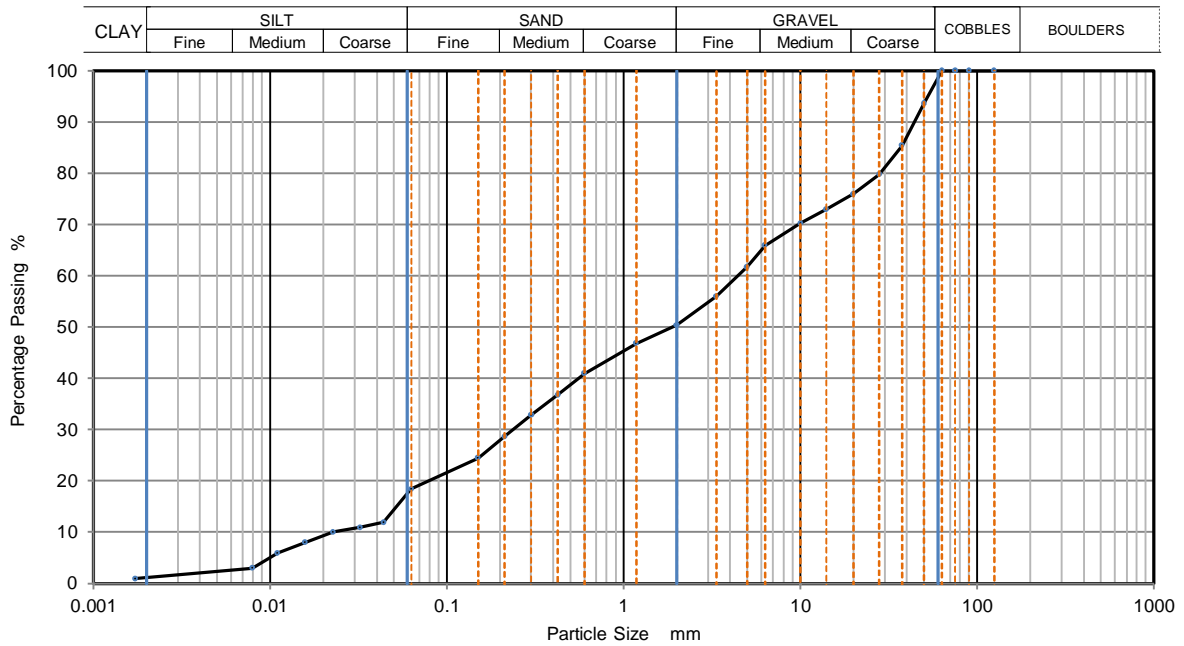
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102365**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	12
90	100	0.0324	11
75	100	0.0227	10
63	100	0.0158	8
50	94	0.0110	6
37.5	85	0.0079	3
28	80	0.0017	1
20	76		
14	73		
10	70		
6.3	66		
5	62		
3.35	56		
2	50		
1.18	47		
0.6	41		
0.425	37	Particle density (assumed)	
0.3	33	2.67	Mg/m3
0.212	29		
0.15	25		
0.063	19		

Dry Mass of sample, g. **7033**

Sample Proportions	% dry mass
Very coarse	0
Gravel	50
Sand	32
Silt	18
Clay	1

Grading Analysis	
D100	mm
D60	mm 4.43
D30	mm 0.236
D10	mm 0.0239
Uniformity Coefficient	190
Curvature Coefficient	0.53

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP04**

Site Name **New Deer 2**

Sample No. **11**

Soil Description **Brown clayey gravelly SAND**

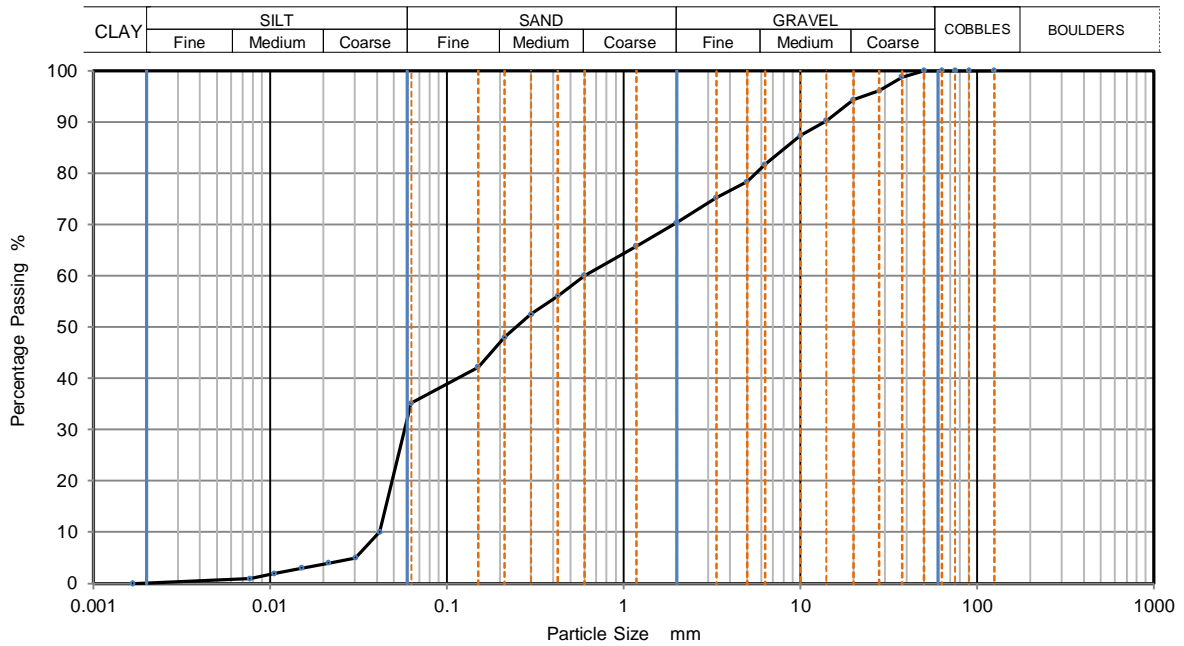
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102372**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0417	10
90	100	0.0305	5
75	100	0.0214	4
63	100	0.0151	3
50	100	0.0106	2
37.5	99	0.0077	1
28	96	0.0017	0
20	94		
14	90		
10	87		
6.3	82		
5	78		
3.35	75		
2	70		
1.18	66		
0.6	60	Particle density (assumed) 2.67 Mg/m ³	
0.425	56		
0.3	53		
0.212	48		
0.15	42		
0.063	35		

Dry Mass of sample, g. 11919

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	35
Silt	35
Clay	0

Grading Analysis	
D100	mm
D60	mm 0.598
D30	mm 0.0579
D10	mm 0.0418
Uniformity Coefficient	14
Curvature Coefficient	0.13

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP05**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown gravelly clayey SAND**

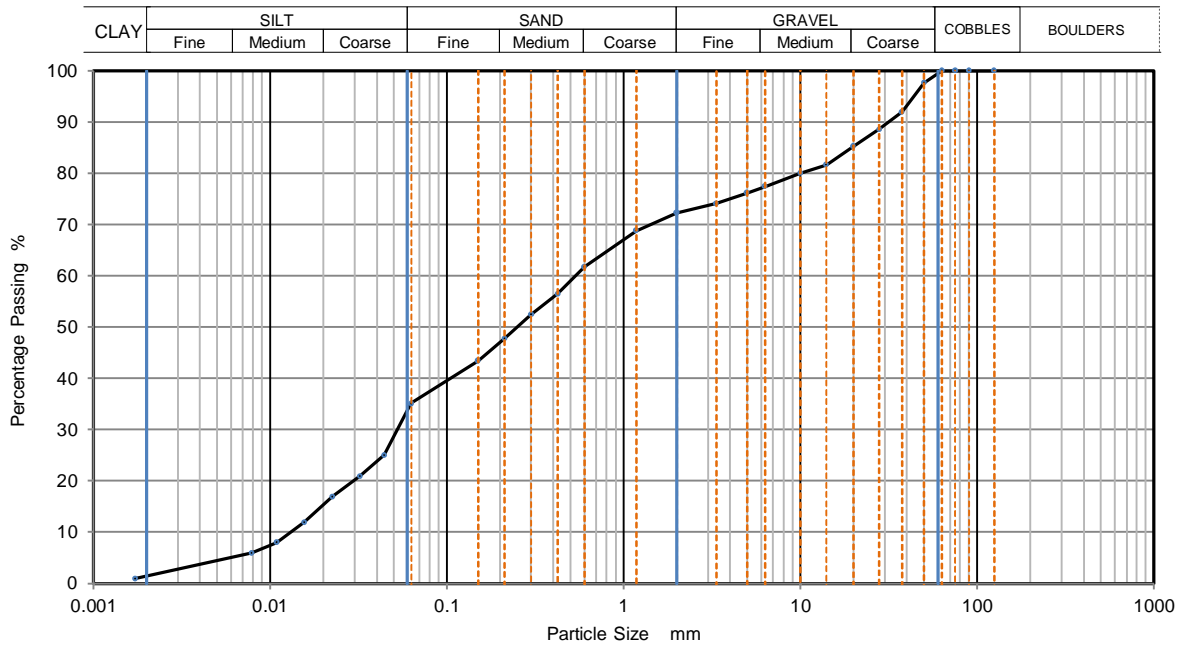
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086114**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	25
90	100	0.0324	21
75	100	0.0225	17
63	100	0.0156	12
50	98	0.0109	8
37.5	92	0.0079	6
28	89	0.0017	1
20	85		
14	82		
10	80		
6.3	77		
5	76		
3.35	74		
2	72		
1.18	69		
0.6	62	Particle density (assumed) 2.67 Mg/m ³	
0.425	57		
0.3	52		
0.212	48		
0.15	43		
0.063	35		

Dry Mass of sample, g. 10493

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	37
Silt	34
Clay	2

Grading Analysis	
D100	mm
D60	mm 0.536
D30	mm 0.0524
D10	mm 0.0131
Uniformity Coefficient	41
Curvature Coefficient	0.39

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP06**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown silty sandy GRAVEL**

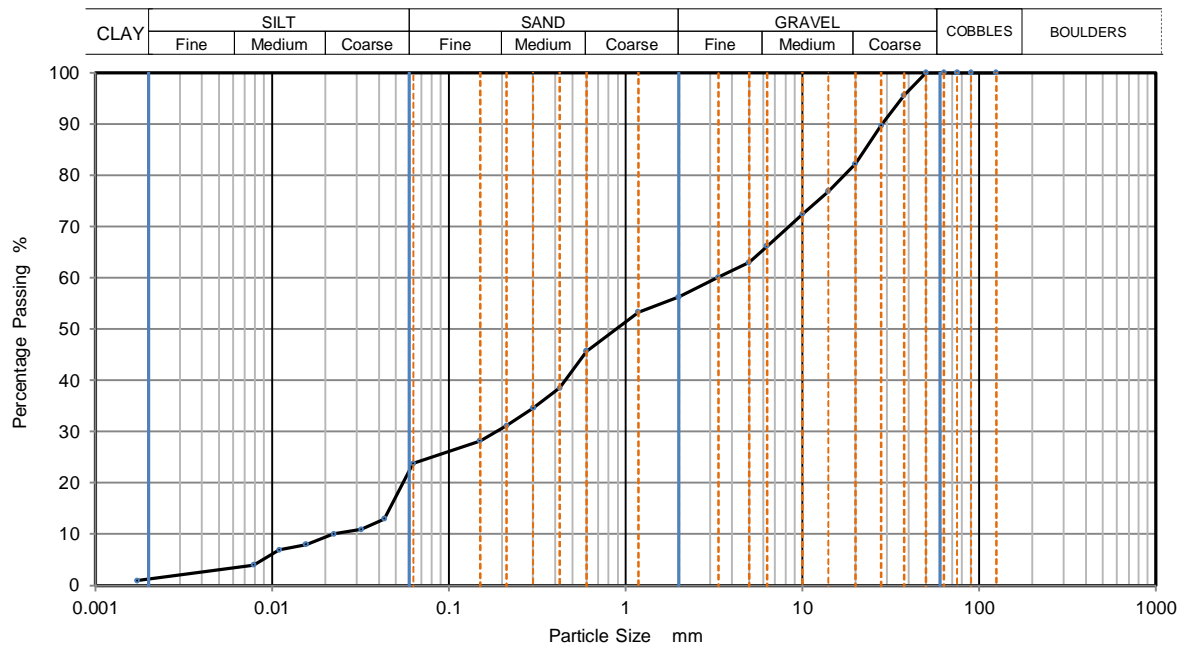
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086121**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0432	13
90	100	0.0318	11
75	100	0.0223	10
63	100	0.0156	8
50	100	0.0110	7
37.5	96	0.0079	4
28	90	0.0017	1
20	82		
14	77		
10	72		
6.3	66		
5	63		
3.35	60		
2	56		
1.18	53		
0.6	46		
0.425	39	Particle density (assumed)	
0.3	35	2.67	Mg/m ³
0.212	31		
0.15	28		
0.063	24		

Dry Mass of sample, g. **10516**

Sample Proportions	% dry mass
Very coarse	0
Gravel	44
Sand	33
Silt	23
Clay	1

Grading Analysis	
D100	mm
D60	mm 3.33
D30	mm 0.185
D10	mm 0.023
Uniformity Coefficient	140
Curvature Coefficient	0.45

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP06**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown clayey gravelly SAND**

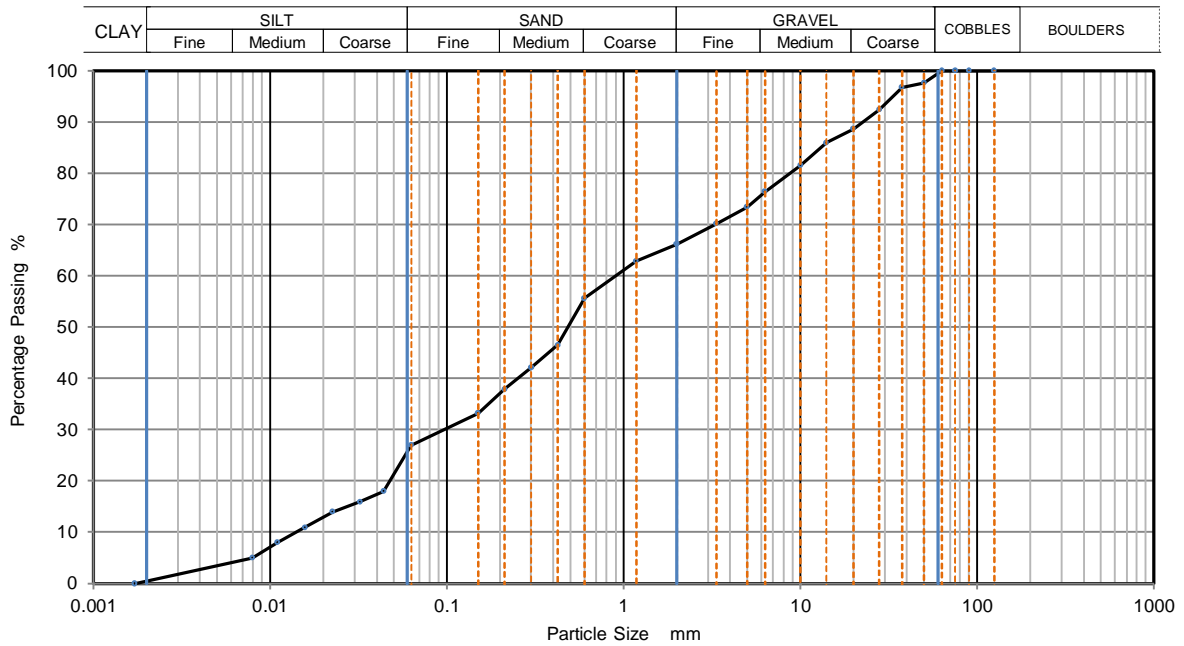
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086123**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	18
90	100	0.0324	16
75	100	0.0226	14
63	100	0.0158	11
50	98	0.0110	8
37.5	97	0.0079	5
28	92	0.0017	0
20	89		
14	86		
10	82		
6.3	76		
5	73		
3.35	70		
2	66		
1.18	63		
0.6	56	Particle density (assumed) 2.67 Mg/m ³	
0.425	47		
0.3	42		
0.212	38		
0.15	33		
0.063	27		

Dry Mass of sample, g. 10182

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	39
Silt	27
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.9
D30	mm	0.0959
D10	mm	0.0139
Uniformity Coefficient		65
Curvature Coefficient		0.73

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP06**

Site Name **New Deer 2**

Sample No. **13**

Soil Description **Brown clayey sandy GRAVEL with cobble**

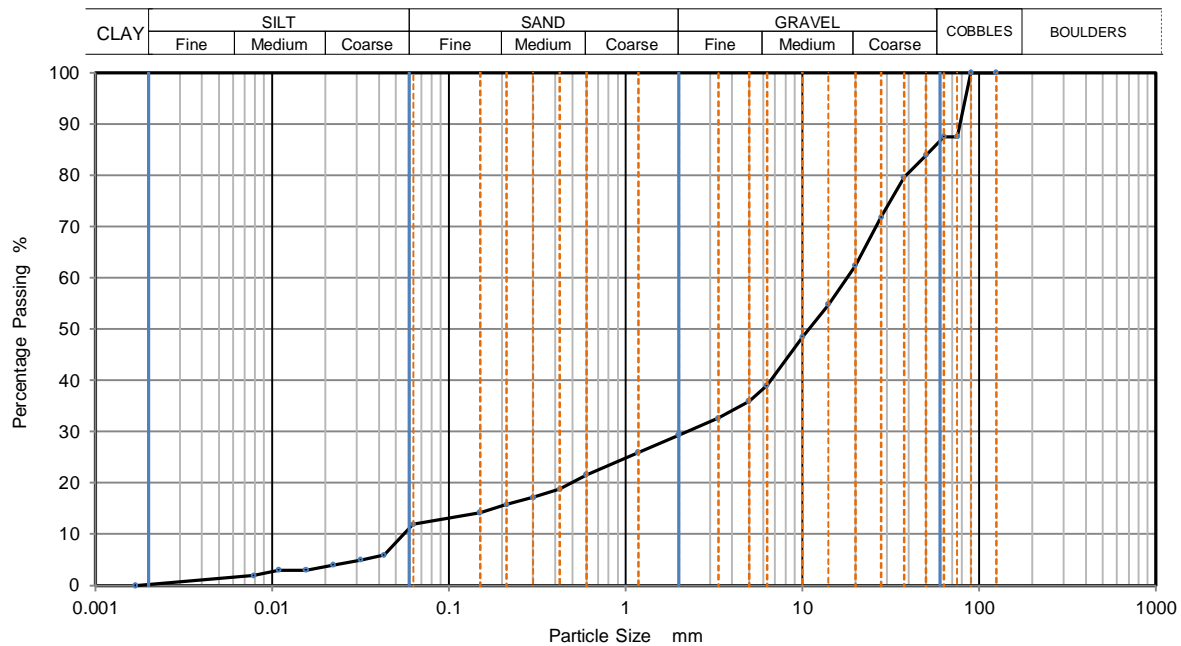
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103017**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0430	6
90	100	0.0317	5
75	88	0.0221	4
63	88	0.0155	3
50	84	0.0109	3
37.5	80	0.0079	2
28	72	0.0017	0
20	62		
14	55		
10	48		
6.3	39		
5	36		
3.35	33		
2	29		
1.18	26		
0.6	22	Particle density (assumed) 2.67 Mg/m ³	
0.425	19		
0.3	17		
0.212	16		
0.15	14		
0.063	12		

Dry Mass of sample, g. 8381

Sample Proportions	% dry mass
Very coarse	13
Gravel	58
Sand	17
Silt	12
Clay	1

Grading Analysis	
D100	mm
D60	mm 17.8
D30	mm 2.19
D10	mm 0.0556
Uniformity Coefficient	320
Curvature Coefficient	4.9

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP07**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey gravelly SAND**

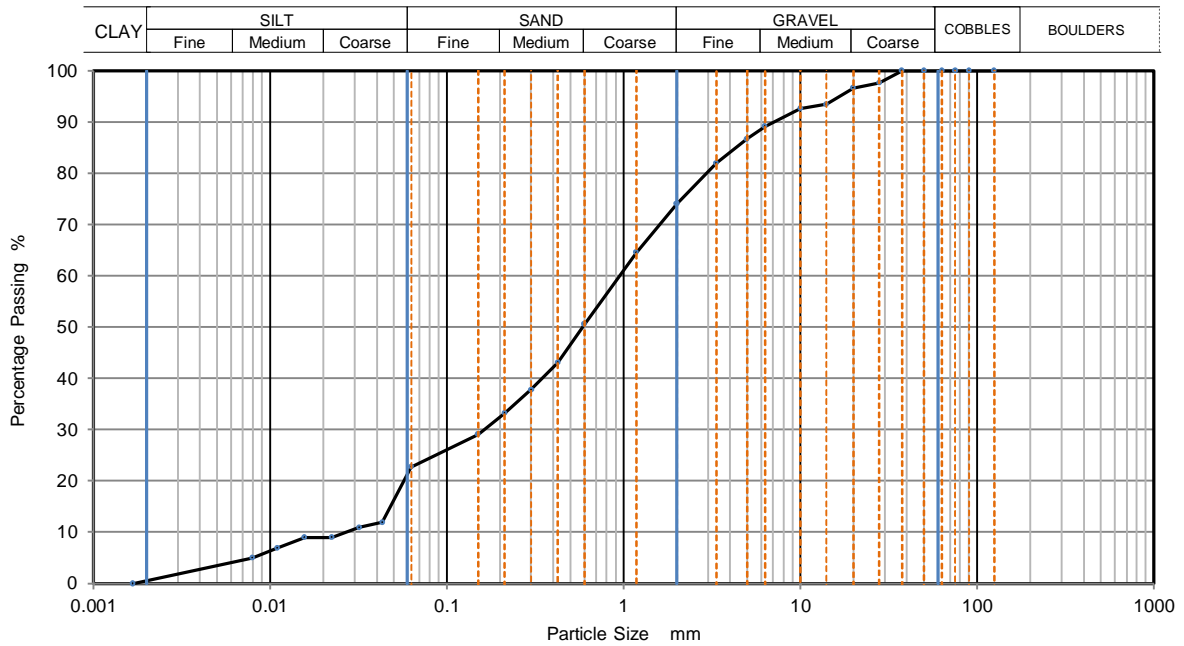
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103019**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0432	12
90	100	0.0318	11
75	100	0.0223	9
63	100	0.0157	9
50	100	0.0110	7
37.5	100	0.0079	5
28	98	0.0017	0
20	97		
14	93		
10	93		
6.3	89		
5	87		
3.35	82		
2	74		
1.18	65		
0.6	51		
0.425	43		
0.3	38		
0.212	33		
0.15	29		
0.063	23		
		Particle density (assumed) 2.67 Mg/m ³	

Dry Mass of sample, g. 4555

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	51
Silt	22
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.943
D30	mm	0.162
D10	mm	0.0259
Uniformity Coefficient		36
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP07**

Site Name **New Deer 2**

Sample No. **11**

Soil Description **Brown silty sandy GRAVEL with cobble**

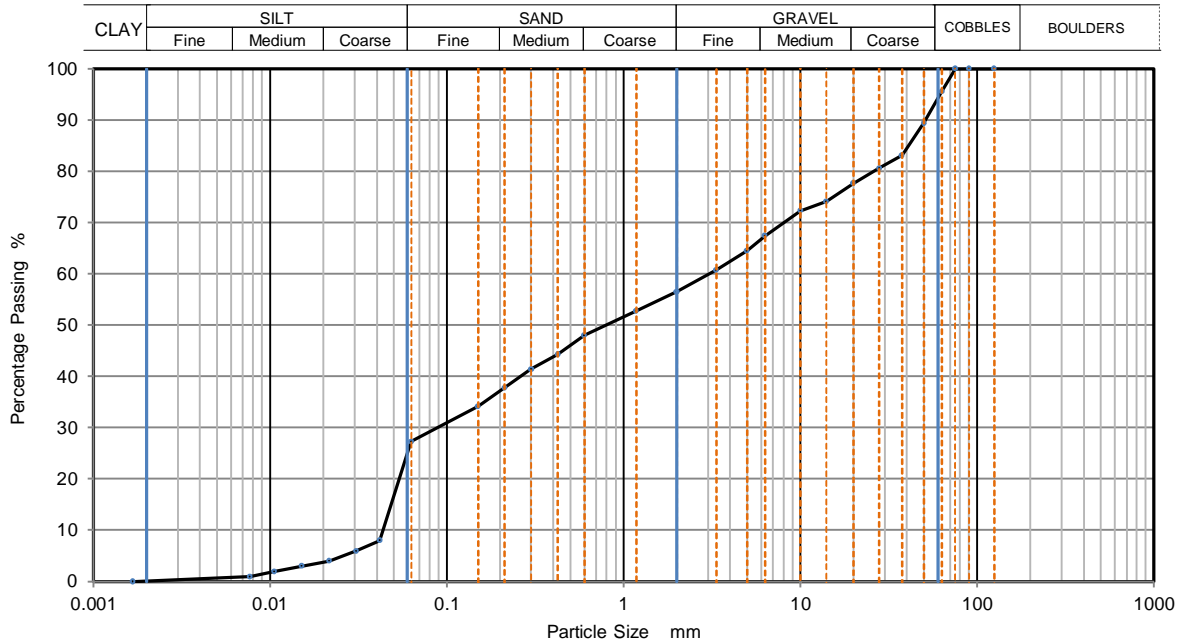
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103028**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0417	8
90	100	0.0307	6
75	100	0.0215	4
63	96	0.0151	3
50	89	0.0106	2
37.5	83	0.0077	1
28	81	0.0017	0
20	78		
14	74		
10	72		
6.3	67		
5	65		
3.35	61		
2	57		
1.18	53		
0.6	48	Particle density (assumed) 2.67 Mg/m ³	
0.425	44		
0.3	41		
0.212	38		
0.15	34		
0.063	27		

Dry Mass of sample, g. 10445

Sample Proportions	% dry mass
Very coarse	4
Gravel	39
Sand	29
Silt	27
Clay	0

Grading Analysis	
D100	mm
D60	mm 3.06
D30	mm 0.0889
D10	mm 0.0437
Uniformity Coefficient	70
Curvature Coefficient	0.059

Remarks
Preparation and testing in accordance with BS1377 unless noted below

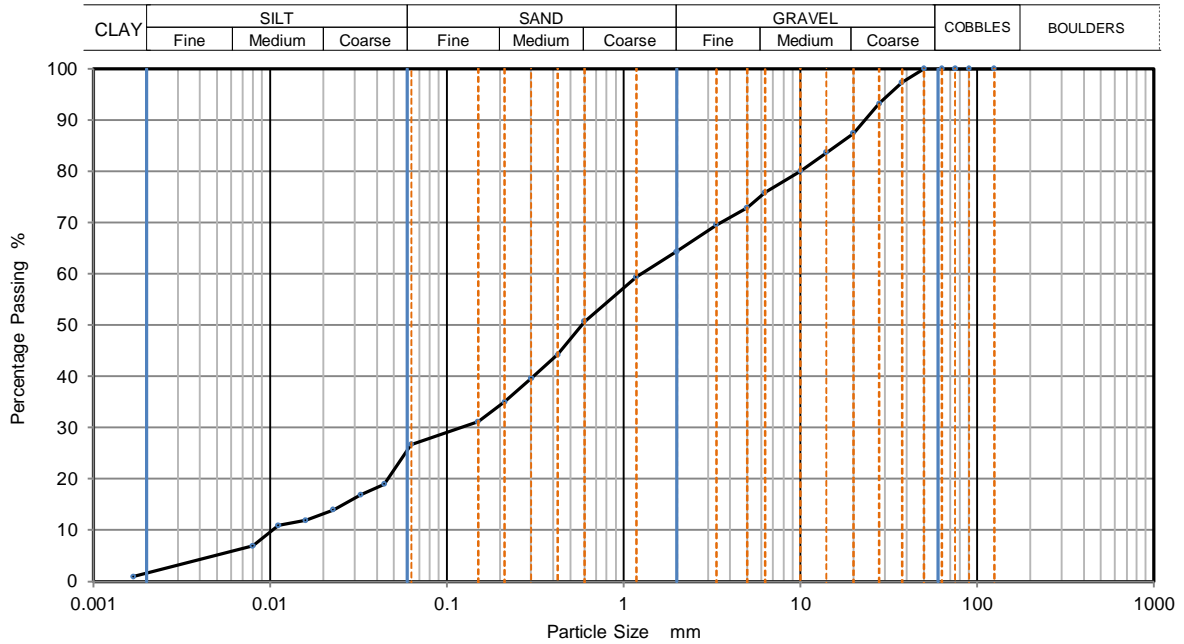


PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP07**

Site Name	New Deer 2	Sample No.	13
Soil Description	Brown silty SAND & GRAVEL	Depth, m	3.00
Specimen Reference	2	Specimen Depth	m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		KeyLAB ID
			K1103030



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	19
90	100	0.0326	17
75	100	0.0227	14
63	100	0.0159	12
50	100	0.0112	11
37.5	97	0.0080	7
28	93	0.0017	1
20	87		
14	84		
10	80		
6.3	76		
5	73		
3.35	70		
2	64		
1.18	59		
0.6	51		
0.425	44	Particle density (assumed) 2.67 Mg/m ³	
0.3	40		
0.212	35		
0.15	31		
0.063	27		

Dry Mass of sample, g. 9052

Sample Proportions	% dry mass
Very coarse	0
Gravel	36
Sand	38
Silt	25
Clay	2

Grading Analysis		
D100	mm	
D60	mm	1.27
D30	mm	0.12
D10	mm	0.0104
Uniformity Coefficient		120
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

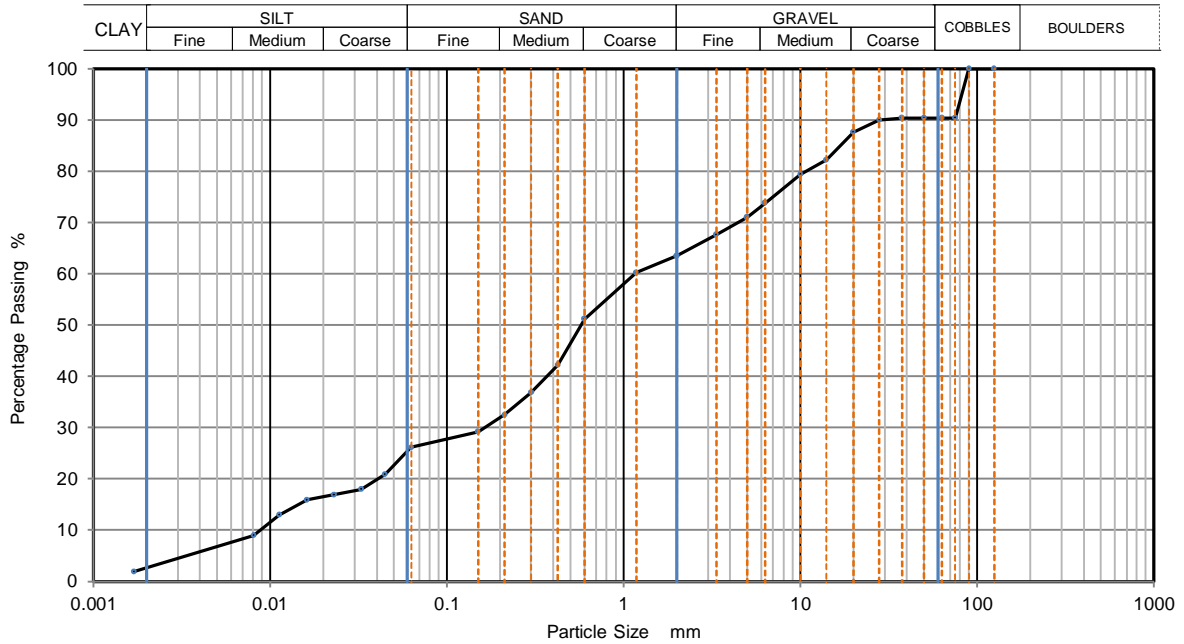


PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP08**

Site Name	New Deer 2	Sample No.	4
Soil Description	Brown gravelly clayey SAND with cobble	Depth, m	1.00
Specimen Reference	2	Specimen Depth	m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		KeyLAB ID
			K1103034



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	21
90	100	0.0328	18
75	90	0.0230	17
63	90	0.0162	16
50	90	0.0113	13
37.5	90	0.0081	9
28	90	0.0017	2
20	88		
14	82		
10	79		
6.3	74		
5	71		
3.35	68		
2	64		
1.18	60		
0.6	51	Particle density (assumed) 2.67 Mg/m ³	
0.425	42		
0.3	37		
0.212	33		
0.15	29		
0.063	26		

Dry Mass of sample, g. 10580

Sample Proportions	% dry mass
Very coarse	10
Gravel	27
Sand	37
Silt	23
Clay	3

Grading Analysis		
D100	mm	
D60	mm	1.16
D30	mm	0.163
D10	mm	0.00865
Uniformity Coefficient		130
Curvature Coefficient		2.7

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP08**

Site Name **New Deer 2**

Sample No. **11**

Soil Description **Brown clayey sandy GRAVEL with cobble**

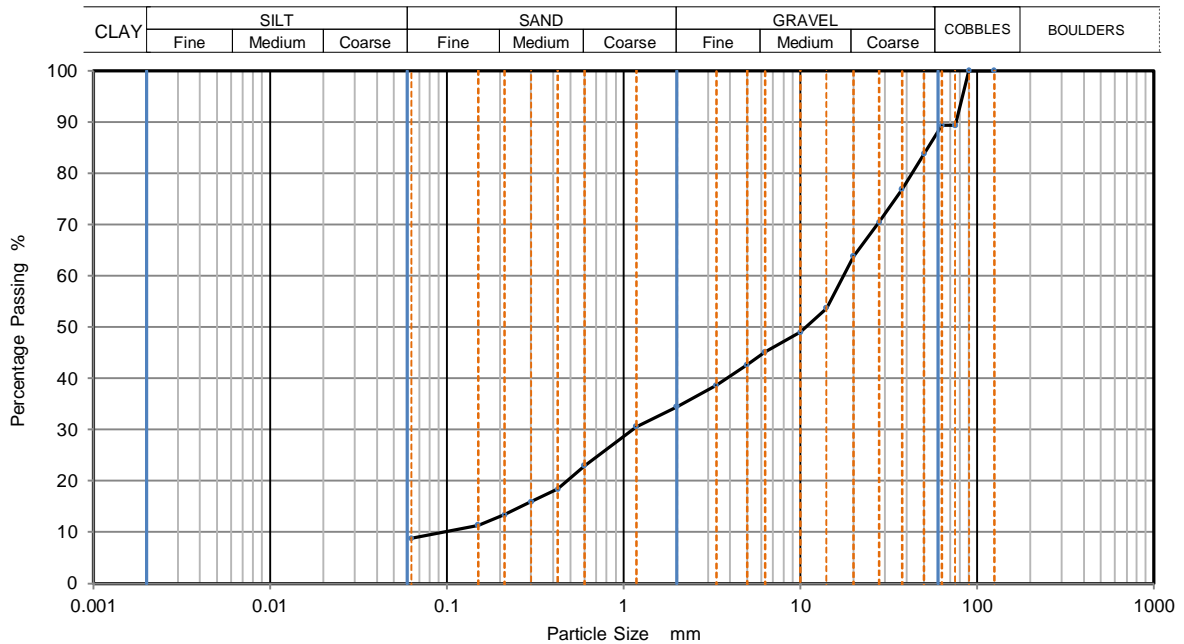
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1103042**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	89		
63	89		
50	84		
37.5	77		
28	71		
20	64		
14	54		
10	49		
6.3	45		
5	43		
3.35	39		
2	35		
1.18	31		
0.6	23		
0.425	18		
0.3	16		
0.212	13		
0.15	11		
0.063	9		

Dry Mass of sample, g. 12309

Sample Proportions	% dry mass
Very coarse	11
Gravel	55
Sand	26
Fines <0.063mm	9

Grading Analysis	
D100	mm
D60	mm 17.5
D30	mm 1.12
D10	mm 0.094
Uniformity Coefficient	190
Curvature Coefficient	0.76

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP08**

Site Name **New Deer 2**

Sample No. **13**

Soil Description **Brown clayey sandy GRAVEL with cobble**

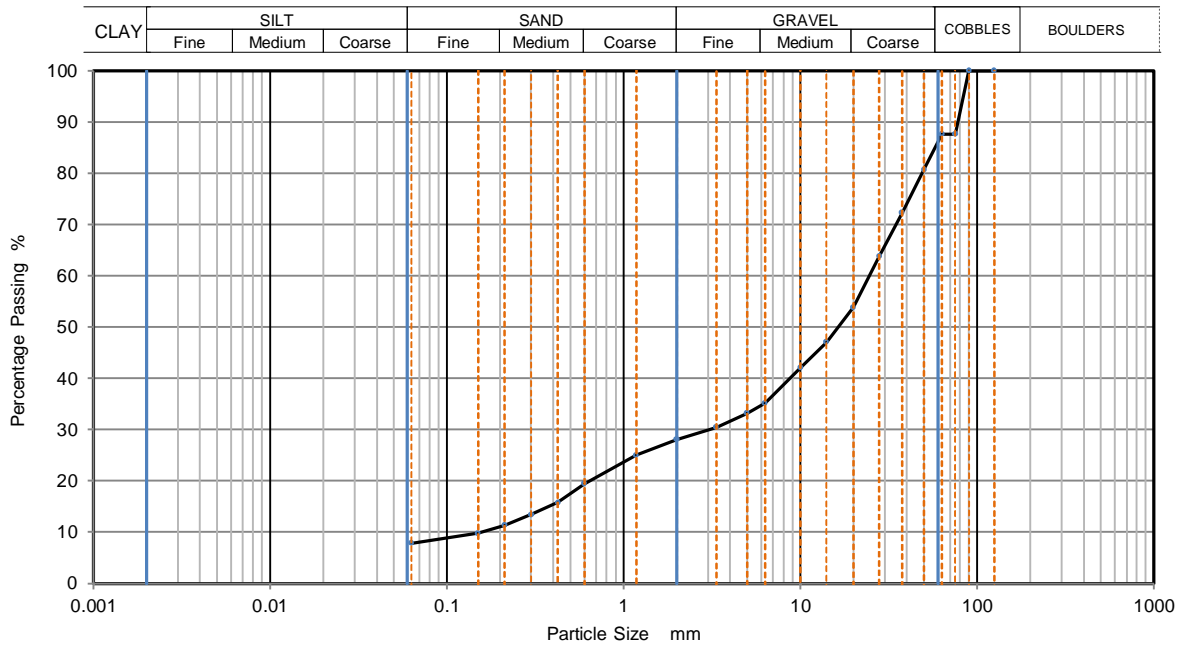
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1103043**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	88		
63	88		
50	81		
37.5	72		
28	64		
20	54		
14	47		
10	42		
6.3	35		
5	33		
3.35	31		
2	28		
1.18	25		
0.6	20		
0.425	16		
0.3	14		
0.212	11		
0.15	10		
0.063	8		

Dry Mass of sample, g. 12293

Sample Proportions	% dry mass
Very coarse	12
Gravel	60
Sand	20
Fines <0.063mm	8

Grading Analysis	
D100	mm
D60	mm 24.6
D30	mm 3
D10	mm 0.156
Uniformity Coefficient	160
Curvature Coefficient	2.3

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP09**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey sandy GRAVEL**

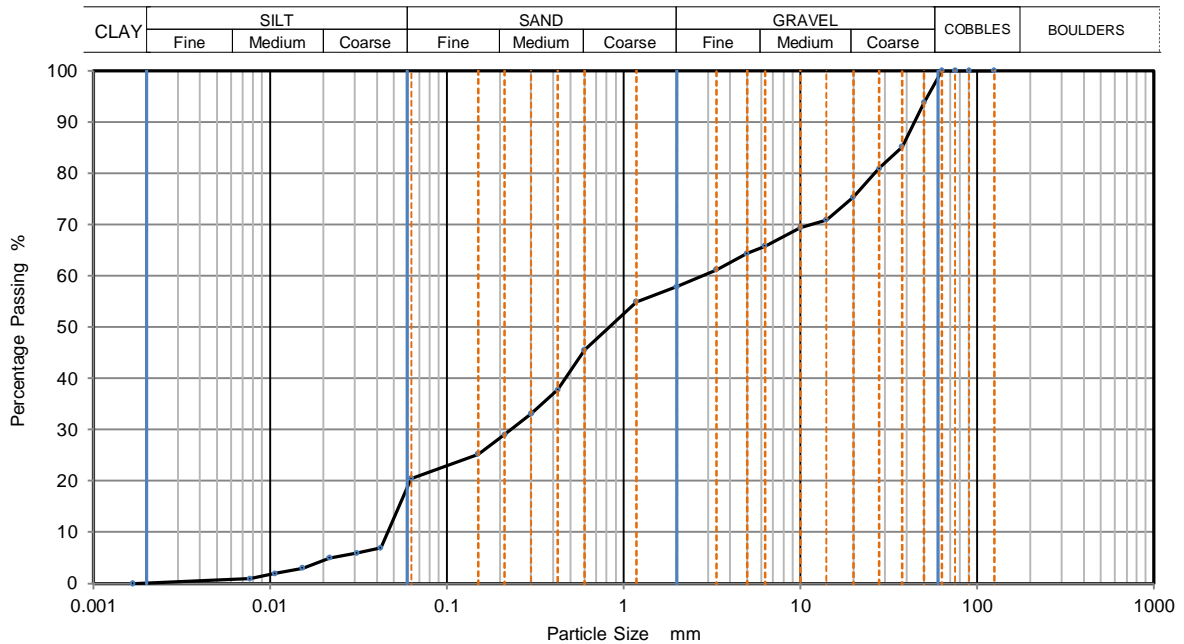
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103045**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0421	7
90	100	0.0310	6
75	100	0.0217	5
63	100	0.0152	3
50	94	0.0107	2
37.5	85	0.0077	1
28	81	0.0017	0
20	75		
14	71		
10	69		
6.3	66		
5	64		
3.35	61		
2	58		
1.18	55		
0.6	46		
0.425	38	Particle density (assumed) 2.67 Mg/m ³	
0.3	33		
0.212	29		
0.15	25		
0.063	21		

Dry Mass of sample, g. **9672**

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	37
Silt	20
Clay	0

Grading Analysis	
D100	mm
D60	mm 2.76
D30	mm 0.231
D10	mm 0.0459
Uniformity Coefficient	60
Curvature Coefficient	0.42

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP09**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown clayey sandy GRAVEL with cobble**

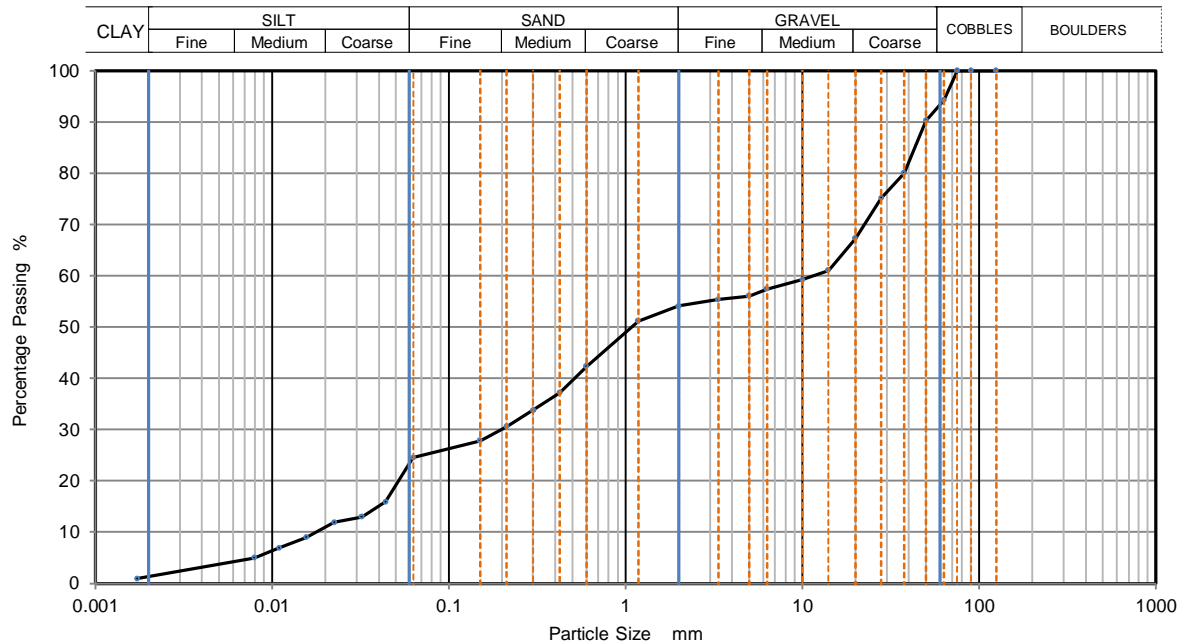
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103047**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	16
90	100	0.0321	13
75	100	0.0225	12
63	94	0.0156	9
50	90	0.0110	7
37.5	80	0.0079	5
28	75	0.0017	1
20	67		
14	61		
10	59		
6.3	57		
5	56		
3.35	55		
2	54		
1.18	51		
0.6	42	Particle density (assumed) 2.67 Mg/m ³	
0.425	37		
0.3	34		
0.212	31		
0.15	28		
0.063	25		

Dry Mass of sample, g. 11992

Sample Proportions	% dry mass
Very coarse	6
Gravel	40
Sand	30
Silt	23
Clay	1

Grading Analysis	
D100	mm
D60	mm 11.4
D30	mm 0.196
D10	mm 0.0184
Uniformity Coefficient	620
Curvature Coefficient	0.18

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP10**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey sandy GRAVEL**

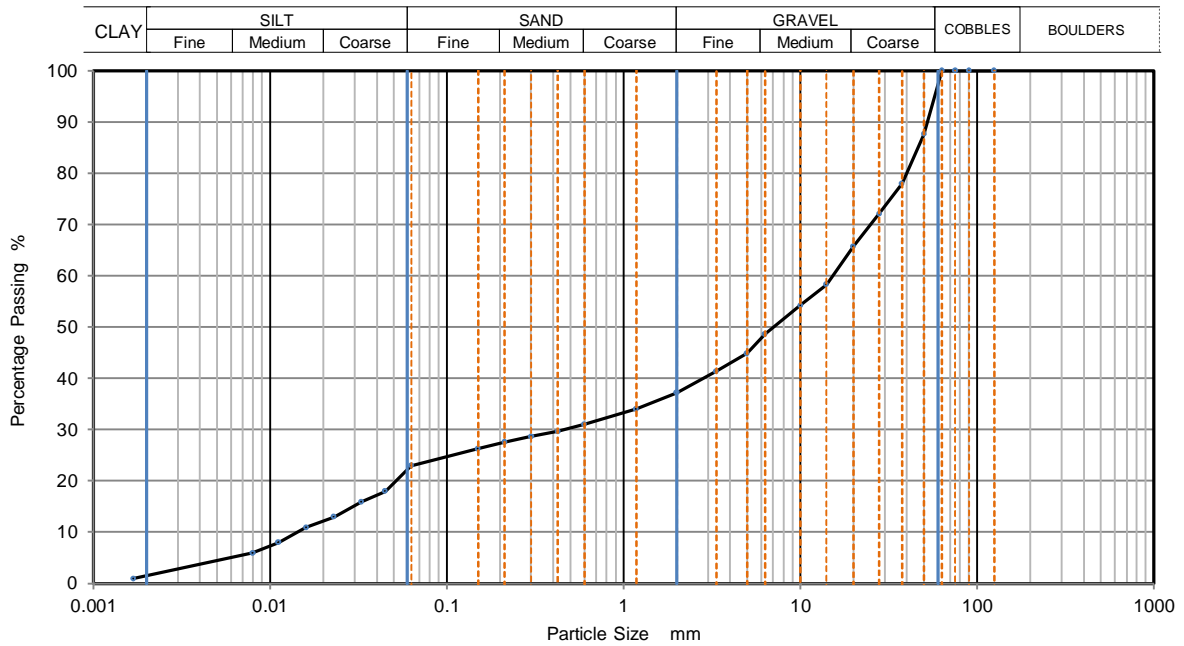
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103054**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	18
90	100	0.0329	16
75	100	0.0229	13
63	100	0.0160	11
50	88	0.0111	8
37.5	78	0.0080	6
28	72	0.0017	1
20	66		
14	58		
10	54		
6.3	49		
5	45		
3.35	41		
2	37		
1.18	34		
0.6	31		
0.425	30	Particle density (assumed) 2.67 Mg/m ³	
0.3	29		
0.212	28		
0.15	26		
0.063	23		

Dry Mass of sample, g. 9206

Sample Proportions	% dry mass
Very coarse	0
Gravel	63
Sand	14
Silt	22
Clay	1

Grading Analysis	
D100	mm
D60	mm 15.2
D30	mm 0.457
D10	mm 0.0135
Uniformity Coefficient	1100
Curvature Coefficient	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP10**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown clayey sandy GRAVEL**

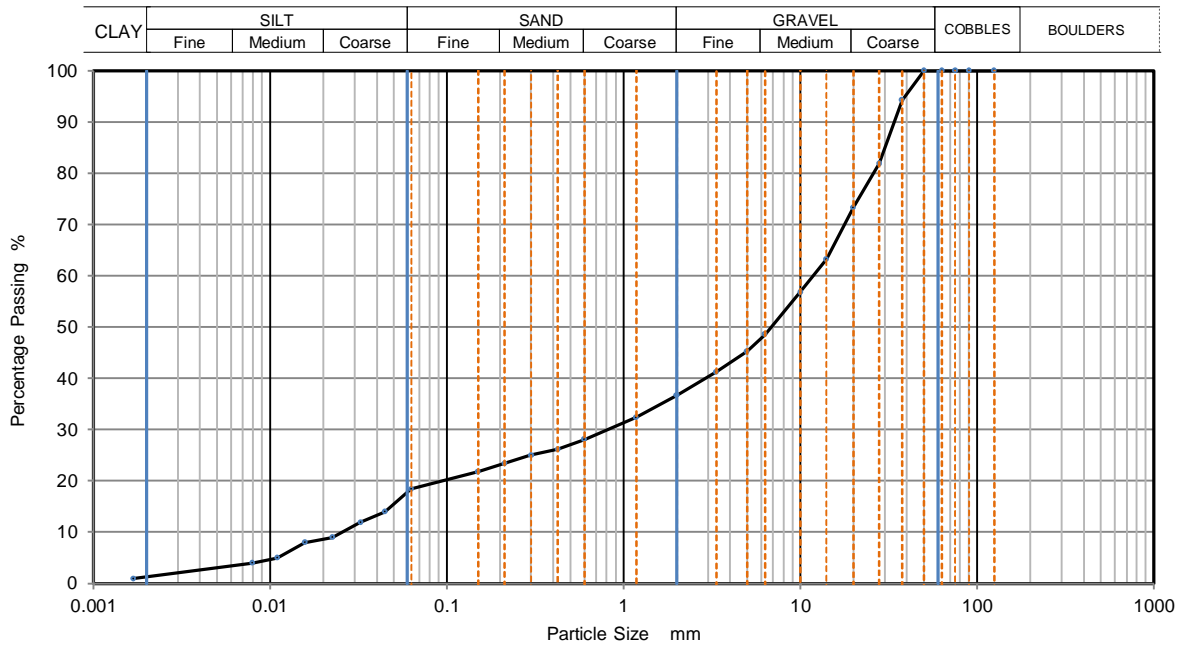
Depth, m **0.80**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103056**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	14
90	100	0.0325	12
75	100	0.0225	9
63	100	0.0158	8
50	100	0.0110	5
37.5	94	0.0079	4
28	82	0.0017	1
20	73		
14	63		
10	57		
6.3	49		
5	45		
3.35	41		
2	37		
1.18	32		
0.6	28	Particle density (assumed) 2.67 Mg/m ³	
0.425	26		
0.3	25		
0.212	24		
0.15	22		
0.063	19		

Dry Mass of sample, g. 13391

Sample Proportions	% dry mass
Very coarse	0
Gravel	63
Sand	18
Silt	18
Clay	1

Grading Analysis	
D100	mm
D60	mm 11.9
D30	mm 0.81
D10	mm 0.0263
Uniformity Coefficient	450
Curvature Coefficient	2.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP11**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown sandy silty GRAVEL**

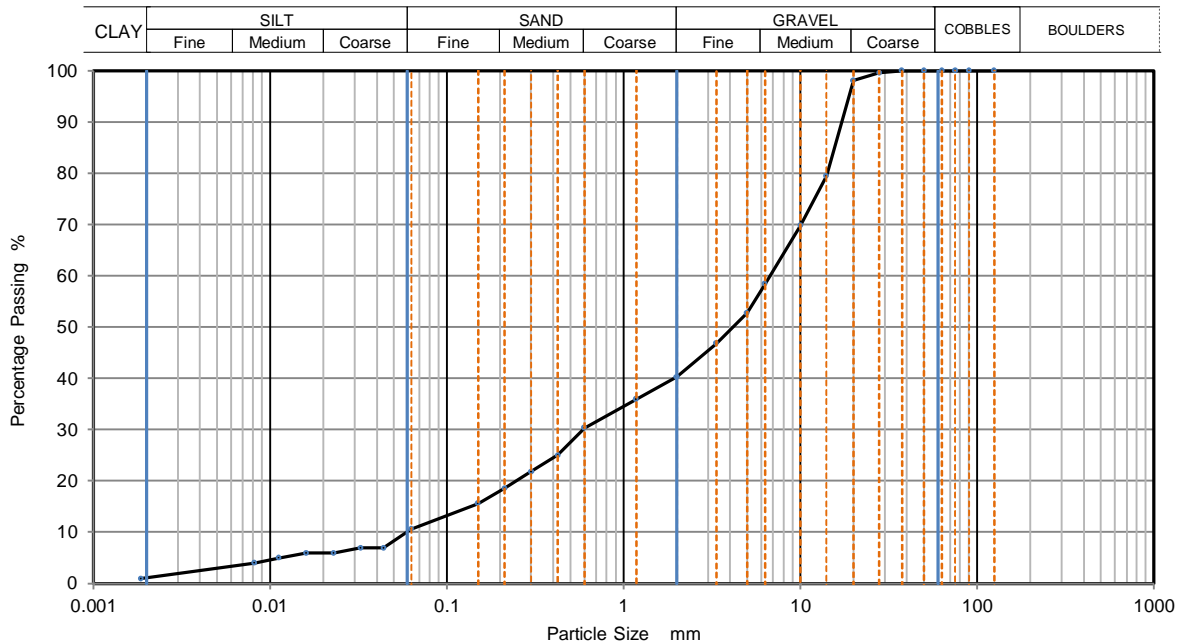
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086072**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	7
90	100	0.0325	7
75	100	0.0229	6
63	100	0.0161	6
50	100	0.0113	5
37.5	100	0.0082	4
28	100	0.0019	1
20	98		
14	80		
10	70		
6.3	58		
5	53		
3.35	47		
2	40		
1.18	36		
0.6	30	Particle density (assumed) 2.67 Mg/m ³	
0.425	25		
0.3	22		
0.212	19		
0.15	16		
0.063	11		

Dry Mass of sample, g. 16090

Sample Proportions	% dry mass
Very coarse	0
Gravel	60
Sand	30
Silt	10
Clay	1

Grading Analysis	
D100	mm
D60	mm 6.72
D30	mm 0.586
D10	mm 0.0596
Uniformity Coefficient	110
Curvature Coefficient	0.86

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP11**

Site Name **New Deer 2**

Sample No. **9**

Soil Description **Brown silty gravelly SAND**

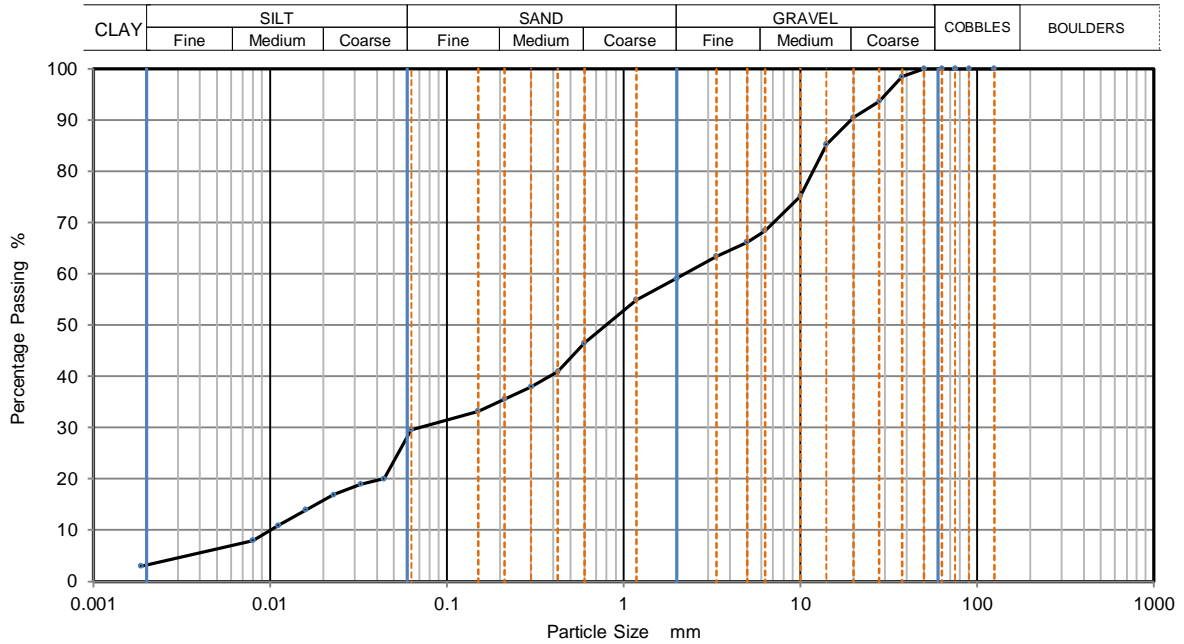
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086077**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	20
90	100	0.0325	19
75	100	0.0228	17
63	100	0.0159	14
50	100	0.0111	11
37.5	98	0.0080	8
28	94	0.0019	3
20	91		
14	85		
10	75		
6.3	68		
5	66		
3.35	63		
2	59		
1.18	55		
0.6	47	Particle density (assumed) 2.67 Mg/m ³	
0.425	41		
0.3	38		
0.212	36		
0.15	33		
0.063	30		

Dry Mass of sample, g. 16091

Sample Proportions	% dry mass
Very coarse	0
Gravel	41
Sand	30
Silt	27
Clay	3

Grading Analysis	
D100	mm
D60	mm 2.22
D30	mm 0.0698
D10	mm 0.00974
Uniformity Coefficient	230
Curvature Coefficient	0.22

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP12**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown sandy silty GRAVEL with cobble**

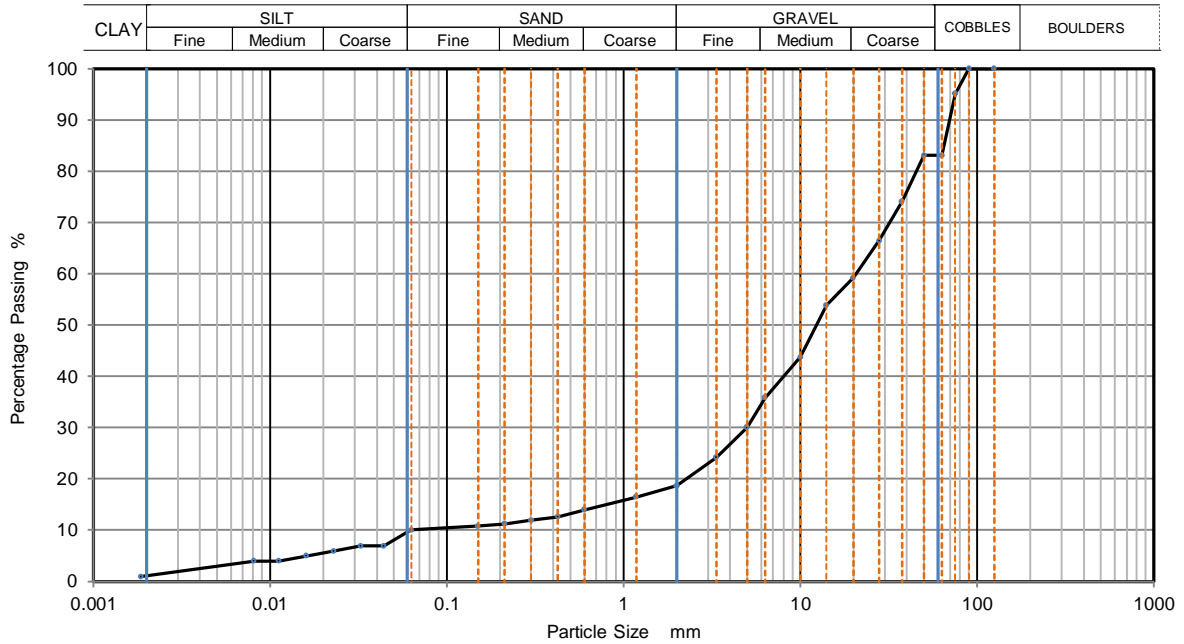
Depth, m **1.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102322**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	7
90	100	0.0326	7
75	95	0.0229	6
63	83	0.0161	5
50	83	0.0112	4
37.5	74	0.0081	4
28	67	0.0019	1
20	59		
14	54		
10	44		
6.3	36		
5	30		
3.35	24		
2	19		
1.18	17		
0.6	14	Particle density (assumed) 2.67 Mg/m ³	
0.425	13		
0.3	12		
0.212	11		
0.15	11		
0.063	10		

Dry Mass of sample, g. 12833

Sample Proportions	% dry mass
Very coarse	17
Gravel	64
Sand	9
Silt	9
Clay	1

Grading Analysis	
D100	mm
D60	mm 20.7
D30	mm 4.98
D10	mm 0.0656
Uniformity Coefficient	320
Curvature Coefficient	18

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP13**

Site Name **New Deer 2**

Sample No. **7**

Soil Description **Brown silty SAND & GRAVEL**

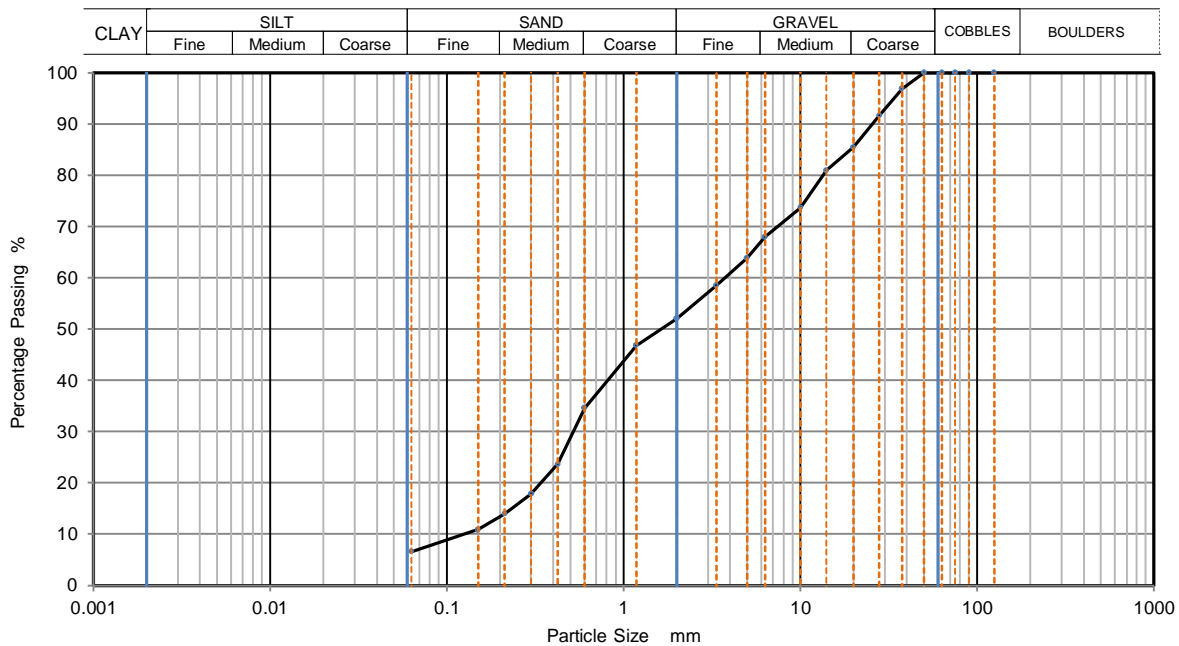
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1086065**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	97		
28	92		
20	86		
14	81		
10	74		
6.3	68		
5	64		
3.35	59		
2	52		
1.18	47		
0.6	35		
0.425	24		
0.3	18		
0.212	14		
0.15	11		
0.063	7		

Dry Mass of sample, g. 17111

Sample Proportions	% dry mass
Very coarse	0
Gravel	48
Sand	46
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	3.74
D30	mm	0.519
D10	mm	0.124
Uniformity Coefficient		30
Curvature Coefficient		0.58

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP13**

Site Name **New Deer 2**

Sample No. **9**

Soil Description **Brown silty SAND & GRAVEL**

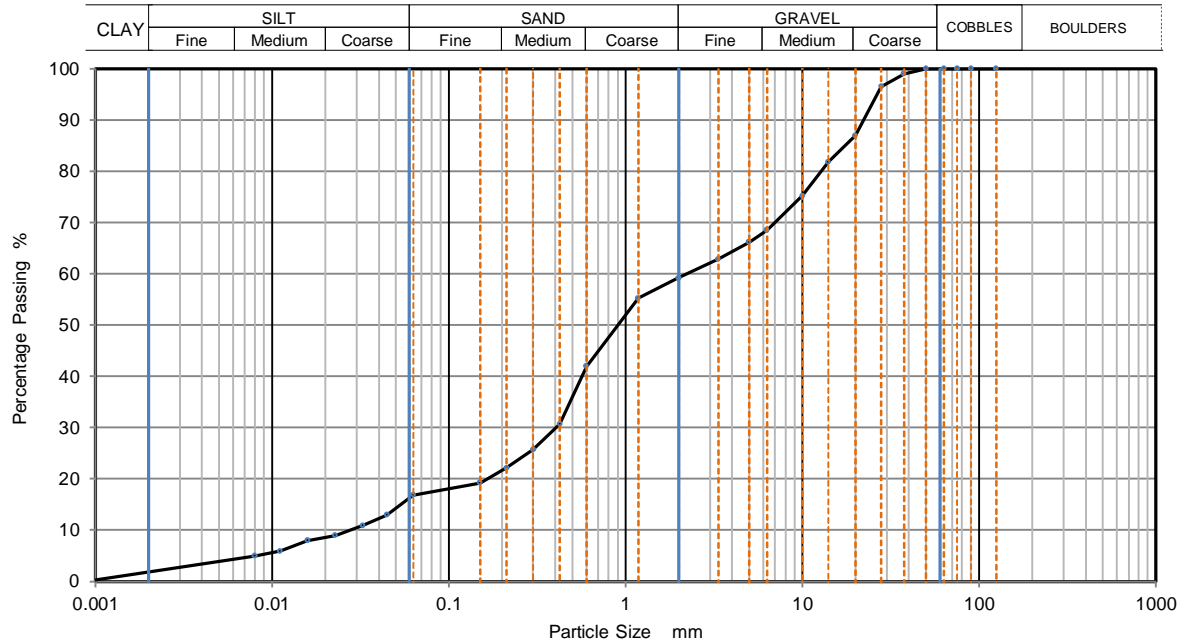
Depth, m **3.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086067**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	13
90	100	0.0326	11
75	100	0.0227	9
63	100	0.0159	8
50	100	0.0111	6
37.5	99	0.0080	5
28	97	0.0009	0
20	87		
14	82		
10	75		
6.3	69		
5	66		
3.35	63		
2	59		
1.18	55		
0.6	42		
0.425	31		
0.3	26		
0.212	22		
0.15	19		
0.063	17		

Dry Mass of sample, g. 11650

Sample Proportions	% dry mass
Very coarse	0
Gravel	41
Sand	42
Silt	15
Clay	2

Grading Analysis	
D100	mm
D60	mm 2.24
D30	mm 0.404
D10	mm 0.0263
Uniformity Coefficient	85
Curvature Coefficient	2.8

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP14**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey gravelly SAND**

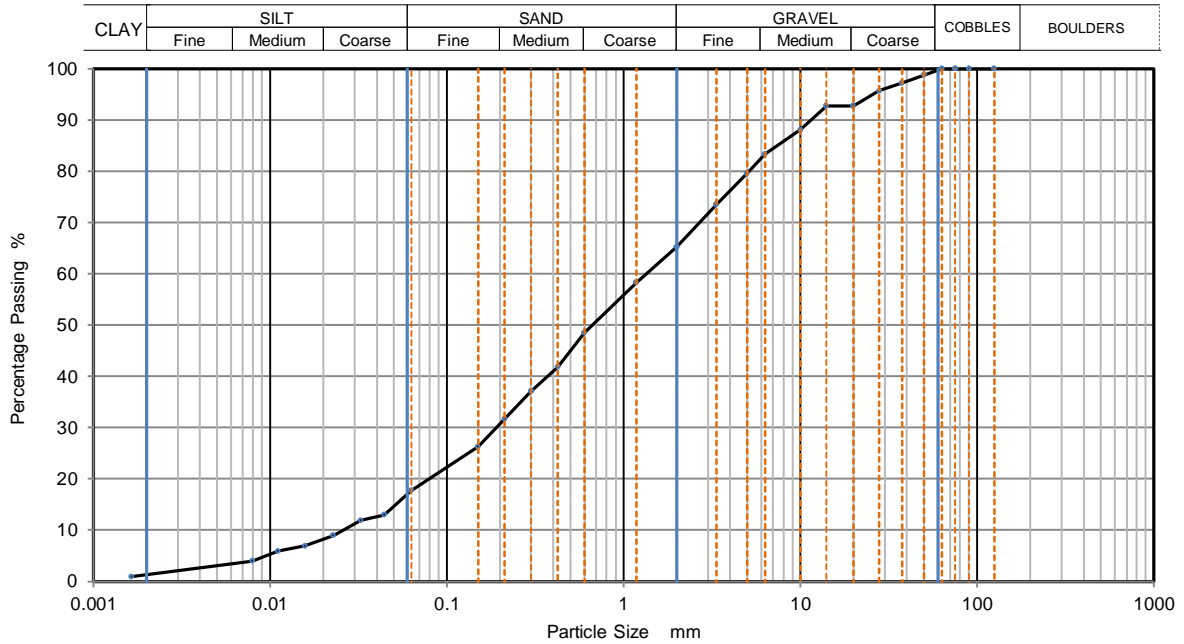
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093420**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	13
90	100	0.0326	12
75	100	0.0227	9
63	100	0.0158	7
50	99	0.0111	6
37.5	97	0.0079	4
28	96	0.0016	1
20	93		
14	93		
10	88		
6.3	83		
5	80		
3.35	74		
2	65		
1.18	58		
0.6	49	Particle density (assumed) 2.67 Mg/m ³	
0.425	42		
0.3	37		
0.212	32		
0.15	26		
0.063	18		

Dry Mass of sample, g. 17001

Sample Proportions	% dry mass
Very coarse	0
Gravel	35
Sand	48
Silt	17
Clay	1

Grading Analysis	
D100	mm
D60	mm 1.34
D30	mm 0.191
D10	mm 0.0253
Uniformity Coefficient	53
Curvature Coefficient	1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP14**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty sandy GRAVEL with cobble**

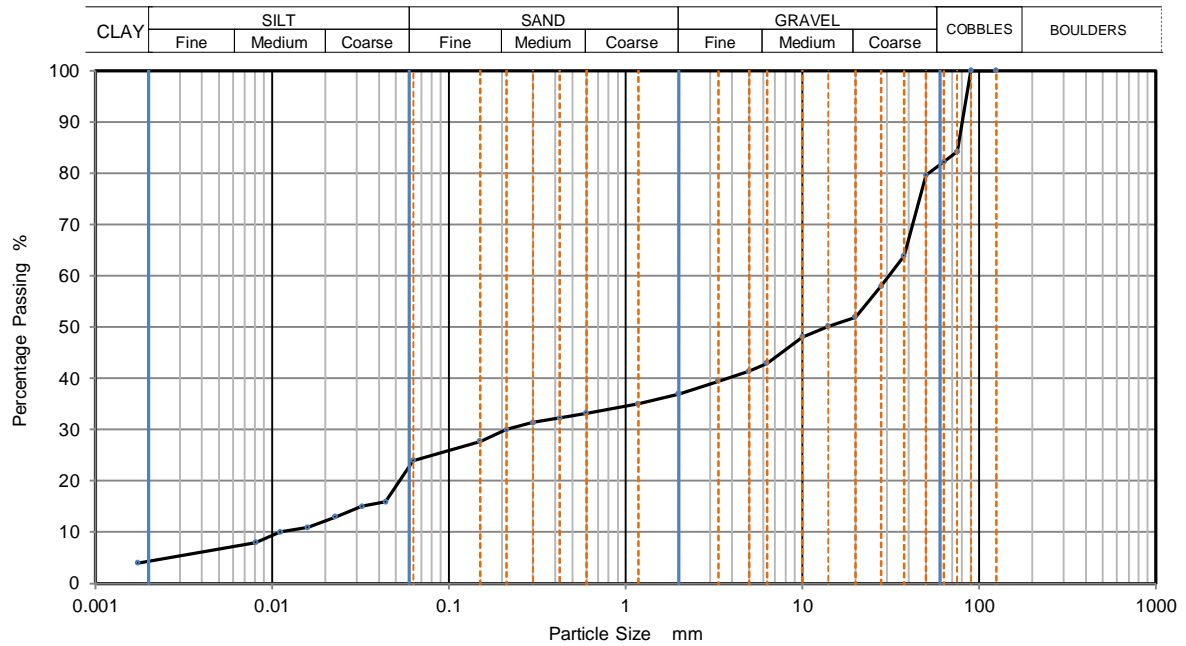
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093424**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	16
90	100	0.0324	15
75	84	0.0227	13
63	82	0.0159	11
50	80	0.0112	10
37.5	64	0.0081	8
28	58	0.0017	4
20	52		
14	50		
10	48		
6.3	43		
5	41		
3.35	40		
2	37		
1.18	35		
0.6	33	Particle density (assumed) 2.67 Mg/m ³	
0.425	32		
0.3	31		
0.212	30		
0.15	28		
0.063	24		

Dry Mass of sample, g. 11476

Sample Proportions	% dry mass
Very coarse	18
Gravel	45
Sand	13
Silt	20
Clay	4

Grading Analysis	
D100	mm
D60	mm 30.9
D30	mm 0.211
D10	mm 0.0114
Uniformity Coefficient	2700
Curvature Coefficient	0.13

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP15**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown silty SAND & GRAVEL**

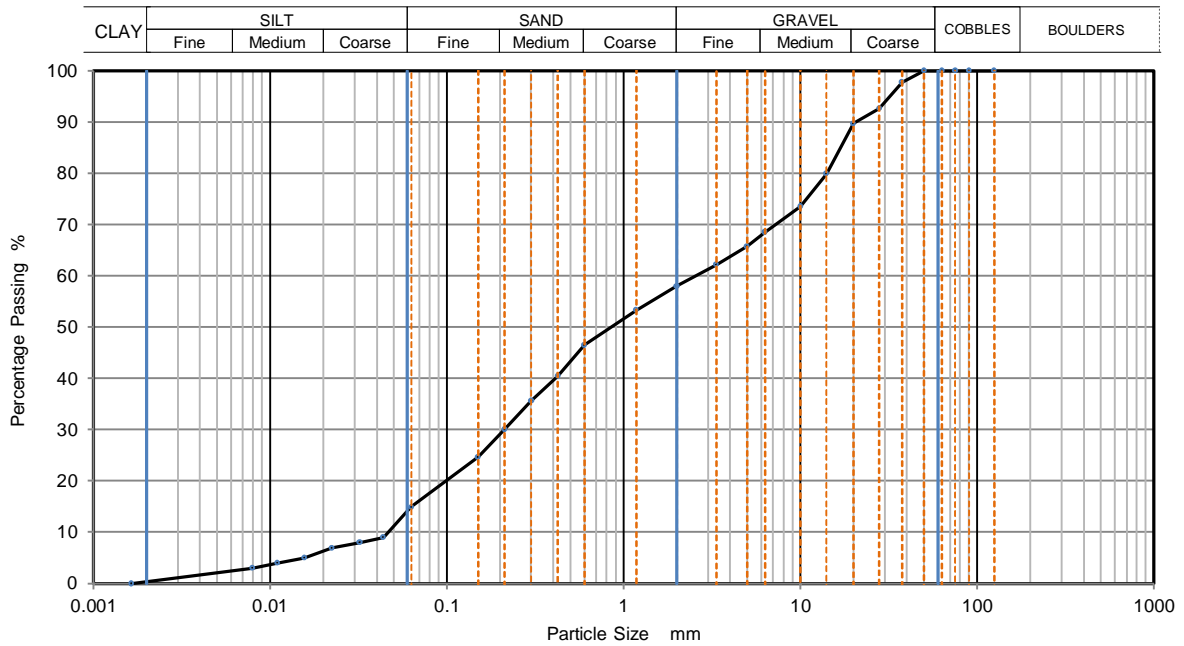
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102252**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0437	9
90	100	0.0321	8
75	100	0.0224	7
63	100	0.0156	5
50	100	0.0110	4
37.5	98	0.0079	3
28	93	0.0016	0
20	90		
14	80		
10	74		
6.3	69		
5	66		
3.35	62		
2	58		
1.18	53		
0.6	47	Particle density (assumed) 2.67 Mg/m ³	
0.425	41		
0.3	36		
0.212	30		
0.15	25		
0.063	15		

Dry Mass of sample, g. 12123

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	43
Silt	15
Clay	0

Grading Analysis	
D100	mm
D60	mm 2.57
D30	mm 0.21
D10	mm 0.0457
Uniformity Coefficient	56
Curvature Coefficient	0.38

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP15**

Site Name **New Deer 2**

Sample No. **7**

Soil Description **Brown sandy silty GRAVEL with cobble**

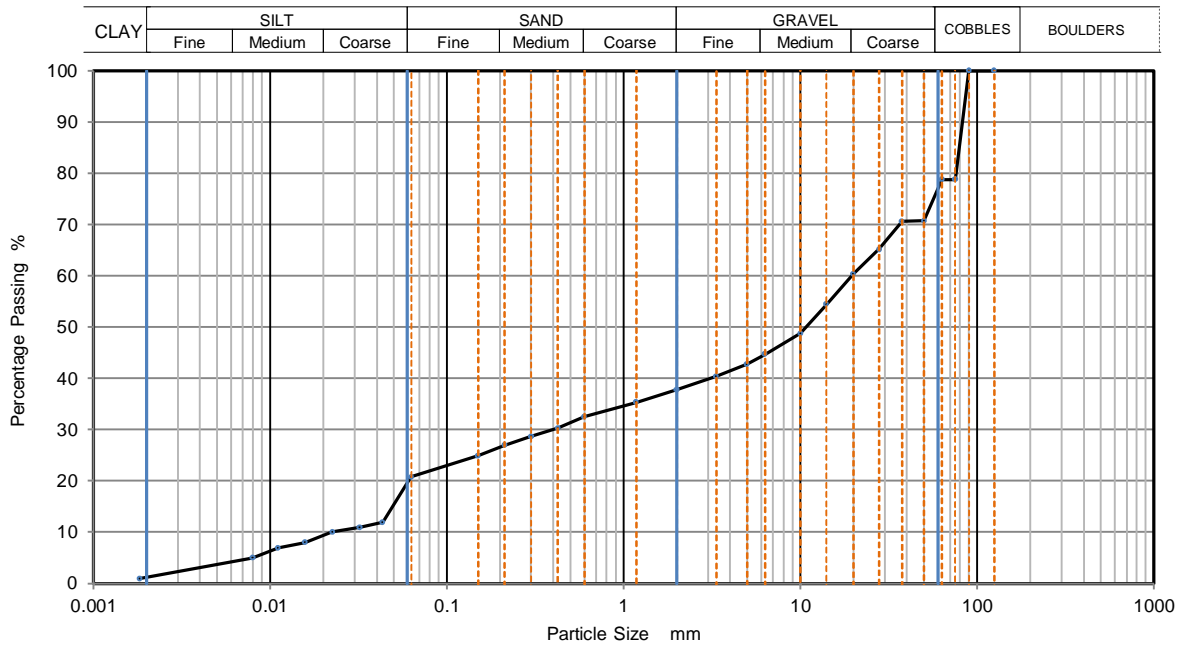
Depth, m **2.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102257**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0434	12
90	100	0.0321	11
75	79	0.0225	10
63	79	0.0158	8
50	71	0.0111	7
37.5	71	0.0080	5
28	65	0.0018	1
20	60		
14	55		
10	49		
6.3	45		
5	43		
3.35	40		
2	38		
1.18	35		
0.6	33		
0.425	30	Particle density (assumed) 2.67 Mg/m ³	
0.3	29		
0.212	27		
0.15	25		
0.063	21		

Dry Mass of sample, g. 11325

Sample Proportions	% dry mass
Very coarse	21
Gravel	41
Sand	17
Silt	20
Clay	1

Grading Analysis	
D100	mm
D60	mm 19.5
D30	mm 0.396
D10	mm 0.0247
Uniformity Coefficient	790
Curvature Coefficient	0.33

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP16**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown silty SAND & GRAVEL**

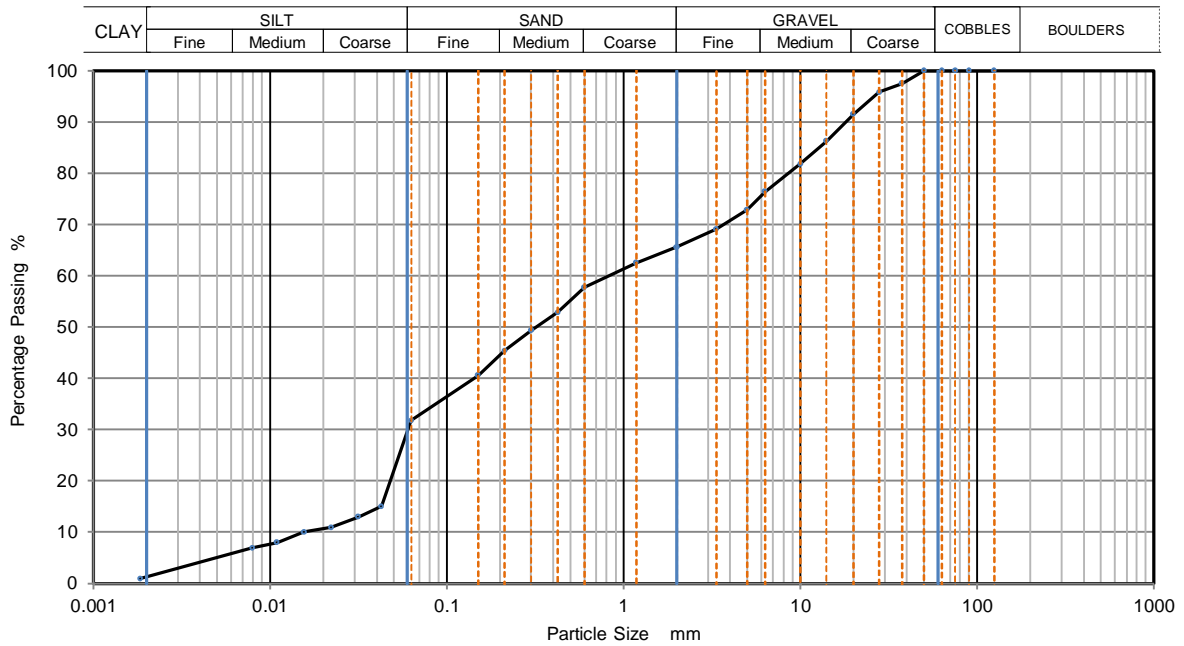
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102304**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0428	15
90	100	0.0316	13
75	100	0.0221	11
63	100	0.0156	10
50	100	0.0109	8
37.5	98	0.0079	7
28	96	0.0018	1
20	92		
14	86		
10	82		
6.3	76		
5	73		
3.35	69		
2	66		
1.18	63		
0.6	58	Particle density (assumed) 2.67 Mg/m ³	
0.425	53		
0.3	49		
0.212	45		
0.15	41		
0.063	32		

Dry Mass of sample, g. 12871

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	34
Silt	31
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.827
D30	mm	0.0605
D10	mm	0.016
Uniformity Coefficient		52
Curvature Coefficient		0.28

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP16**

Site Name **New Deer 2**

Sample No. **9**

Soil Description **Brown silty sandy GRAVEL**

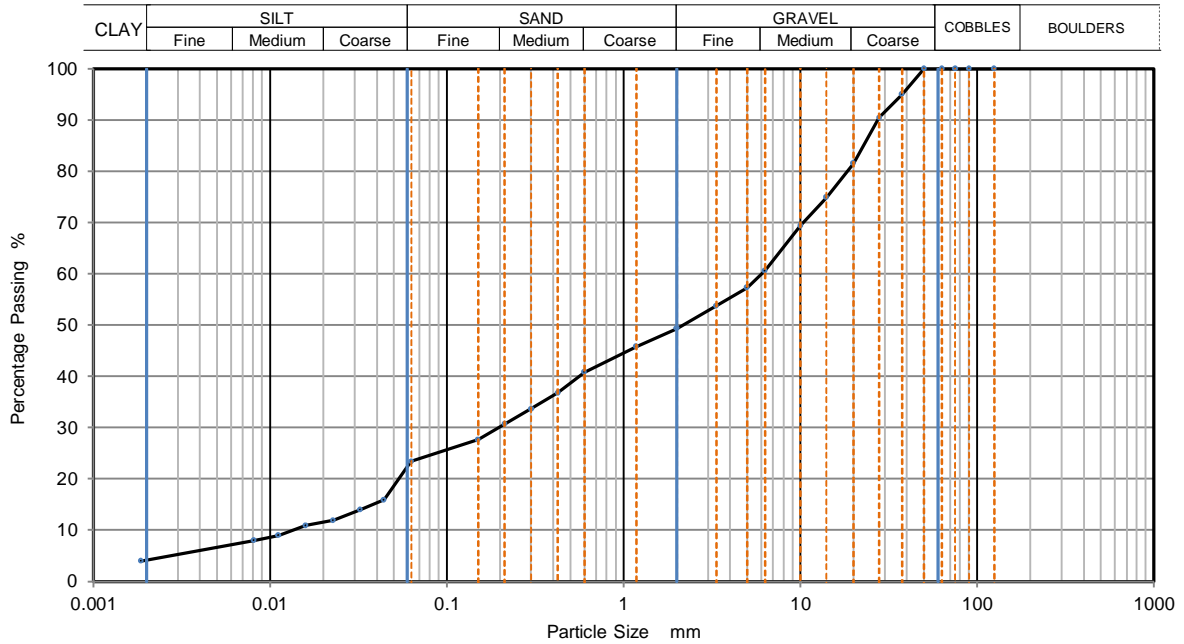
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102309**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	16
90	100	0.0324	14
75	100	0.0227	12
63	100	0.0159	11
50	100	0.0112	9
37.5	95	0.0081	8
28	91	0.0019	4
20	82		
14	75		
10	69		
6.3	61		
5	57		
3.35	54		
2	49		
1.18	46		
0.6	41	Particle density (assumed) 2.67 Mg/m ³	
0.425	37		
0.3	34		
0.212	31		
0.15	28		
0.063	24		

Dry Mass of sample, g. 15940

Sample Proportions	% dry mass
Very coarse	0
Gravel	51
Sand	26
Silt	19
Clay	5

Grading Analysis		
D100	mm	
D60	mm	6.05
D30	mm	0.195
D10	mm	0.0128
Uniformity Coefficient		470
Curvature Coefficient		0.49

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP17**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown sandy silty GRAVEL with cobble**

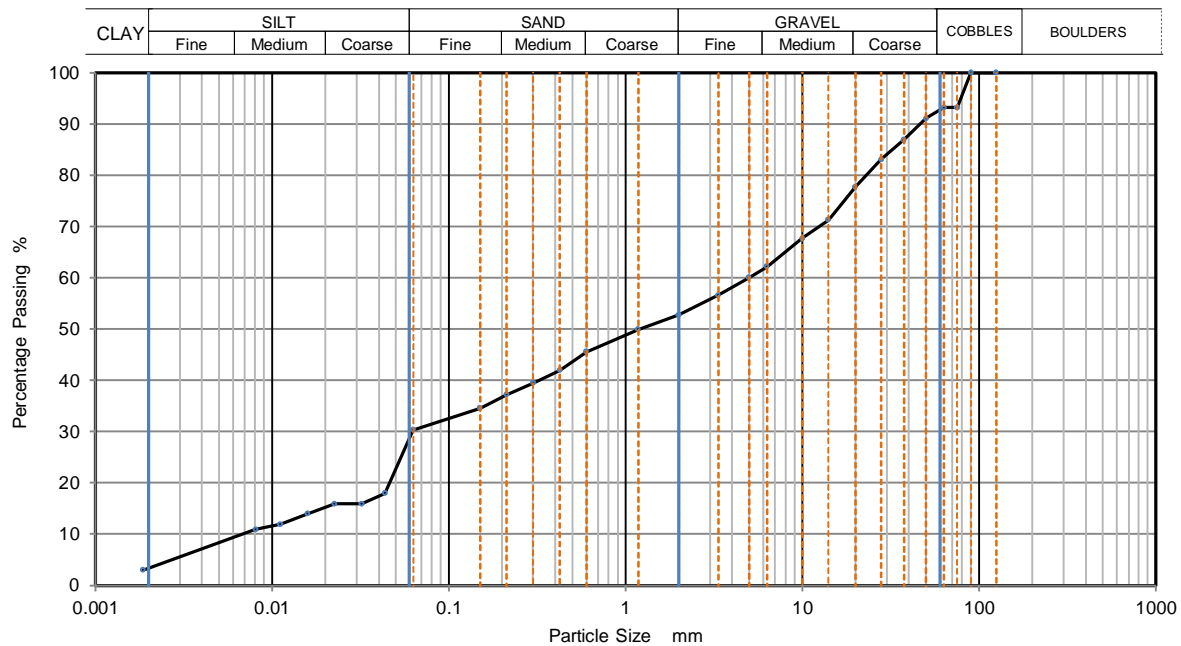
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102313**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0435	18
90	100	0.0321	16
75	93	0.0226	16
63	93	0.0159	14
50	91	0.0111	12
37.5	87	0.0081	11
28	83	0.0019	3
20	78		
14	71		
10	68		
6.3	62		
5	60		
3.35	57		
2	53		
1.18	50		
0.6	46		
0.425	42	Particle density (assumed)	
0.3	40	2.67	Mg/m ³
0.212	37		
0.15	35		
0.063	30		

Dry Mass of sample, g. 11073

Sample Proportions	% dry mass
Very coarse	7
Gravel	40
Sand	22
Silt	27
Clay	3

Grading Analysis	
D100	mm
D60	mm 5.02
D30	mm 0.0622
D10	mm 0.00711
Uniformity Coefficient	710
Curvature Coefficient	0.11

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP17**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty gravelly SAND**

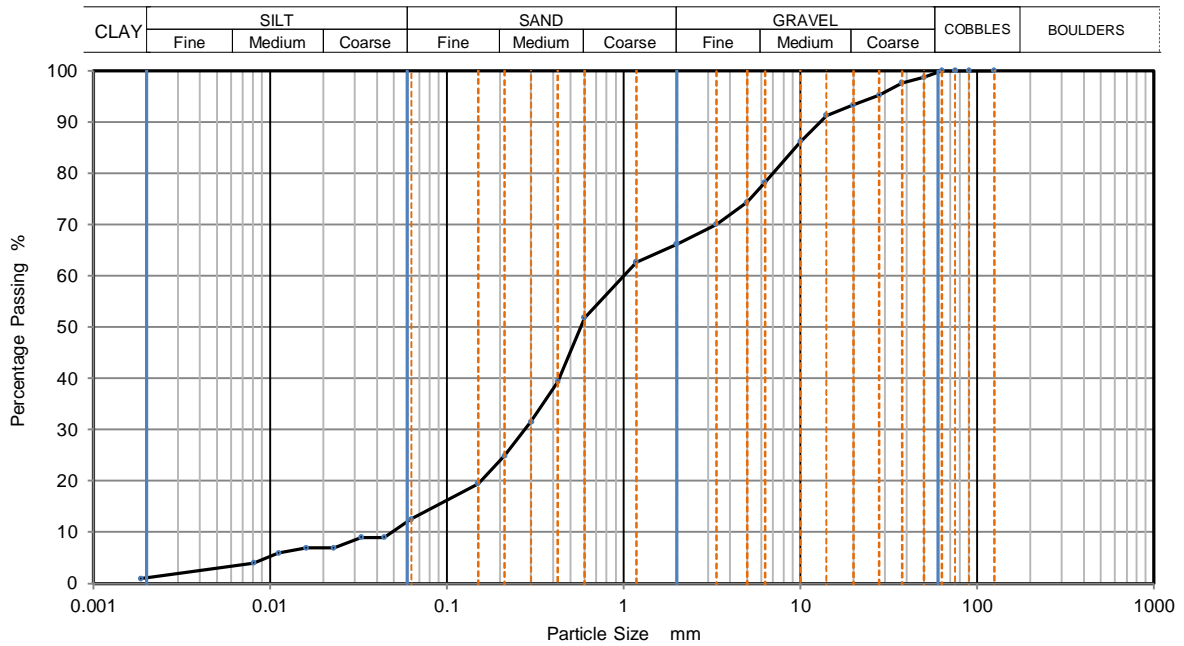
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102315**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	9
90	100	0.0328	9
75	100	0.0229	7
63	100	0.0161	7
50	99	0.0112	6
37.5	98	0.0081	4
28	95	0.0019	1
20	93		
14	91		
10	86		
6.3	78		
5	74		
3.35	70		
2	66		
1.18	63		
0.6	52		
0.425	39	Particle density (assumed) 2.67 Mg/m ³	
0.3	32		
0.212	25		
0.15	20		
0.063	13		

Dry Mass of sample, g. 11465

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	54
Silt	11
Clay	1

Grading Analysis	
D100	mm
D60	mm 0.997
D30	mm 0.277
D10	mm 0.0488
Uniformity Coefficient	20
Curvature Coefficient	1.6

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP18**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy silty GRAVEL with cobble**

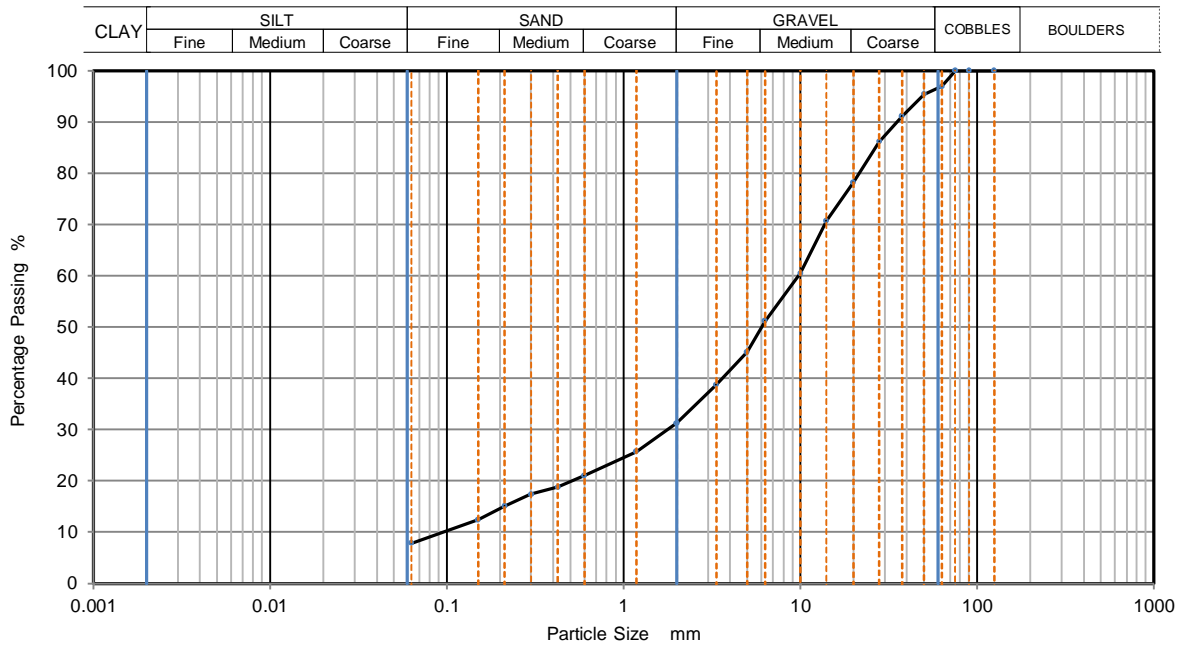
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1093276**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	97		
50	95		
37.5	91		
28	86		
20	78		
14	71		
10	61		
6.3	51		
5	45		
3.35	39		
2	31		
1.18	26		
0.6	21		
0.425	19		
0.3	17		
0.212	15		
0.15	12		
0.063	8		
		Particle density (assumed) 2.67 Mg/m ³	

Dry Mass of sample, g. 14612

Sample Proportions	% dry mass
Very coarse	3
Gravel	66
Sand	23
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	9.76
D30	mm	1.77
D10	mm	0.0942
Uniformity Coefficient		100
Curvature Coefficient		3.4

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP18**

Site Name **New Deer 2**

Sample No. **7**

Soil Description **Brown clayey sandy GRAVEL with cobble**

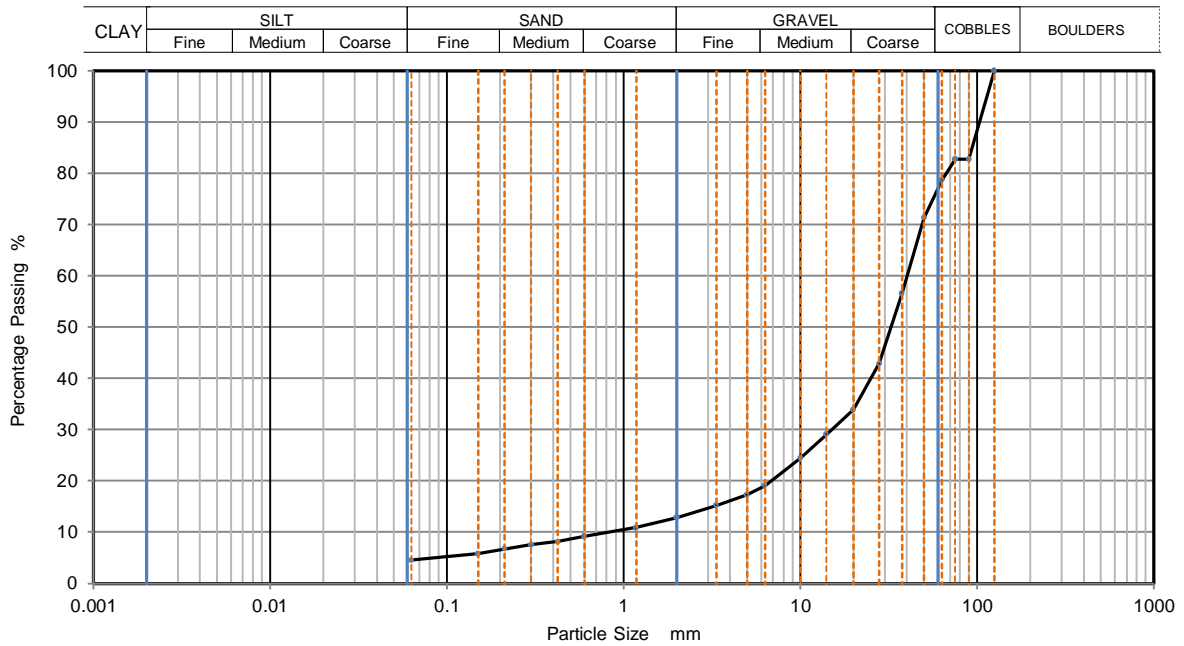
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1093281**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	83		
75	83		
63	79		
50	71		
37.5	57		
28	43		
20	34		
14	29		
10	25		
6.3	19		
5	17		
3.35	15		
2	13		
1.18	11		
0.6	9		
0.425	8		
0.3	8		
0.212	7		
0.15	6		
0.063	5		

Dry Mass of sample, g. 12546

Sample Proportions	% dry mass
Very coarse	21
Gravel	66
Sand	8
Fines <0.063mm	5

Grading Analysis		
D100	mm	125
D60	mm	40.1
D30	mm	15
D10	mm	0.828
Uniformity Coefficient		48
Curvature Coefficient		6.8

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP19**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown sandy silty GRAVEL with cobble**

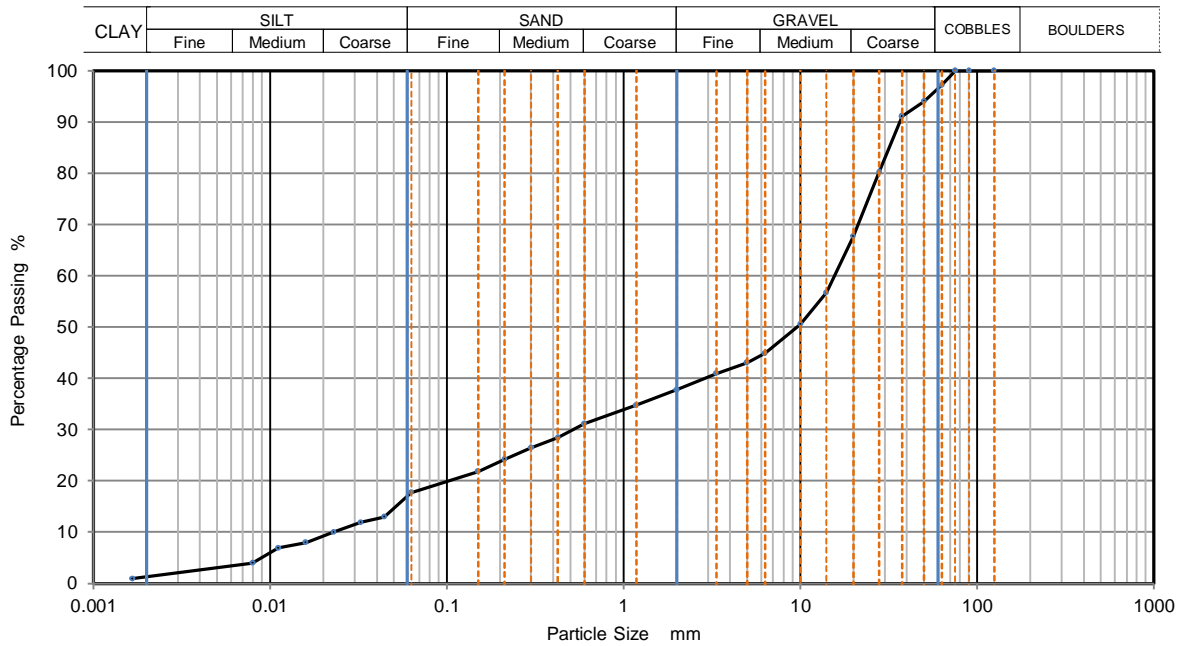
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102821**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	13
90	100	0.0326	12
75	100	0.0229	10
63	97	0.0159	8
50	94	0.0111	7
37.5	91	0.0080	4
28	80	0.0017	1
20	68		
14	57		
10	51		
6.3	45		
5	43		
3.35	41		
2	38		
1.18	35		
0.6	31		
0.425	29	Particle density (assumed) 2.67 Mg/m ³	
0.3	27		
0.212	24		
0.15	22		
0.063	18		

Dry Mass of sample, g. 13384

Sample Proportions	% dry mass
Very coarse	3
Gravel	59
Sand	20
Silt	17
Clay	1

Grading Analysis	
D100	mm
D60	mm 15.6
D30	mm 0.514
D10	mm 0.0214
Uniformity Coefficient	730
Curvature Coefficient	0.79

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP19**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown sandy silty GRAVEL with cobble**

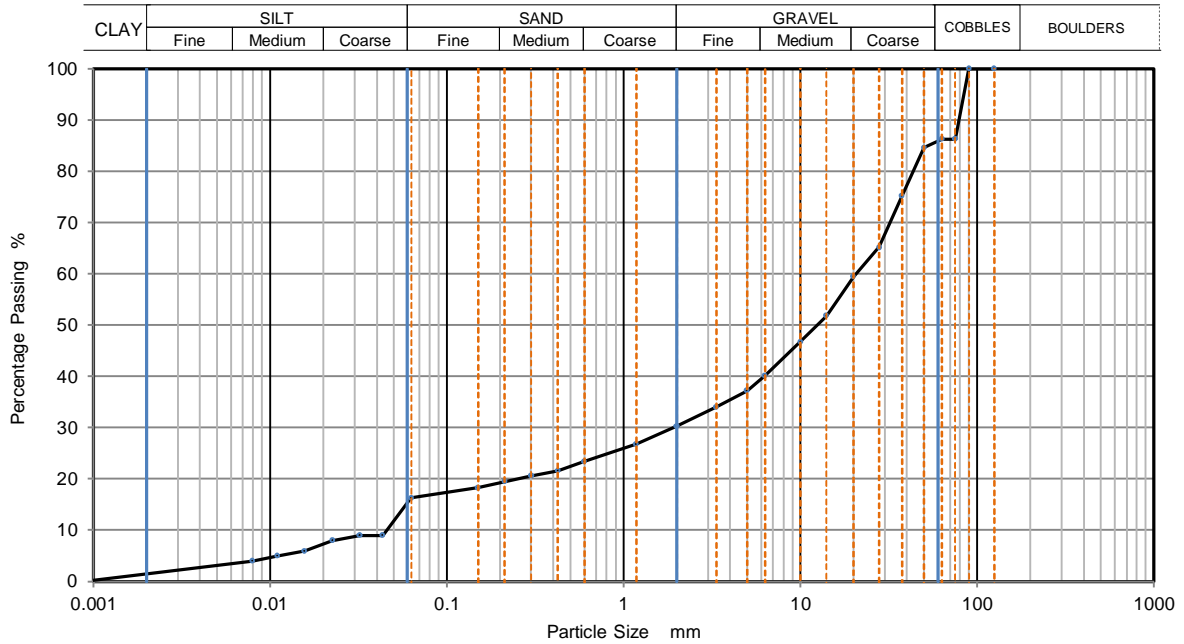
Depth, m **3.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K110282**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0434	9
90	100	0.0321	9
75	86	0.0225	8
63	86	0.0157	6
50	85	0.0110	5
37.5	75	0.0079	4
28	65	0.0009	0
20	60		
14	52		
10	47		
6.3	40		
5	37		
3.35	34		
2	30		
1.18	27		
0.6	23	Particle density (assumed) 2.67 Mg/m ³	
0.425	22		
0.3	21		
0.212	20		
0.15	18		
0.063	16		

Dry Mass of sample, g. 8322

Sample Proportions	% dry mass
Very coarse	14
Gravel	56
Sand	14
Silt	15
Clay	1

Grading Analysis		
D100	mm	
D60	mm	20.6
D30	mm	1.9
D10	mm	0.0455
Uniformity Coefficient		450
Curvature Coefficient		3.9

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP20**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown silty SAND & GRAVEL**

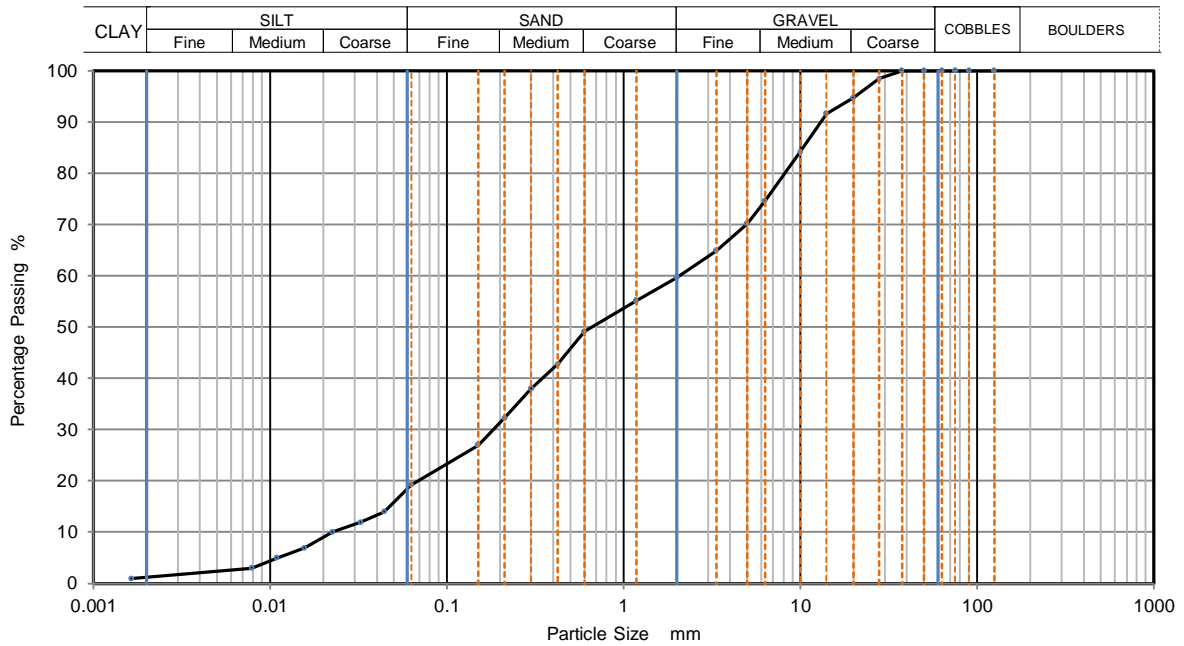
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102805**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	14
90	100	0.0325	12
75	100	0.0226	10
63	100	0.0157	7
50	100	0.0109	5
37.5	100	0.0079	3
28	98	0.0016	1
20	95		
14	92		
10	84		
6.3	75		
5	70		
3.35	65		
2	60		
1.18	55		
0.6	49	Particle density (assumed) 2.67 Mg/m ³	
0.425	43		
0.3	38		
0.212	32		
0.15	27		
0.063	19		

Dry Mass of sample, g. 11338

Sample Proportions	% dry mass
Very coarse	0
Gravel	40
Sand	40
Silt	18
Clay	1

Grading Analysis		
D100	mm	
D60	mm	2.06
D30	mm	0.183
D10	mm	0.0235
Uniformity Coefficient		88
Curvature Coefficient		0.69

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP20**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown silty sandy GRAVEL**

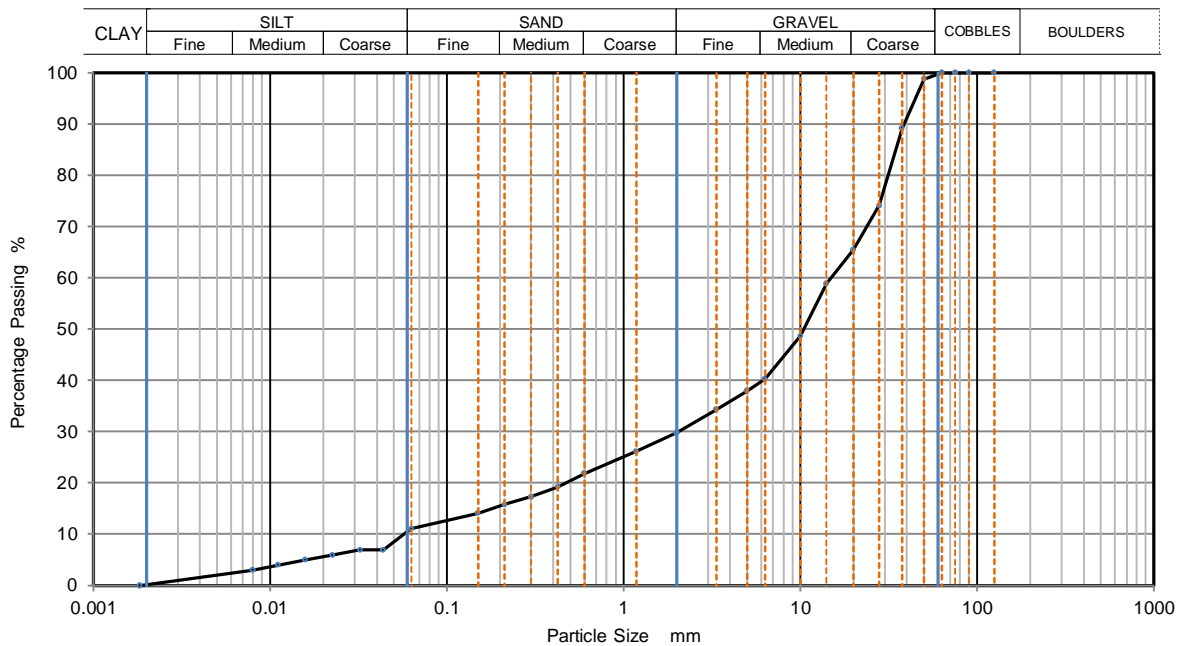
Depth, m **3.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102809**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0437	7
90	100	0.0324	7
75	100	0.0226	6
63	100	0.0158	5
50	99	0.0111	4
37.5	89	0.0080	3
28	74	0.0018	0
20	66		
14	59		
10	49		
6.3	40		
5	38		
3.35	34		
2	30		
1.18	26		
0.6	22		
0.425	19	Particle density (assumed)	
0.3	17	2.67	Mg/m3
0.212	16		
0.15	14		
0.063	11		

Dry Mass of sample, g. 14118

Sample Proportions	% dry mass
Very coarse	0
Gravel	70
Sand	19
Silt	11
Clay	1

Grading Analysis	
D100	mm
D60	mm 14.8
D30	mm 2.05
D10	mm 0.0573
Uniformity Coefficient	260
Curvature Coefficient	4.9

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP21**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy silty GRAVEL**

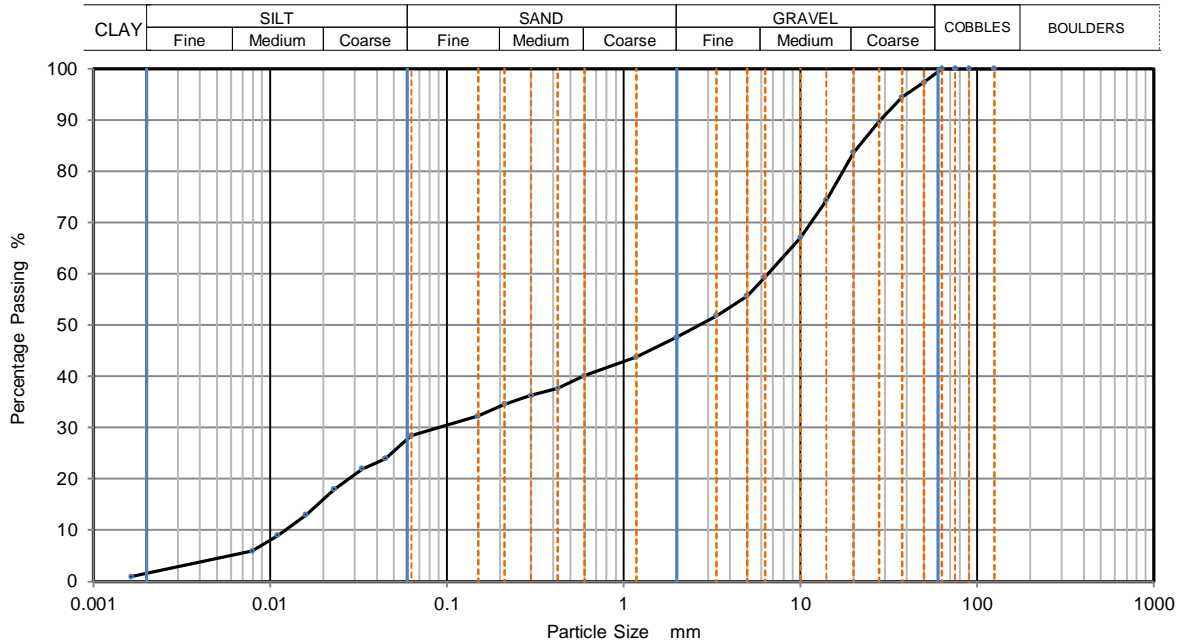
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102294**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	24
90	100	0.0332	22
75	100	0.0231	18
63	100	0.0159	13
50	97	0.0110	9
37.5	94	0.0079	6
28	90	0.0016	1
20	84		
14	74		
10	67		
6.3	59		
5	56		
3.35	52		
2	48		
1.18	44		
0.6	40		
0.425	38	Particle density (assumed) 2.67 Mg/m ³	
0.3	36		
0.212	35		
0.15	32		
0.063	29		

Dry Mass of sample, g. 11851

Sample Proportions	% dry mass
Very coarse	0
Gravel	52
Sand	19
Silt	27
Clay	2

Grading Analysis	
D100	mm
D60	mm 6.58
D30	mm 0.0896
D10	mm 0.0122
Uniformity Coefficient	540
Curvature Coefficient	0.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP21**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown clayey sandy GRAVEL**

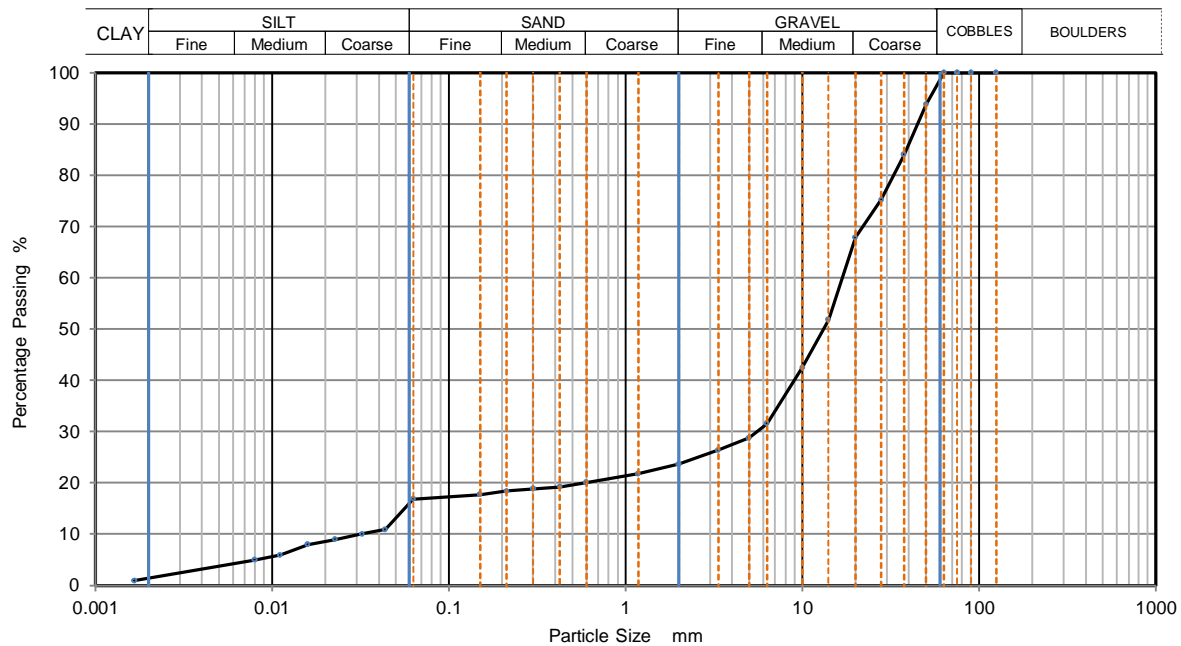
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102298**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0437	11
90	100	0.0324	10
75	100	0.0227	9
63	100	0.0159	8
50	94	0.0111	6
37.5	84	0.0080	5
28	75	0.0017	1
20	68		
14	52		
10	43		
6.3	32		
5	29		
3.35	26		
2	24		
1.18	22		
0.6	20		
0.425	19	Particle density (assumed) 2.67 Mg/m ³	
0.3	19		
0.212	18		
0.15	18		
0.063	17		

Dry Mass of sample, g. **16829**

Sample Proportions	% dry mass
Very coarse	0
Gravel	76
Sand	7
Silt	16
Clay	1

Grading Analysis	
D100	mm
D60	mm 16.8
D30	mm 5.51
D10	mm 0.0304
Uniformity Coefficient	550
Curvature Coefficient	59

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP22**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy silty GRAVEL with cobble**

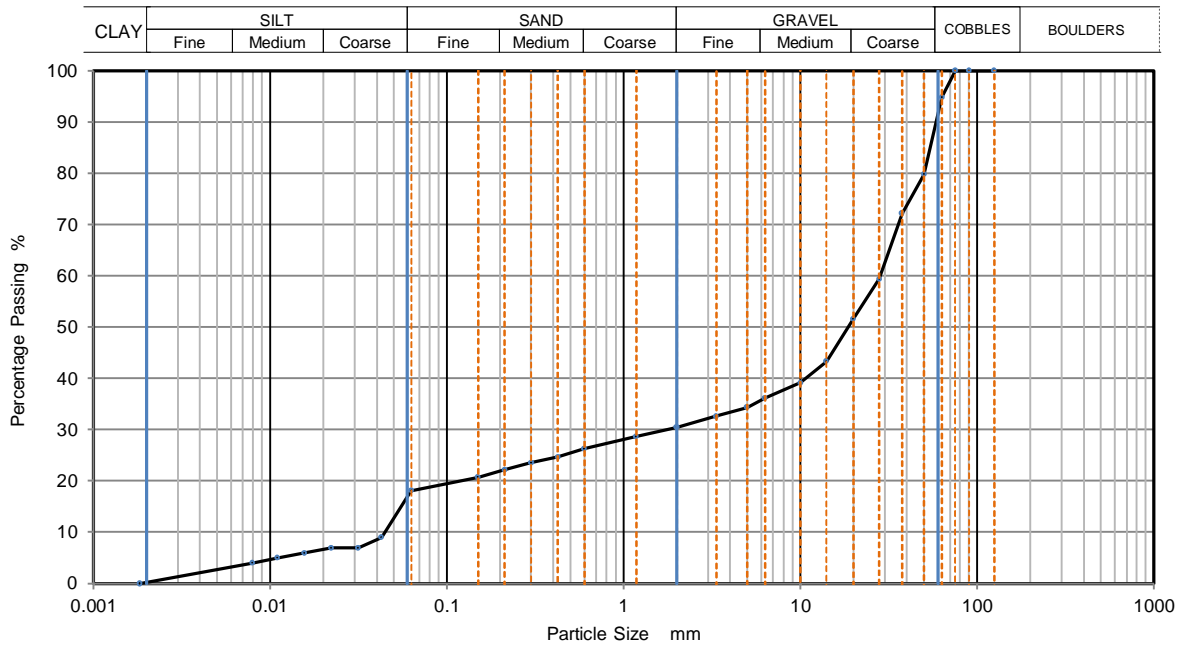
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093451**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0428	9
90	100	0.0316	7
75	100	0.0222	7
63	95	0.0156	6
50	80	0.0110	5
37.5	72	0.0079	4
28	59	0.0018	0
20	52		
14	43		
10	39		
6.3	36		
5	34		
3.35	33		
2	31		
1.18	29		
0.6	26		
0.425	25	Particle density (assumed) 2.67 Mg/m ³	
0.3	24		
0.212	22		
0.15	21		
0.063	18		

Dry Mass of sample, g. 10877

Sample Proportions	% dry mass
Very coarse	5
Gravel	64
Sand	12
Silt	18
Clay	0

Grading Analysis	
D100	mm
D60	mm 28.4
D30	mm 1.74
D10	mm 0.0453
Uniformity Coefficient	630
Curvature Coefficient	2.3

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP22**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown clayey sandy GRAVEL with cobble**

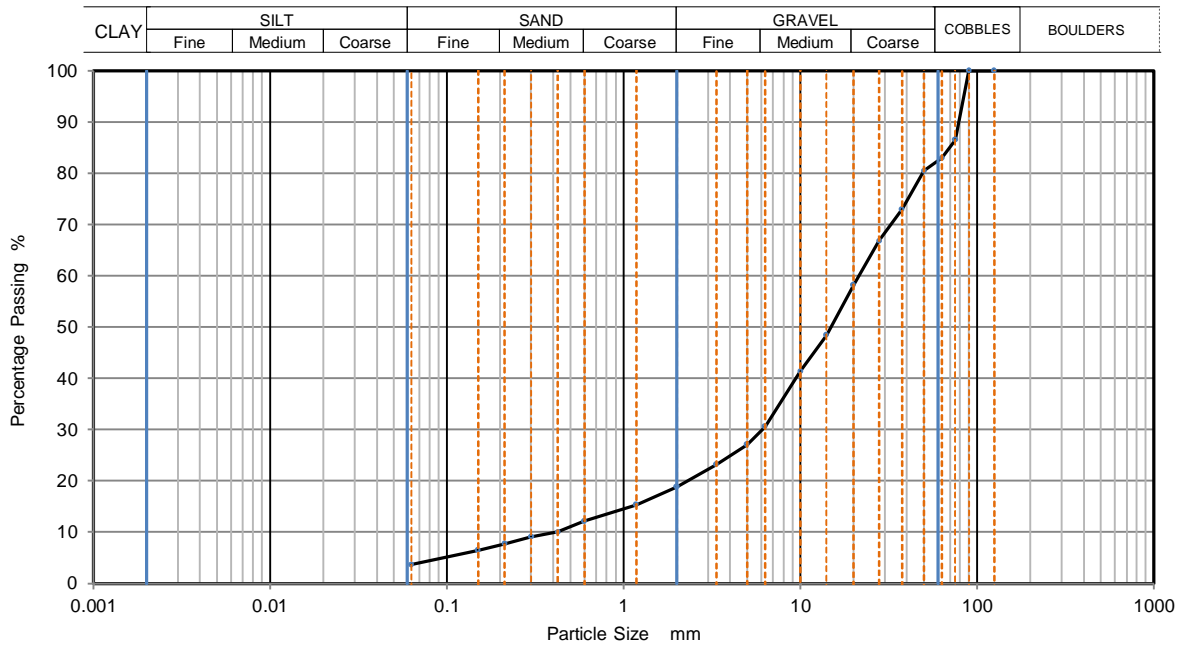
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1093455**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	87		
63	83		
50	81		
37.5	73		
28	67		
20	58		
14	48		
10	41		
6.3	31		
5	27		
3.35	23		
2	19		
1.18	15		
0.6	12		
0.425	10		
0.3	9		
0.212	8		
0.15	7		
0.063	4		

Dry Mass of sample, g. 18967

Sample Proportions	% dry mass
Very coarse	17
Gravel	64
Sand	15
Fines <0.063mm	4

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	50
Curvature Coefficient	4

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP23**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy clayey GRAVEL with cobble**

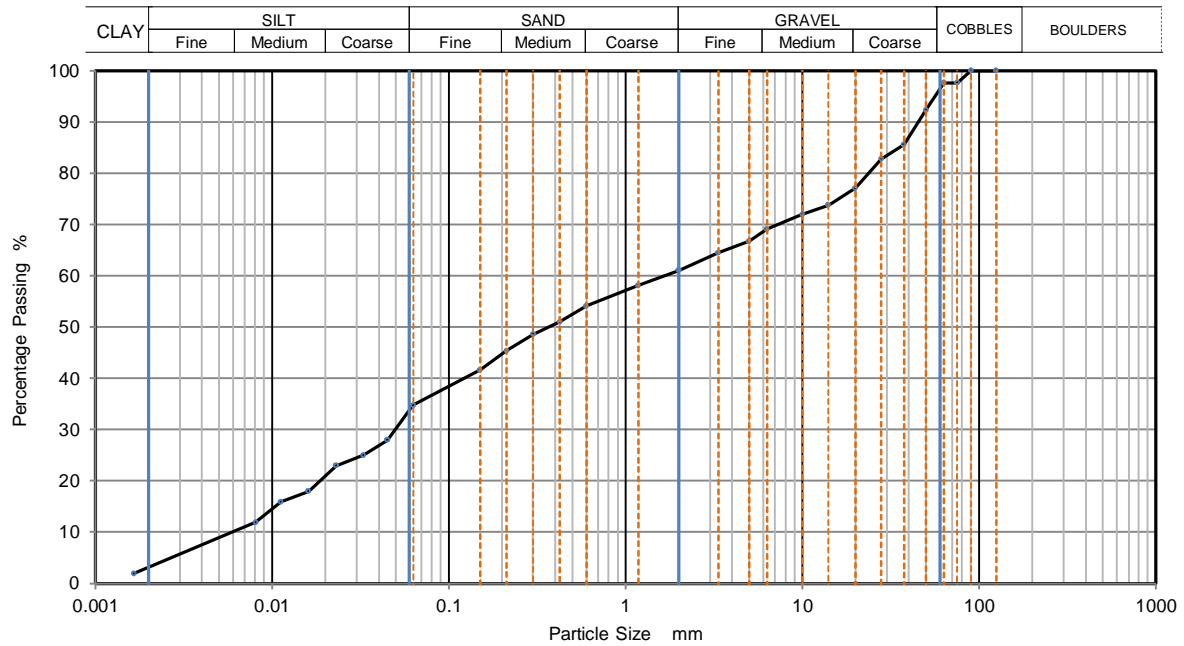
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093412**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0448	28
90	100	0.0329	25
75	98	0.0231	23
63	98	0.0161	18
50	92	0.0113	16
37.5	86	0.0081	12
28	83	0.0017	2
20	77		
14	74		
10	72		
6.3	69		
5	67		
3.35	65		
2	61		
1.18	58		
0.6	54	Particle density (assumed) 2.67 Mg/m ³	
0.425	51		
0.3	49		
0.212	45		
0.15	42		
0.063	35		

Dry Mass of sample, g. 12244

Sample Proportions	% dry mass
Very coarse	2
Gravel	37
Sand	26
Silt	32
Clay	3

Grading Analysis		
D100	mm	
D60	mm	1.65
D30	mm	0.0493
D10	mm	0.00594
Uniformity Coefficient		280
Curvature Coefficient		0.25

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP23**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown clayey sandy GRAVEL with cobble**

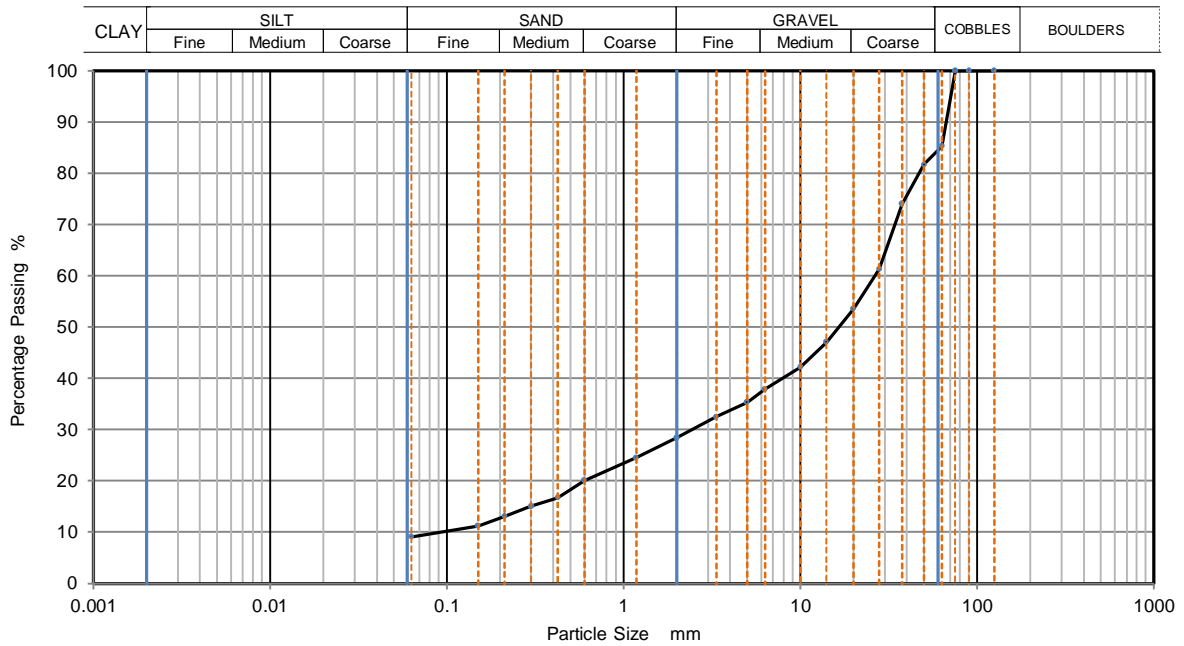
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1093416**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	85		
50	82		
37.5	74		
28	61		
20	54		
14	47		
10	42		
6.3	38		
5	35		
3.35	33		
2	28		
1.18	25		
0.6	20		
0.425	17		
0.3	15		
0.212	13		
0.15	11		
0.063	9		

Dry Mass of sample, g. 12303

Sample Proportions	% dry mass
Very coarse	15
Gravel	57
Sand	19
Fines <0.063mm	9

Grading Analysis	
D100	mm
D60	mm 26.5
D30	mm 2.44
D10	mm 0.0901
Uniformity Coefficient	290
Curvature Coefficient	2.5

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP24**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown silty SAND & GRAVEL**

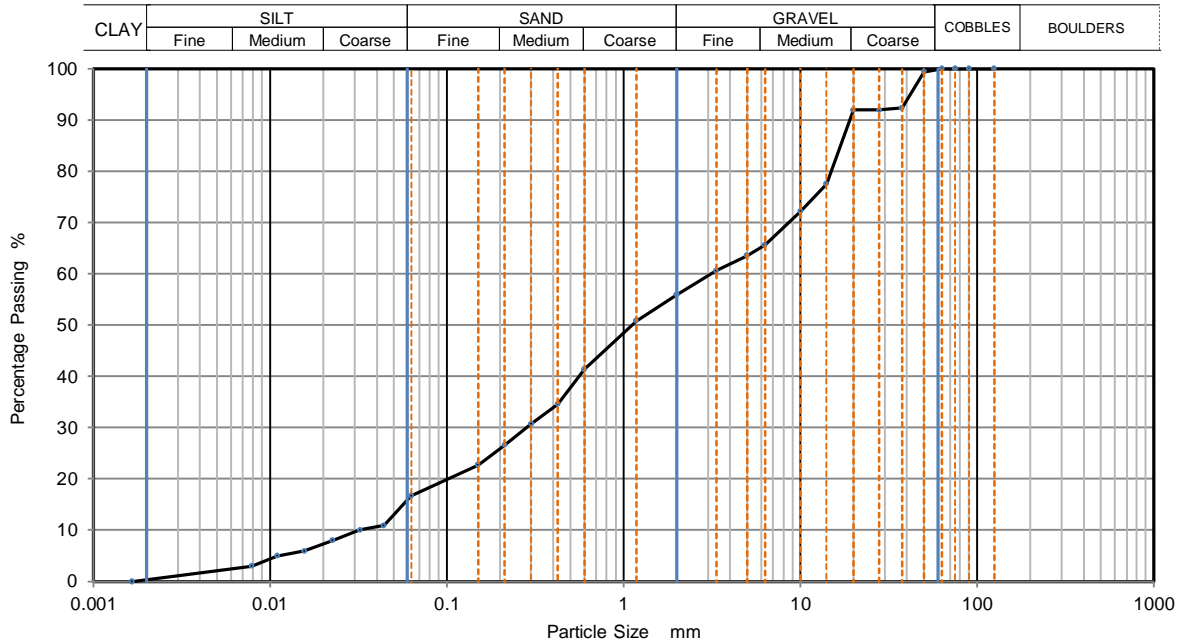
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093404**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	11
90	100	0.0324	10
75	100	0.0225	8
63	100	0.0156	6
50	99	0.0110	5
37.5	92	0.0079	3
28	92	0.0016	0
20	92		
14	78		
10	72		
6.3	66		
5	64		
3.35	61		
2	56		
1.18	51		
0.6	41		
0.425	35	Particle density (assumed)	
0.3	31	2.67	Mg/m3
0.212	27		
0.15	23		
0.063	17		

Dry Mass of sample, g. 13328

Sample Proportions	% dry mass
Very coarse	0
Gravel	44
Sand	39
Silt	17
Clay	0

Grading Analysis		
D100	mm	
D60	mm	3.13
D30	mm	0.283
D10	mm	0.0339
Uniformity Coefficient		92
Curvature Coefficient		0.76

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP24**

Site Name **New Deer 2**

Sample No. **5**

Soil Description **Brown sandy silty GRAVEL with cobble**

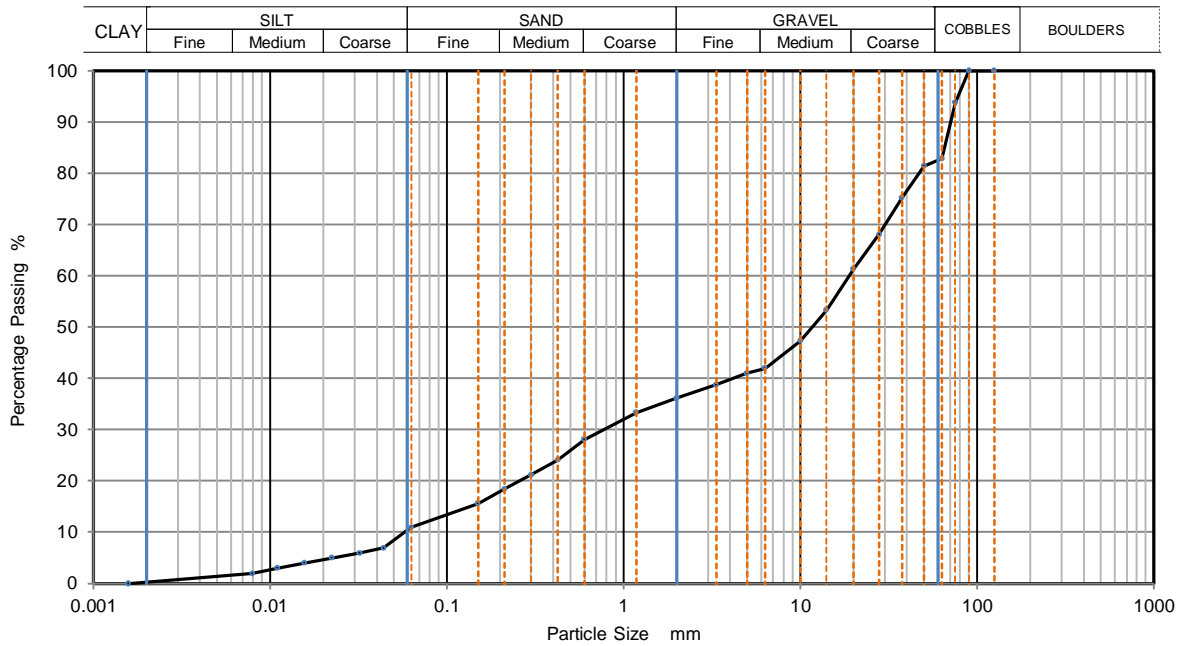
Depth, m **2.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093408**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	7
90	100	0.0321	6
75	94	0.0224	5
63	83	0.0156	4
50	81	0.0110	3
37.5	75	0.0079	2
28	68	0.0016	0
20	61		
14	53		
10	47		
6.3	42		
5	41		
3.35	39		
2	36		
1.18	33		
0.6	28	Particle density (assumed) 2.67 Mg/m ³	
0.425	24		
0.3	21		
0.212	19		
0.15	16		
0.063	11		

Dry Mass of sample, g. 12599

Sample Proportions	% dry mass
Very coarse	17
Gravel	47
Sand	25
Silt	10
Clay	1

Grading Analysis	
D100	mm
D60	mm 18.9
D30	mm 0.768
D10	mm 0.0572
Uniformity Coefficient	330
Curvature Coefficient	0.55

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP25**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown sandy silty GRAVEL with cobble**

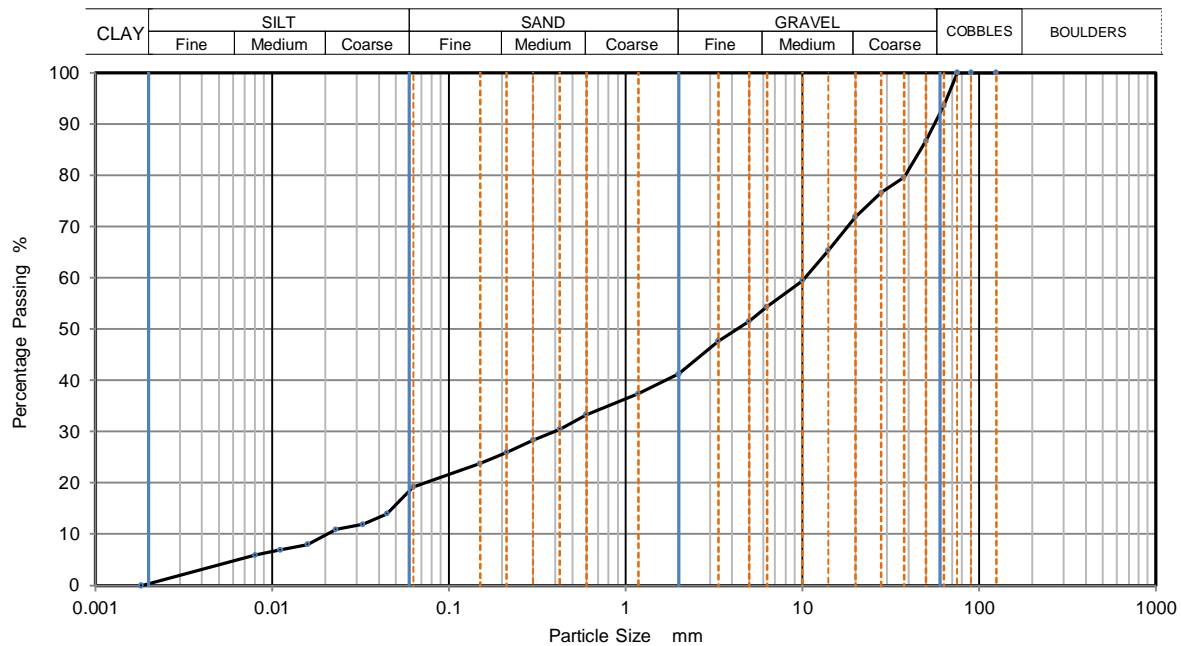
Depth, m **1.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093398**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	14
90	100	0.0326	12
75	100	0.0229	11
63	94	0.0159	8
50	87	0.0111	7
37.5	80	0.0080	6
28	77	0.0018	0
20	72		
14	65		
10	60		
6.3	54		
5	52		
3.35	48		
2	41		
1.18	37		
0.6	33	Particle density (assumed) 2.67 Mg/m ³	
0.425	31		
0.3	28		
0.212	26		
0.15	24		
0.063	19		

Dry Mass of sample, g. 13166

Sample Proportions	% dry mass
Very coarse	6
Gravel	52
Sand	22
Silt	19
Clay	0

Grading Analysis	
D100	mm
D60	mm 10.3
D30	mm 0.395
D10	mm 0.0196
Uniformity Coefficient	520
Curvature Coefficient	0.77

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP25**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown sandy silty GRAVEL with cobble**

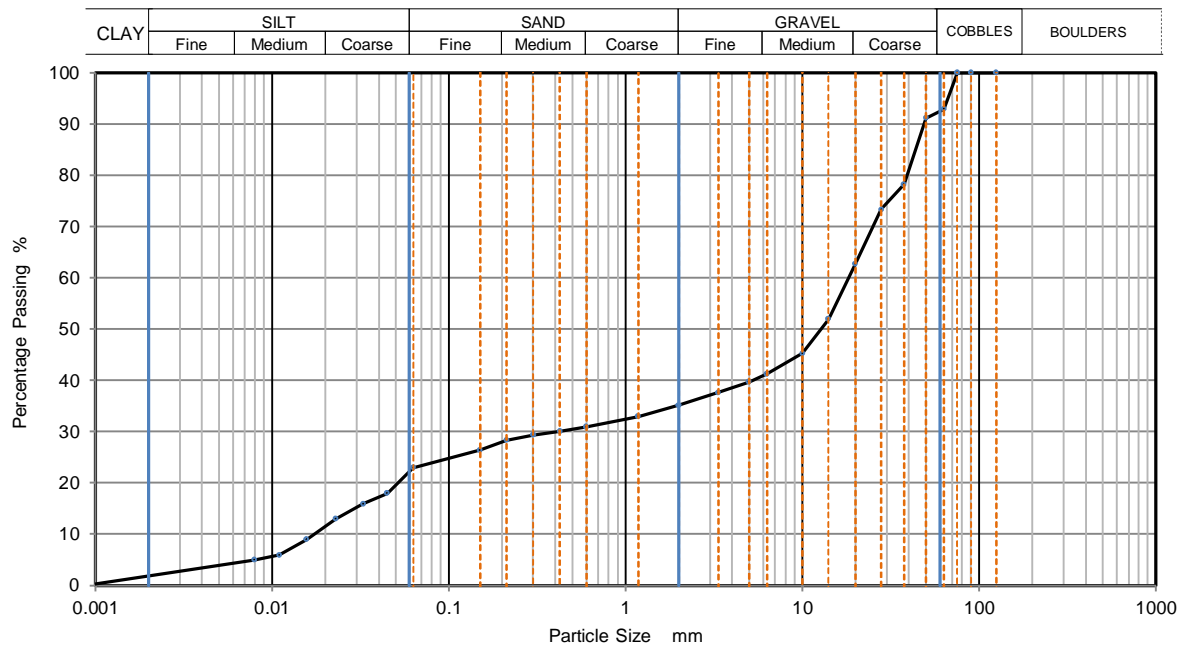
Depth, m **3.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093402**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	18
90	100	0.0328	16
75	100	0.0228	13
63	93	0.0157	9
50	91	0.0110	6
37.5	78	0.0079	5
28	73	0.0009	0
20	63		
14	52		
10	45		
6.3	41		
5	40		
3.35	38		
2	35		
1.18	33		
0.6	31		
0.425	30	Particle density (assumed) 2.67 Mg/m ³	
0.3	29		
0.212	28		
0.15	26		
0.063	23		

Dry Mass of sample, g. 11396

Sample Proportions	% dry mass
Very coarse	7
Gravel	58
Sand	12
Silt	21
Clay	2

Grading Analysis	
D100	mm
D60	mm 18.2
D30	mm 0.402
D10	mm 0.0177
Uniformity Coefficient	1000
Curvature Coefficient	0.5

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP26**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy gravelly SILT**

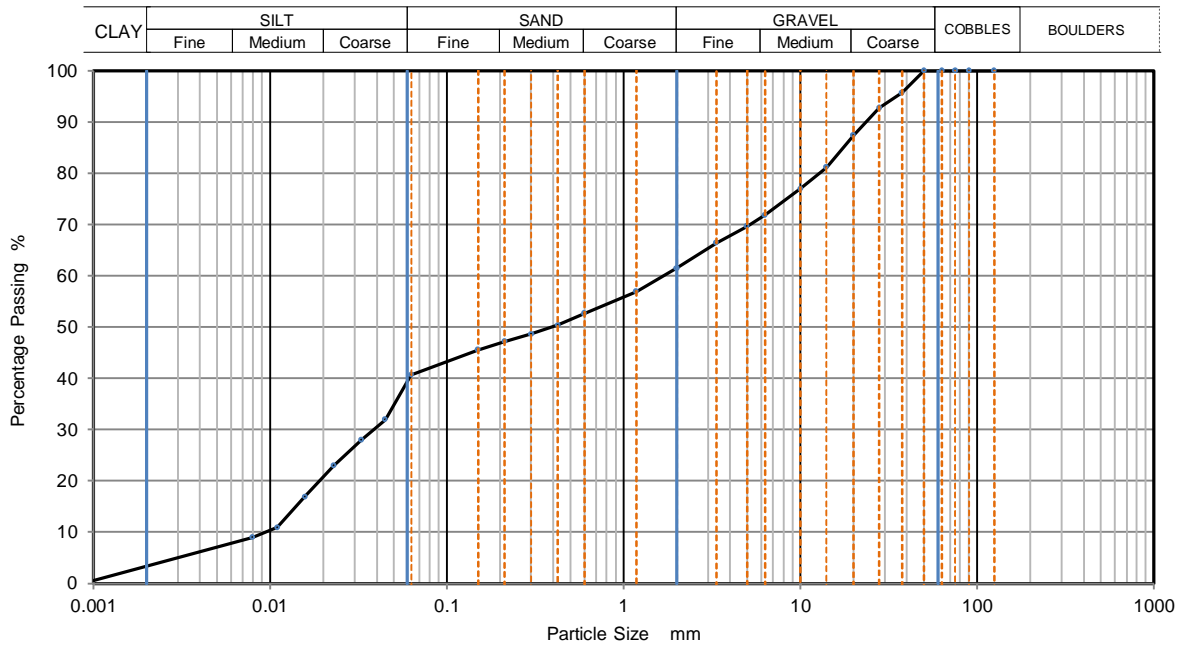
Depth, m **1.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093390**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	32
90	100	0.0328	28
75	100	0.0228	23
63	100	0.0158	17
50	100	0.0110	11
37.5	96	0.0079	9
28	93	0.0009	0
20	87		
14	81		
10	77		
6.3	72		
5	70		
3.35	66		
2	62		
1.18	57		
0.6	53		
0.425	50	Particle density (assumed)	
0.3	49	2.67	Mg/m ³
0.212	47		
0.15	46		
0.063	41		

Dry Mass of sample, g. 11054

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	21
Silt	37
Clay	3

Grading Analysis		
D100	mm	
D60	mm	1.68
D30	mm	0.0382
D10	mm	0.00907
Uniformity Coefficient		180
Curvature Coefficient		0.096

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP26**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown silty sandy GRAVEL with cobble**

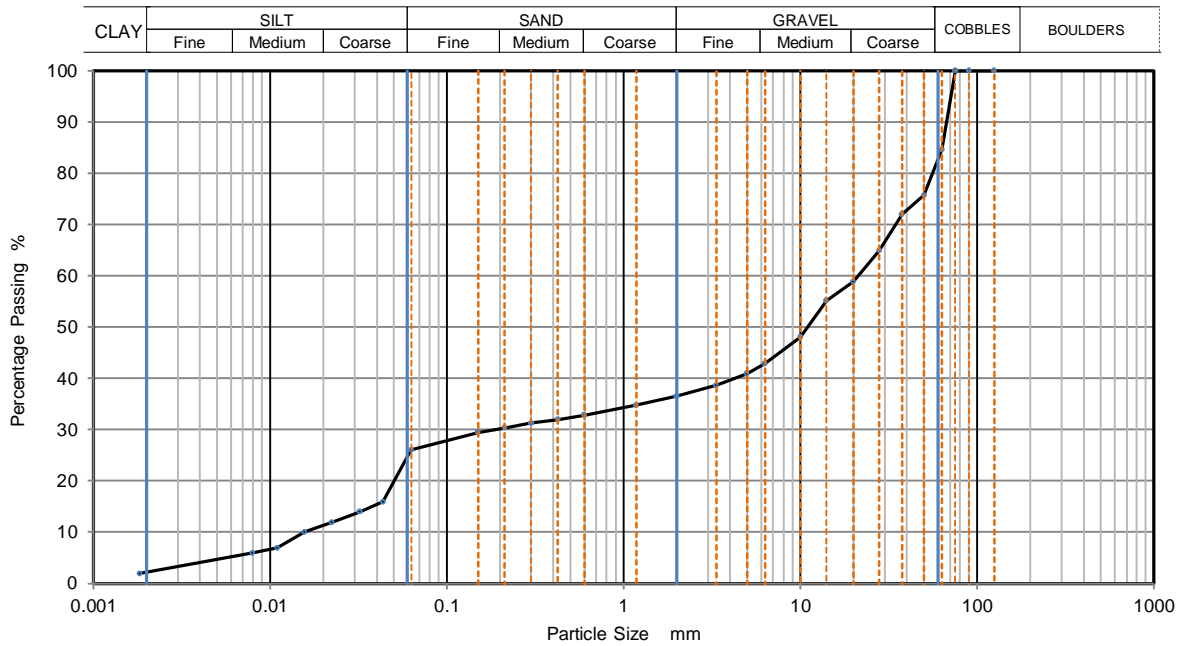
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093394**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0435	16
90	100	0.0321	14
75	100	0.0224	12
63	85	0.0157	10
50	76	0.0110	7
37.5	72	0.0079	6
28	65	0.0018	2
20	59		
14	55		
10	48		
6.3	43		
5	41		
3.35	39		
2	37		
1.18	35		
0.6	33		
0.425	32	Particle density (assumed) 2.67 Mg/m ³	
0.3	31		
0.212	30		
0.15	30		
0.063	26		

Dry Mass of sample, g. 19270

Sample Proportions	% dry mass
Very coarse	15
Gravel	48
Sand	10
Silt	24
Clay	2

Grading Analysis	
D100	mm
D60	mm 21.2
D30	mm 0.179
D10	mm 0.0161
Uniformity Coefficient	1300
Curvature Coefficient	0.094

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP27**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy silty GRAVEL**

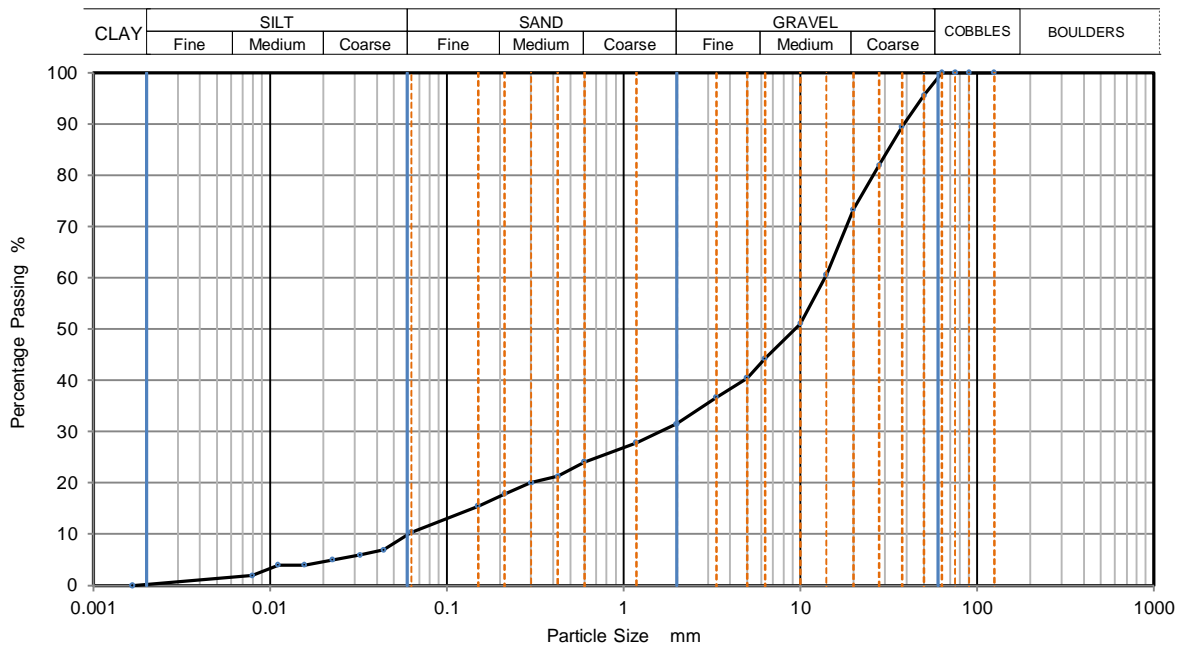
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093443**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	7
90	100	0.0324	6
75	100	0.0225	5
63	100	0.0157	4
50	96	0.0111	4
37.5	90	0.0079	2
28	82	0.0017	0
20	73		
14	61		
10	51		
6.3	44		
5	41		
3.35	37		
2	32		
1.18	28		
0.6	24		
0.425	21	Particle density (assumed)	
0.3	20	2.67	Mg/m ³
0.212	18		
0.15	16		
0.063	10		

Dry Mass of sample, g. 15348

Sample Proportions	% dry mass
Very coarse	0
Gravel	69
Sand	21
Silt	10
Clay	1

Grading Analysis	
D100	mm
D60	mm 13.7
D30	mm 1.61
D10	mm 0.0608
Uniformity Coefficient	230
Curvature Coefficient	3.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP27**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty sandy GRAVEL with cobble**

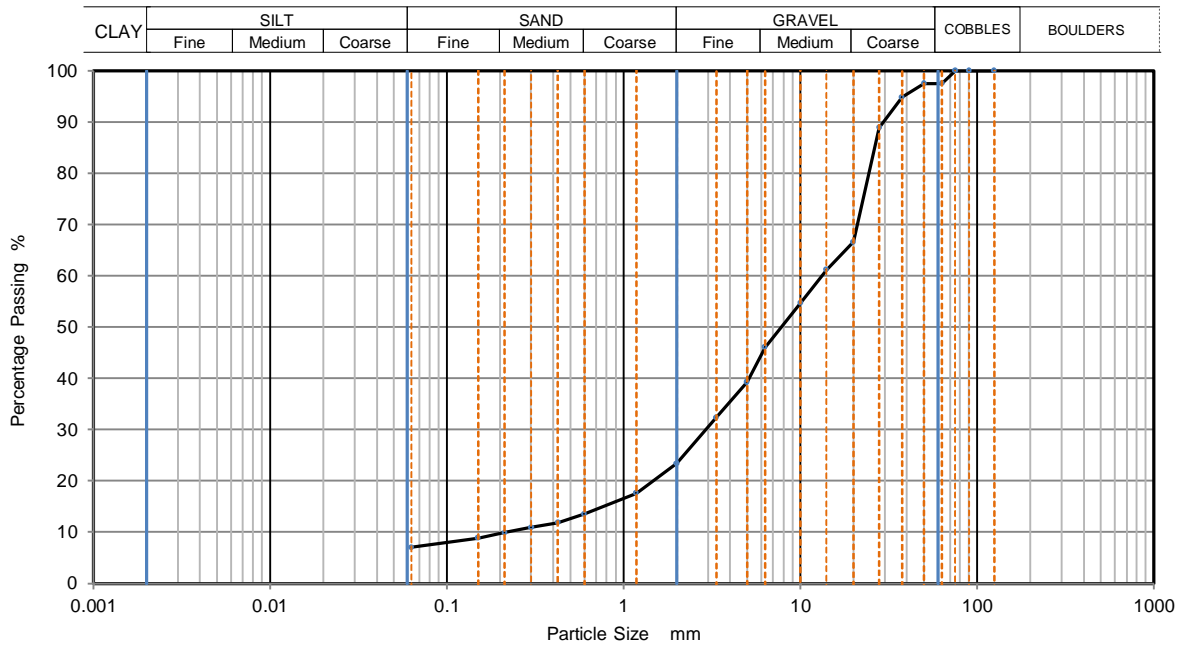
Depth, m **2.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1093447**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	98		
50	98		
37.5	95		
28	89		
20	67		
14	61		
10	55		
6.3	46		
5	39		
3.35	32		
2	24		
1.18	18		
0.6	14		
0.425	12		
0.3	11		
0.212	10		
0.15	9		
0.063	7		
		Particle density (assumed) 2.67 Mg/m ³	

Dry Mass of sample, g. 12382

Sample Proportions	% dry mass
Very coarse	3
Gravel	74
Sand	17
Fines <0.063mm	7

Grading Analysis	
D100	mm
D60	mm 13.2
D30	mm 2.91
D10	mm 0.216
Uniformity Coefficient	61
Curvature Coefficient	3

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP28**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy silty GRAVEL**

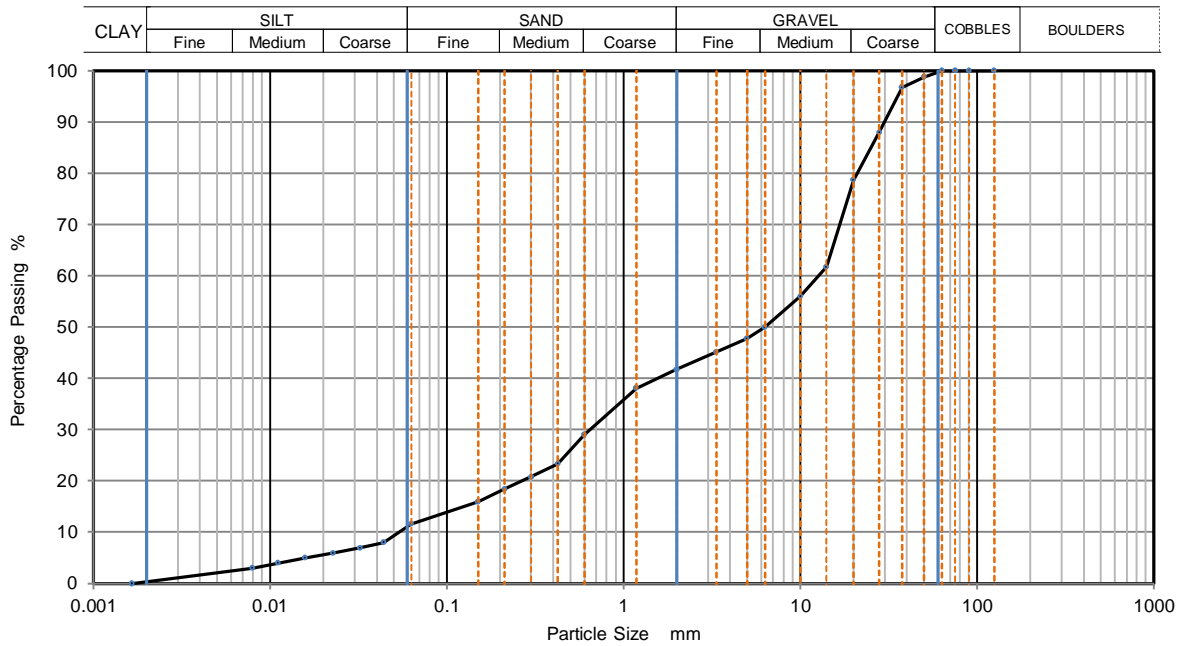
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102286**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	8
90	100	0.0324	7
75	100	0.0227	6
63	100	0.0158	5
50	99	0.0111	4
37.5	97	0.0079	3
28	88	0.0017	0
20	79		
14	62		
10	56		
6.3	50		
5	48		
3.35	45		
2	42		
1.18	38		
0.6	29		
0.425	23	Particle density (assumed) 2.67 Mg/m ³	
0.3	21		
0.212	18		
0.15	16		
0.063	12		

Dry Mass of sample, g. 12843

Sample Proportions	% dry mass
Very coarse	0
Gravel	58
Sand	30
Silt	11
Clay	0

Grading Analysis	
D100	mm
D60	mm 12.6
D30	mm 0.645
D10	mm 0.0543
Uniformity Coefficient	230
Curvature Coefficient	0.61

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP28**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty gravelly SAND**

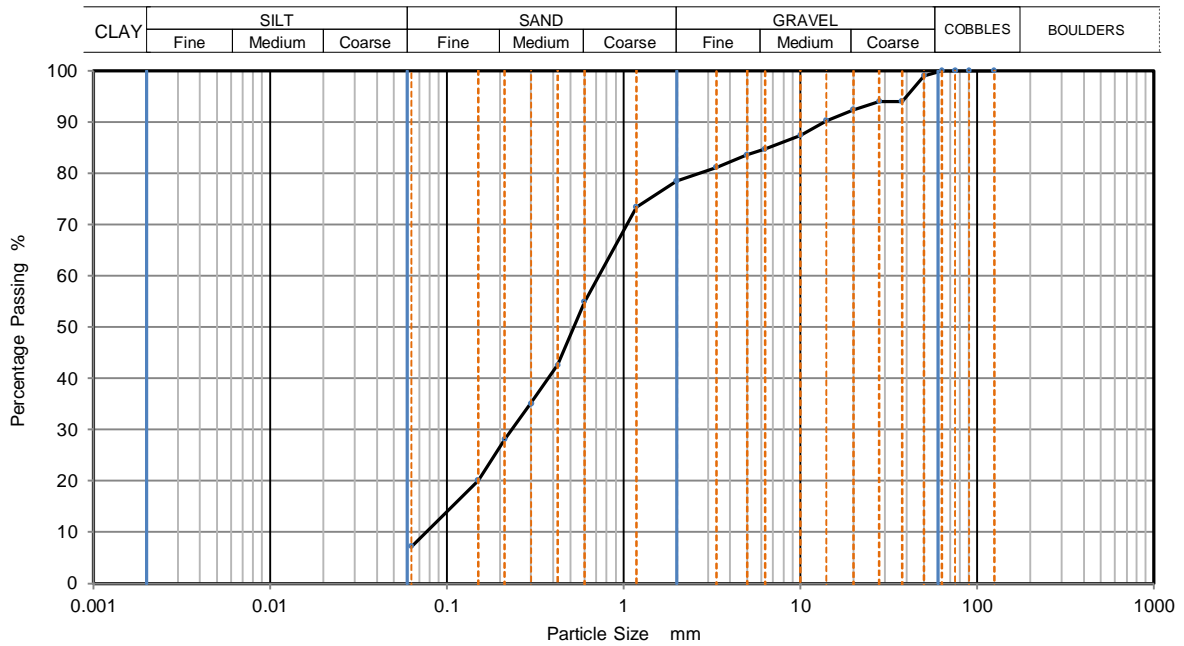
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1102290**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	99		
37.5	94		
28	94		
20	92		
14	90		
10	87		
6.3	85		
5	84		
3.35	81		
2	79		
1.18	73		
0.6	55		
0.425	43		
0.3	35		
0.212	28		
0.15	20		
0.063	7		

Dry Mass of sample, g. 18830

Sample Proportions	% dry mass
Very coarse	0
Gravel	22
Sand	71
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	0.723
D30	mm	0.233
D10	mm	0.0757
Uniformity Coefficient		9.6
Curvature Coefficient		0.99

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP29**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy silty GRAVEL**

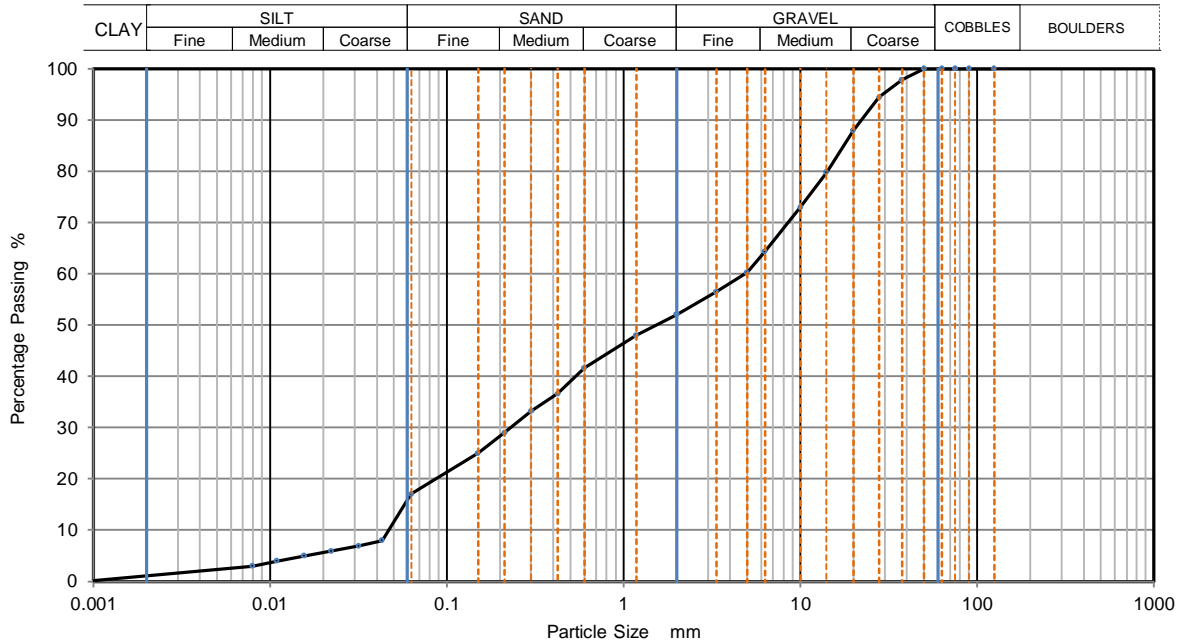
Depth, m **0.50**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102811**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0430	8
90	100	0.0317	7
75	100	0.0222	6
63	100	0.0155	5
50	100	0.0109	4
37.5	98	0.0079	3
28	94	0.0009	0
20	88		
14	80		
10	73		
6.3	64		
5	60		
3.35	57		
2	52		
1.18	48		
0.6	42		
0.425	37	Particle density (assumed) 2.67 Mg/m ³	
0.3	33		
0.212	29		
0.15	25		
0.063	17		

Dry Mass of sample, g. 14457

Sample Proportions	% dry mass
Very coarse	0
Gravel	48
Sand	35
Silt	16
Clay	1

Grading Analysis		
D100	mm	
D60	mm	4.83
D30	mm	0.23
D10	mm	0.0461
Uniformity Coefficient		100
Curvature Coefficient		0.24

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP29**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty gravelly SAND**

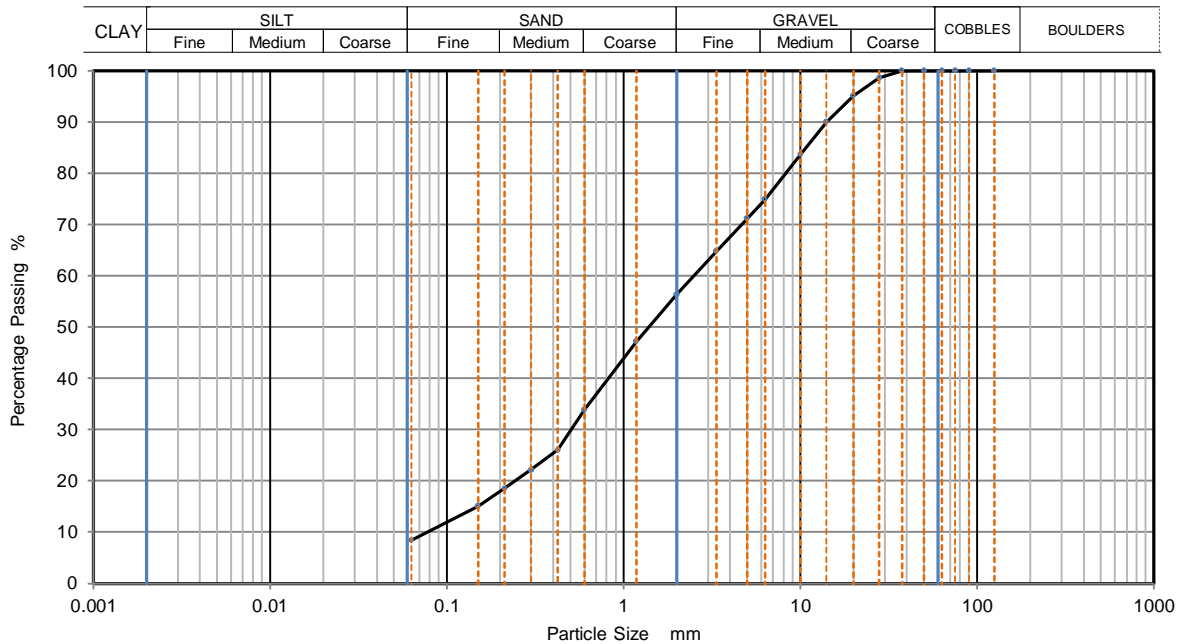
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1102815**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	95		
14	90		
10	84		
6.3	75		
5	71		
3.35	65		
2	56		
1.18	47		
0.6	34		
0.425	26		
0.3	22		
0.212	19		
0.15	15		
0.063	9		

Dry Mass of sample, g. 11676

Sample Proportions	% dry mass
Very coarse	0
Gravel	44
Sand	48
Fines <0.063mm	8

Grading Analysis	
D100	mm
D60	mm 2.5
D30	mm 0.505
D10	mm 0.0768
Uniformity Coefficient	33
Curvature Coefficient	1.3

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP30**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown silty sandy GRAVEL**

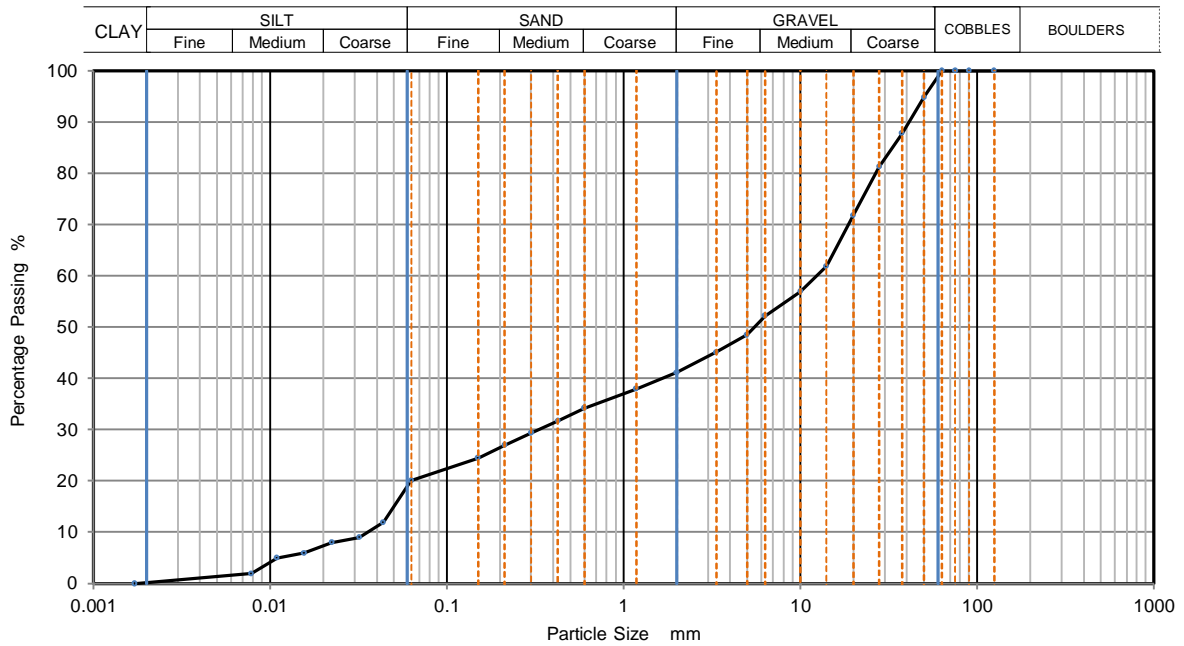
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102827**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0437	12
90	100	0.0318	9
75	100	0.0223	8
63	100	0.0156	6
50	95	0.0109	5
37.5	88	0.0078	2
28	81	0.0017	0
20	72		
14	62		
10	57		
6.3	52		
5	49		
3.35	45		
2	41		
1.18	38		
0.6	34		
0.425	32	Particle density (assumed)	
0.3	29	2.67	Mg/m ³
0.212	27		
0.15	25		
0.063	20		

Dry Mass of sample, g. 10887

Sample Proportions	% dry mass
Very coarse	0
Gravel	59
Sand	21
Silt	20
Clay	0

Grading Analysis	
D100	mm
D60	mm 12.3
D30	mm 0.328
D10	mm 0.0339
Uniformity Coefficient	360
Curvature Coefficient	0.26

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP30**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown sandy GRAVEL with cobble**

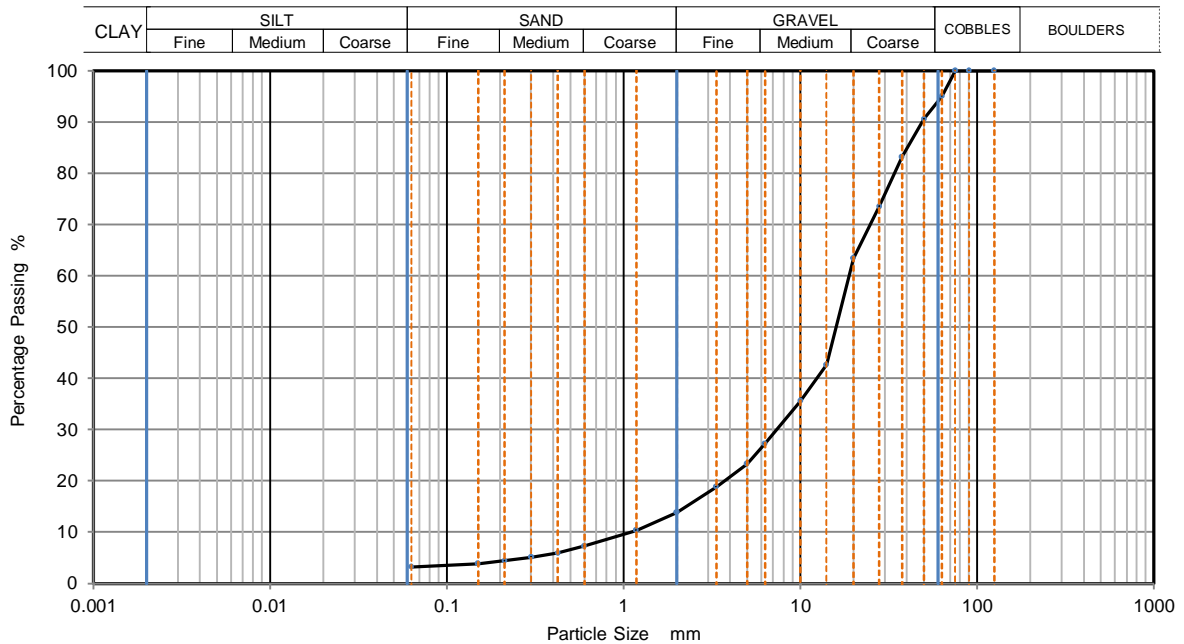
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1102831**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	95		
50	91		
37.5	83		
28	74		
20	63		
14	43		
10	36		
6.3	27		
5	23		
3.35	19		
2	14		
1.18	10		
0.6	7		
0.425	6		
0.3	5		
0.212	5		
0.15	4		
0.063	3		

Dry Mass of sample, g. 14532

Sample Proportions	% dry mass
Very coarse	5
Gravel	81
Sand	11
Fines <0.063mm	3

Grading Analysis	
D100	mm
D60	mm 18.9
D30	mm 7.33
D10	mm 1.08
Uniformity Coefficient	17
Curvature Coefficient	2.6

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP31**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown sandy silty GRAVEL**

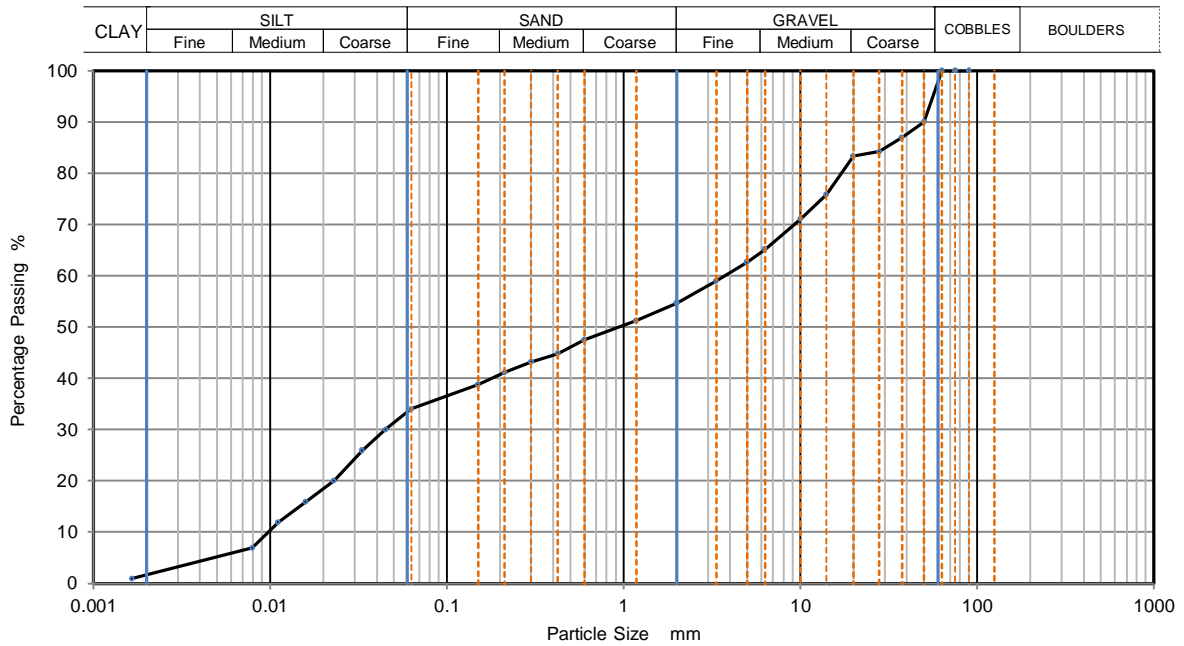
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102331**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125		0.0451	30
90	100	0.0332	26
75	100	0.0229	20
63	100	0.0159	16
50	90	0.0111	12
37.5	87	0.0079	7
28	84	0.0016	1
20	83		
14	76		
10	71		
6.3	65		
5	63		
3.35	59		
2	55		
1.18	51		
0.6	48	Particle density (assumed)	
0.425	45	2.67	Mg/m ³
0.3	43		
0.212	41		
0.15	39		
0.063	34		

Dry Mass of sample, g. **9357**

Sample Proportions	% dry mass
Very coarse	0
Gravel	45
Sand	21
Silt	32
Clay	2

Grading Analysis	
D100	mm
D60	mm 3.73
D30	mm 0.0463
D10	mm 0.00972
Uniformity Coefficient	380
Curvature Coefficient	0.059

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP31**

Site Name **New Deer 2**

Sample No.

Soil Description **Brown sandy silty GRAVEL**

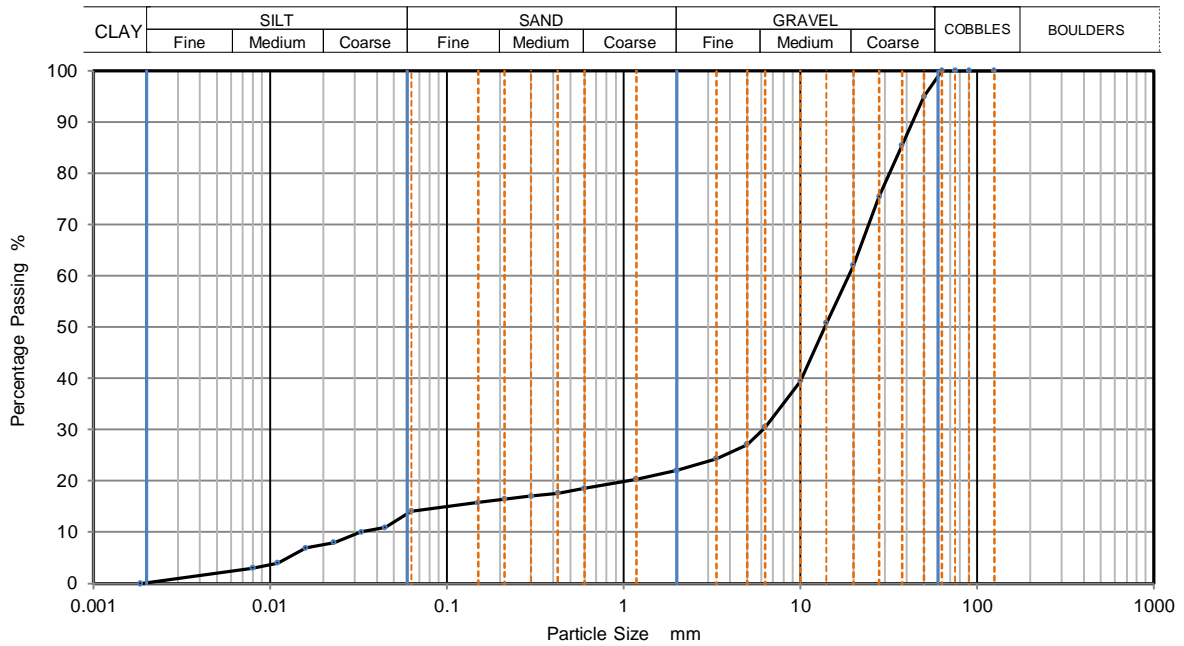
Depth, m **3.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102335**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	11
90	100	0.0328	10
75	100	0.0229	8
63	100	0.0159	7
50	95	0.0110	4
37.5	86	0.0080	3
28	76	0.0018	0
20	62		
14	51		
10	40		
6.3	31		
5	27		
3.35	24		
2	22		
1.18	20		
0.6	19	Particle density (assumed) 2.67 Mg/m ³	
0.425	18		
0.3	17		
0.212	17		
0.15	16		
0.063	14		

Dry Mass of sample, g. 9431

Sample Proportions	% dry mass
Very coarse	0
Gravel	78
Sand	8
Silt	14
Clay	1

Grading Analysis	
D100	mm
D60	mm 18.7
D30	mm 6.1
D10	mm 0.0365
Uniformity Coefficient	510
Curvature Coefficient	54

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP32**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown silty sandy GRAVEL with cobble**

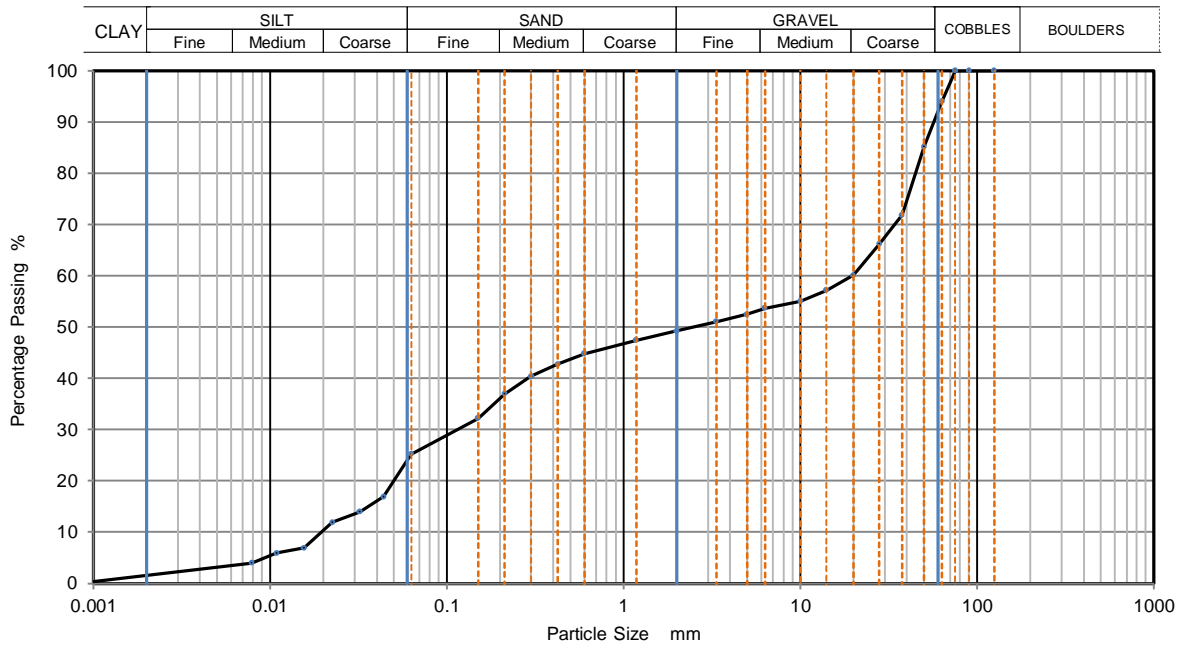
Depth, m **0.50**

Specimen Reference **3** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102835**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	17
90	100	0.0321	14
75	100	0.0225	12
63	94	0.0155	7
50	85	0.0109	6
37.5	72	0.0079	4
28	66	0.0008	0
20	60		
14	57		
10	55		
6.3	54		
5	53		
3.35	51		
2	49		
1.18	47		
0.6	45	Particle density (assumed) 2.67 Mg/m ³	
0.425	43		
0.3	40		
0.212	37		
0.15	32		
0.063	25		

Dry Mass of sample, g. 13259

Sample Proportions	% dry mass
Very coarse	6
Gravel	45
Sand	24
Silt	24
Clay	2

Grading Analysis	
D100	mm
D60	mm 19.7
D30	mm 0.114
D10	mm 0.0194
Uniformity Coefficient	1000
Curvature Coefficient	0.034

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP32**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty sandy GRAVEL with cobble**

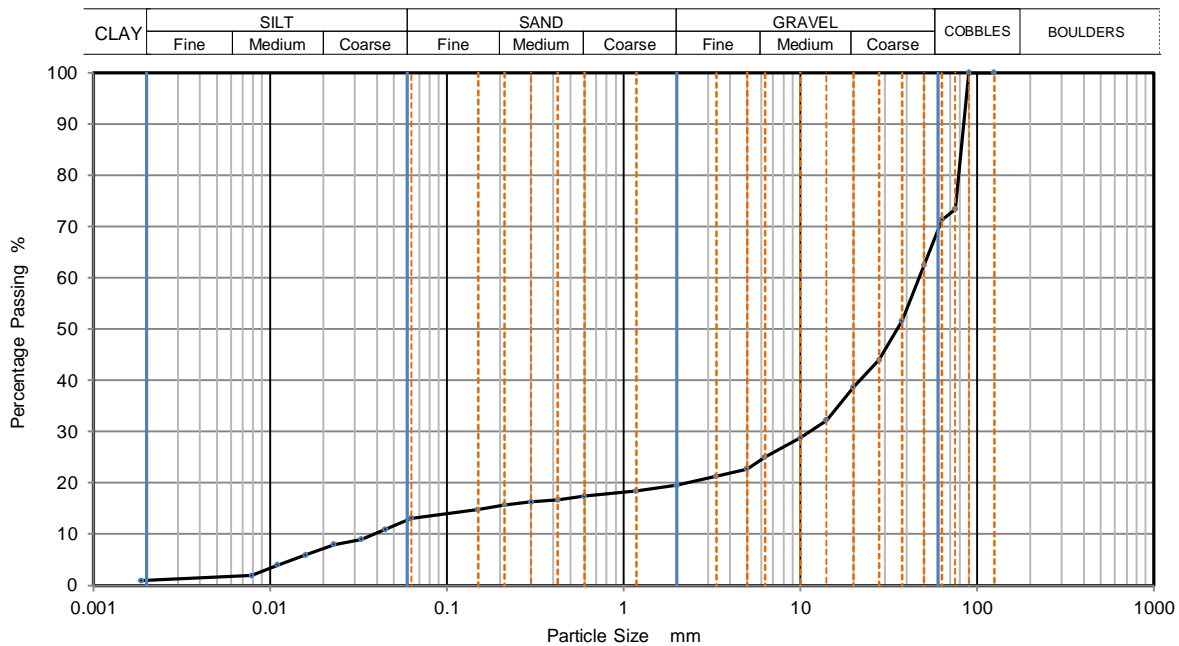
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102839**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0448	11
90	100	0.0328	9
75	73	0.0229	8
63	71	0.0159	6
50	62	0.0110	4
37.5	52	0.0079	2
28	44	0.0019	1
20	39		
14	32		
10	29		
6.3	25		
5	23		
3.35	21		
2	20		
1.18	18		
0.6	17	Particle density (assumed) 2.67 Mg/m ³	
0.425	17		
0.3	16		
0.212	16		
0.15	15		
0.063	13		

Dry Mass of sample, g. 16717

Sample Proportions	% dry mass
Very coarse	29
Gravel	52
Sand	7
Silt	12
Clay	1

Grading Analysis	
D100	mm
D60	mm 46.9
D30	mm 11.3
D10	mm 0.0402
Uniformity Coefficient	1200
Curvature Coefficient	68

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP33**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown sandy silty GRAVEL with cobble**

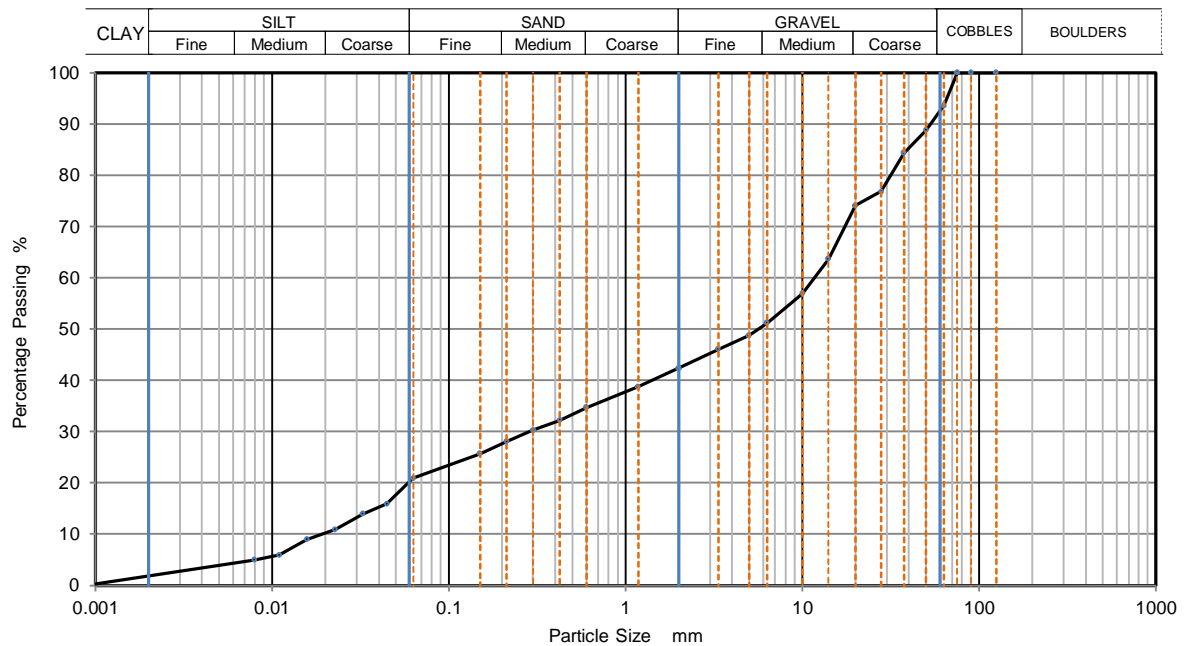
Depth, m **1.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093471**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	16
90	100	0.0326	14
75	100	0.0227	11
63	94	0.0158	9
50	89	0.0110	6
37.5	84	0.0079	5
28	77	0.0009	0
20	74		
14	64		
10	57		
6.3	51		
5	49		
3.35	46		
2	42		
1.18	39		
0.6	35	Particle density (assumed) 2.67 Mg/m ³	
0.425	32		
0.3	30		
0.212	28		
0.15	26		
0.063	21		

Dry Mass of sample, g. 12472

Sample Proportions	% dry mass
Very coarse	7
Gravel	51
Sand	21
Silt	19
Clay	2

Grading Analysis		
D100	mm	
D60	mm	11.6
D30	mm	0.286
D10	mm	0.0188
Uniformity Coefficient		620
Curvature Coefficient		0.37

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP33**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown sandy silty GRAVEL**

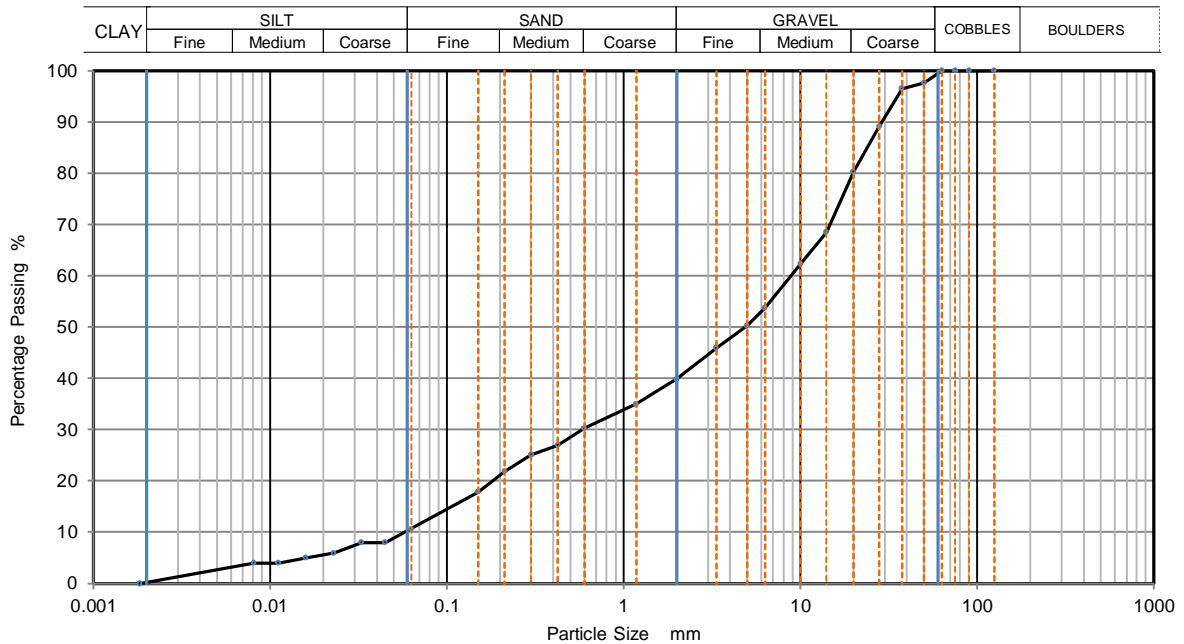
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093475**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	8
90	100	0.0329	8
75	100	0.0229	6
63	100	0.0159	5
50	98	0.0111	4
37.5	97	0.0081	4
28	89	0.0018	0
20	80		
14	69		
10	62		
6.3	54		
5	50		
3.35	46		
2	40		
1.18	35		
0.6	30	Particle density (assumed) 2.67 Mg/m ³	
0.425	27		
0.3	25		
0.212	22		
0.15	18		
0.063	11		

Dry Mass of sample, g. 19717

Sample Proportions	% dry mass
Very coarse	0
Gravel	60
Sand	29
Silt	10
Clay	1

Grading Analysis		
D100	mm	
D60	mm	8.84
D30	mm	0.584
D10	mm	0.0566
Uniformity Coefficient		160
Curvature Coefficient		0.68

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP34**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy silty GRAVEL**

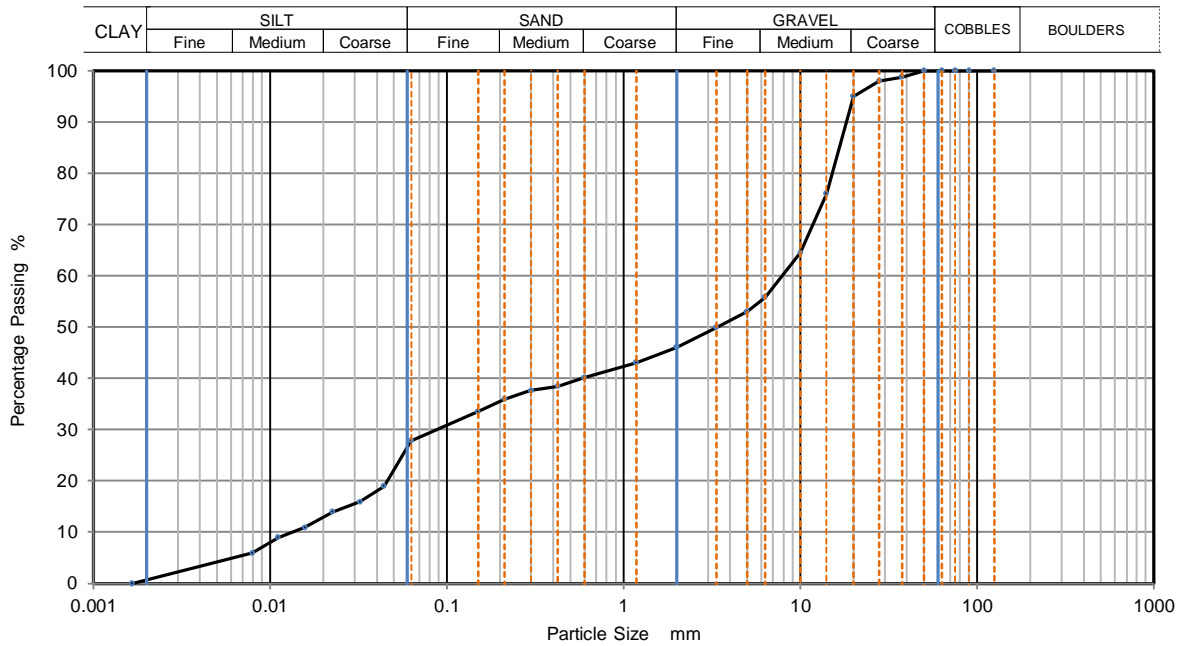
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102278**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	19
90	100	0.0324	16
75	100	0.0226	14
63	100	0.0158	11
50	100	0.0111	9
37.5	99	0.0079	6
28	98	0.0016	0
20	95		
14	76		
10	65		
6.3	56		
5	53		
3.35	50		
2	46		
1.18	43		
0.6	40	Particle density (assumed) 2.67 Mg/m ³	
0.425	39		
0.3	38		
0.212	36		
0.15	34		
0.063	28		

Dry Mass of sample, g. 13074

Sample Proportions	% dry mass
Very coarse	0
Gravel	54
Sand	18
Silt	27
Clay	1

Grading Analysis	
D100	mm
D60	mm 7.88
D30	mm 0.087
D10	mm 0.0123
Uniformity Coefficient	640
Curvature Coefficient	0.078

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP34**

Site Name **New Deer 2**

Sample No. **5**

Soil Description **Brown silty sandy GRAVEL**

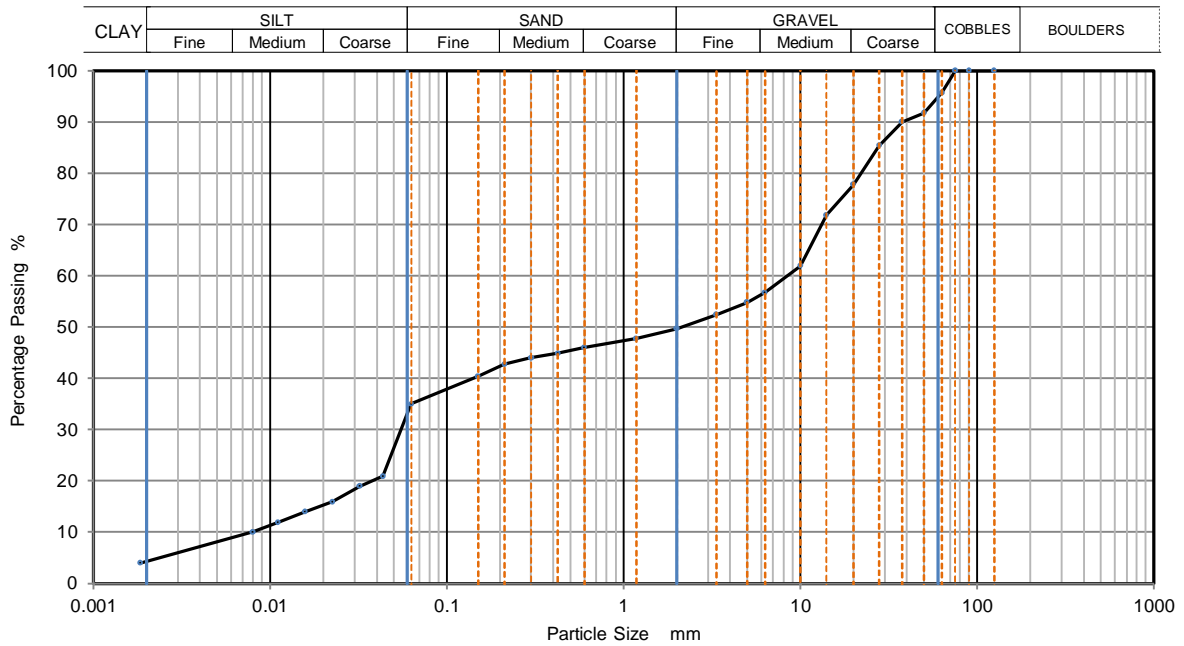
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102282**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0435	21
90	100	0.0321	19
75	100	0.0225	16
63	96	0.0158	14
50	92	0.0111	12
37.5	90	0.0080	10
28	85	0.0018	4
20	78		
14	72		
10	62		
6.3	57		
5	55		
3.35	52		
2	50		
1.18	48		
0.6	46	Particle density (assumed) 2.67 Mg/m ³	
0.425	45		
0.3	44		
0.212	43		
0.15	40		
0.063	35		

Dry Mass of sample, g. 12838

Sample Proportions	% dry mass
Very coarse	4
Gravel	46
Sand	15
Silt	30
Clay	5

Grading Analysis		
D100	mm	
D60	mm	8.4
D30	mm	0.0553
D10	mm	0.00823
Uniformity Coefficient		1000
Curvature Coefficient		0.044

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP35**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown gravelly sandy SILT**

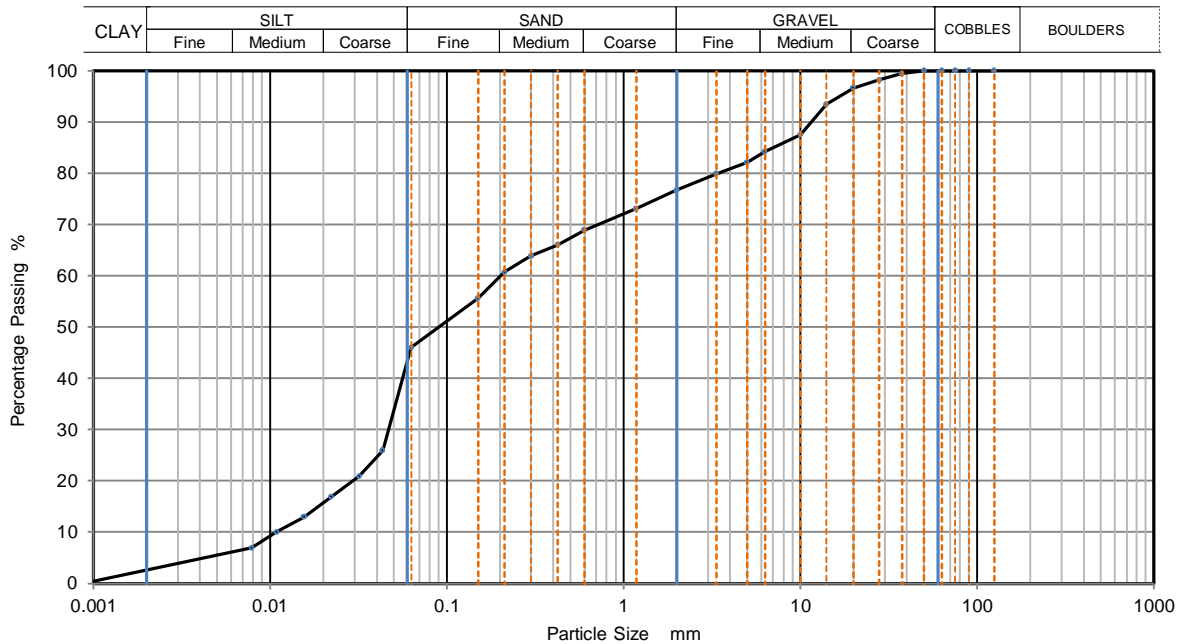
Depth, m **0.50**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102269**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0434	26
90	100	0.0318	21
75	100	0.0222	17
63	100	0.0155	13
50	100	0.0109	10
37.5	99	0.0079	7
28	98	0.0009	0
20	97		
14	93		
10	88		
6.3	84		
5	82		
3.35	80		
2	77		
1.18	73		
0.6	69	Particle density (assumed) 2.67 Mg/m ³	
0.425	66		
0.3	64		
0.212	61		
0.15	56		
0.063	46		

Dry Mass of sample, g.

9027

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	31
Silt	43
Clay	3

Grading Analysis	
D100	mm
D60	mm 0.203
D30	mm 0.0469
D10	mm 0.0108
Uniformity Coefficient	19
Curvature Coefficient	1

Remarks

Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP35**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown sandy silty GRAVEL with cobble**

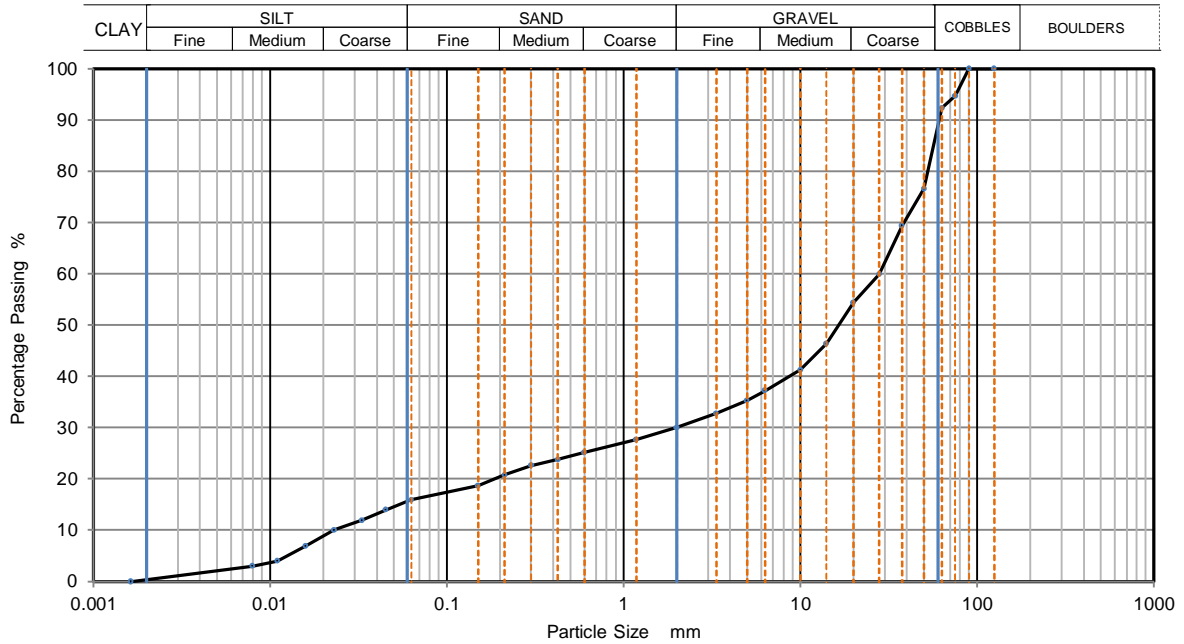
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102273**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0453	14
90	100	0.0330	12
75	95	0.0231	10
63	92	0.0159	7
50	77	0.0110	4
37.5	69	0.0079	3
28	60	0.0016	0
20	54		
14	46		
10	41		
6.3	37		
5	35		
3.35	33		
2	30		
1.18	28		
0.6	25		
0.425	24	Particle density (assumed) 2.67 Mg/m ³	
0.3	23		
0.212	21		
0.15	19		
0.063	16		

Dry Mass of sample, g. 9836

Sample Proportions	% dry mass
Very coarse	8
Gravel	62
Sand	14
Silt	16
Clay	0

Grading Analysis	
D100	mm
D60	mm 28.1
D30	mm 2.01
D10	mm 0.0222
Uniformity Coefficient	1300
Curvature Coefficient	6.5

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP36**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown silty gravelly SAND with cobble**

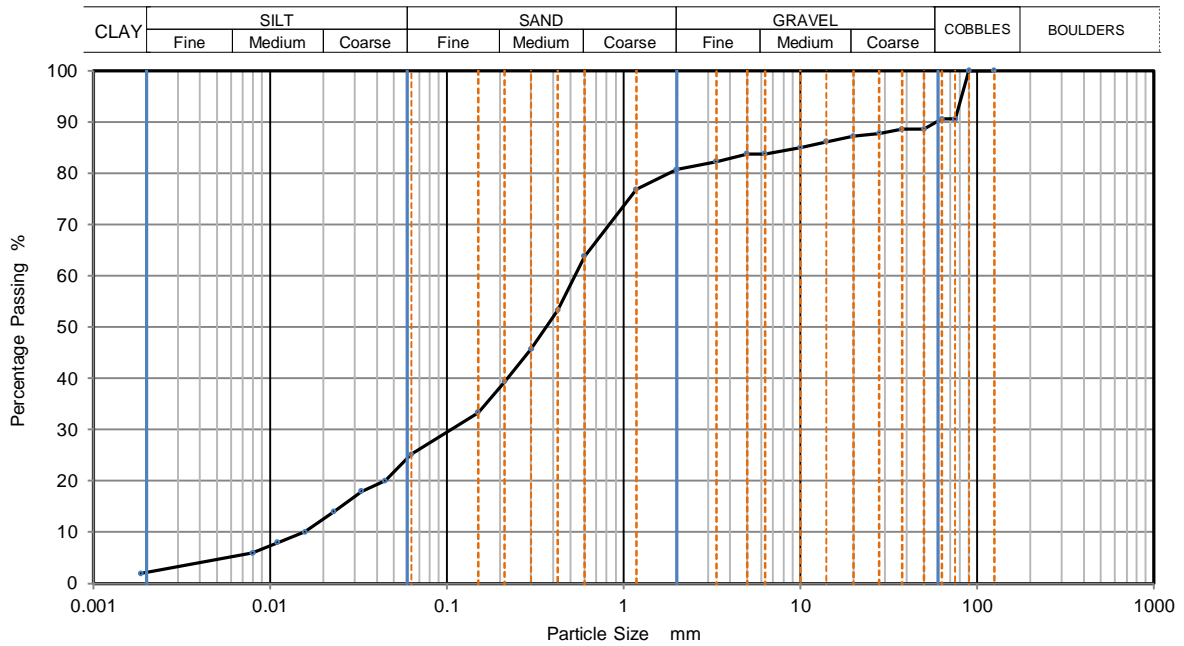
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093429**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	20
90	100	0.0329	18
75	91	0.0228	14
63	91	0.0158	10
50	89	0.0110	8
37.5	89	0.0080	6
28	88	0.0019	2
20	87		
14	86		
10	85		
6.3	84		
5	84		
3.35	82		
2	81		
1.18	77		
0.6	64	Particle density (assumed) 2.67 Mg/m ³	
0.425	53		
0.3	46		
0.212	39		
0.15	33		
0.063	25		

Dry Mass of sample, g. 13361

Sample Proportions	% dry mass
Very coarse	9
Gravel	10
Sand	56
Silt	23
Clay	2

Grading Analysis	
D100	mm
D60	mm 0.53
D30	mm 0.105
D10	mm 0.0149
Uniformity Coefficient	36
Curvature Coefficient	1.4

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP36**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown gravelly silty SAND with cobble**

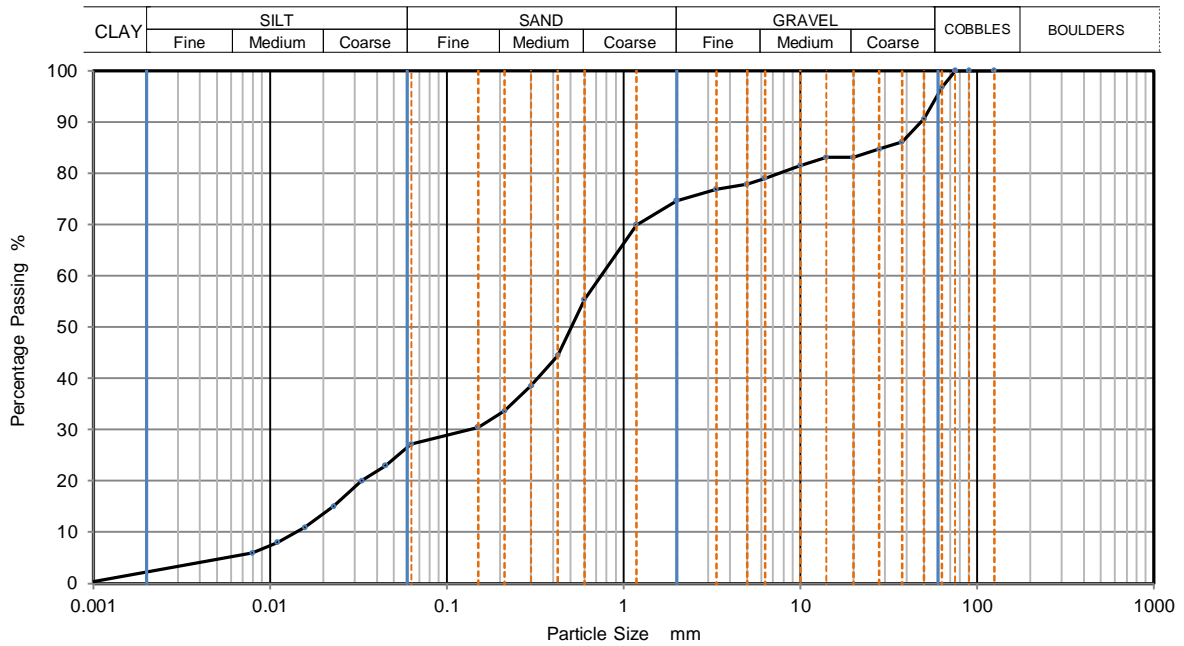
Depth, m **2.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093433**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	23
90	100	0.0330	20
75	100	0.0228	15
63	97	0.0158	11
50	91	0.0110	8
37.5	86	0.0079	6
28	85	0.0009	0
20	83		
14	83		
10	82		
6.3	79		
5	78		
3.35	77		
2	75		
1.18	70		
0.6	55	Particle density (assumed) 2.67 Mg/m ³	
0.425	45		
0.3	39		
0.212	34		
0.15	31		
0.063	27		

Dry Mass of sample, g. 10083

Sample Proportions	% dry mass
Very coarse	3
Gravel	22
Sand	48
Silt	25
Clay	2

Grading Analysis	
D100	mm
D60	mm 0.743
D30	mm 0.133
D10	mm 0.0143
Uniformity Coefficient	52
Curvature Coefficient	1.7

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP37**

Site Name **New Deer 2**

Sample No. **5**

Soil Description **Brown gravelly silty SAND**

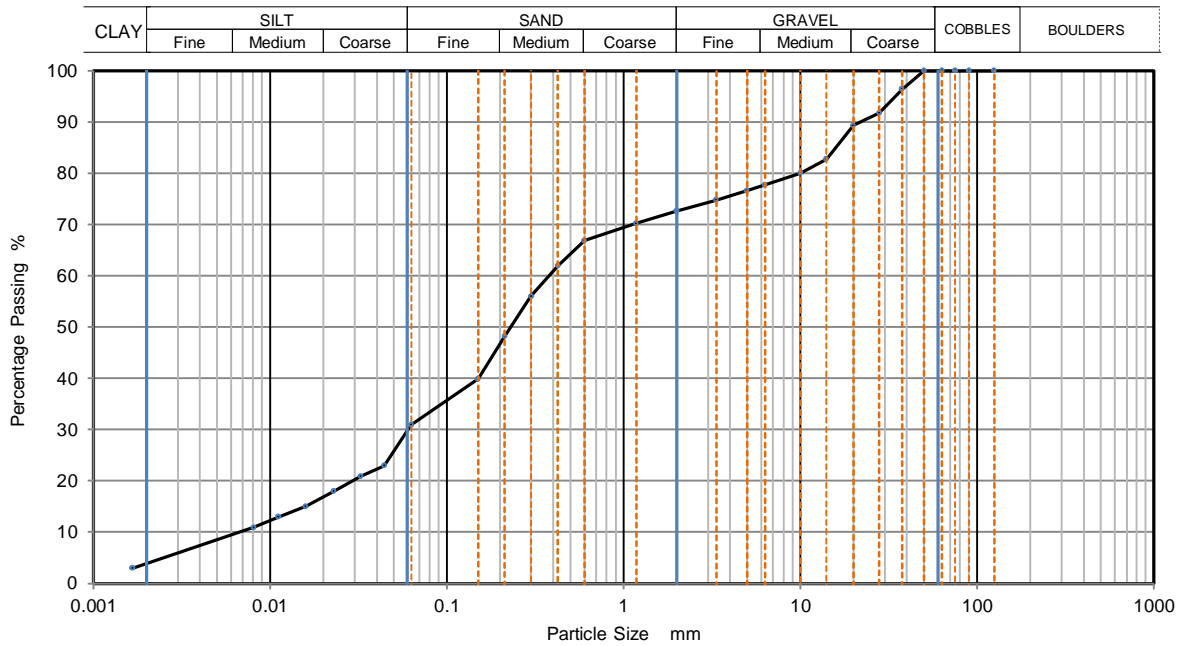
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093462**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	23
90	100	0.0326	21
75	100	0.0228	18
63	100	0.0159	15
50	100	0.0112	13
37.5	96	0.0081	11
28	92	0.0017	3
20	89		
14	83		
10	80		
6.3	78		
5	77		
3.35	75		
2	73		
1.18	70		
0.6	67	Particle density (assumed) 2.67 Mg/m ³	
0.425	62		
0.3	56		
0.212	48		
0.15	40		
0.063	31		

Dry Mass of sample, g. 11886

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	42
Silt	27
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.379
D30	mm	0.0606
D10	mm	0.00687
Uniformity Coefficient		55
Curvature Coefficient		1.4

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP37**

Site Name **New Deer 2**

Sample No. **7**

Soil Description **Brown silty gravelly SAND**

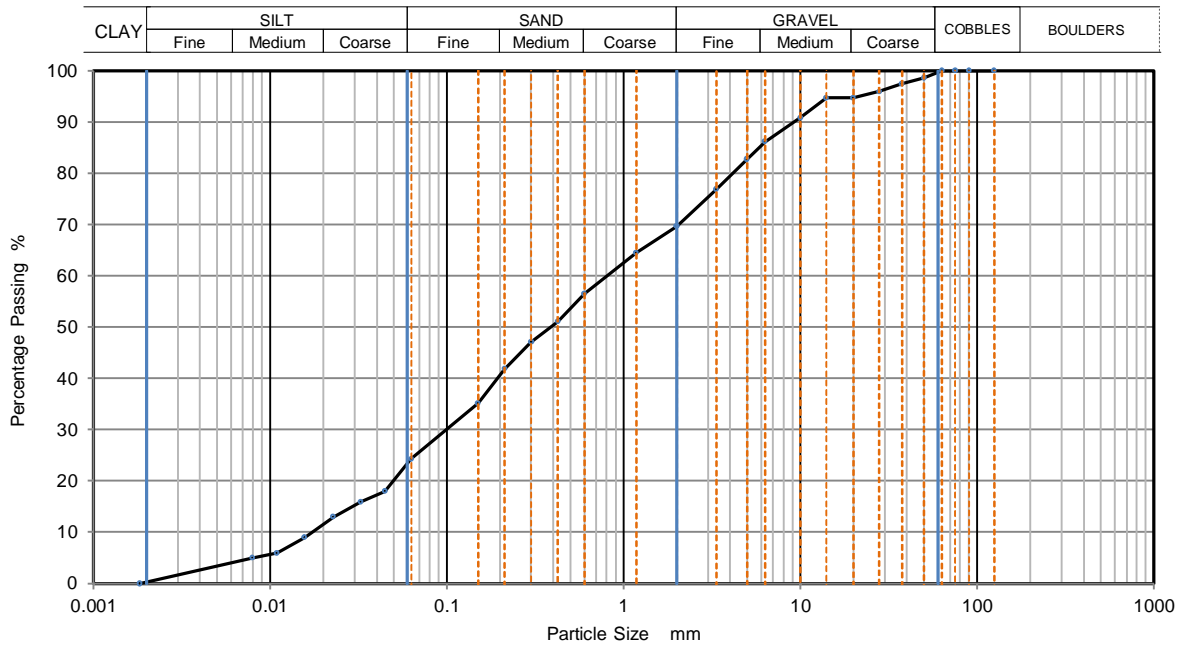
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093464**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	18
90	100	0.0326	16
75	100	0.0227	13
63	100	0.0157	9
50	99	0.0109	6
37.5	97	0.0079	5
28	96	0.0018	0
20	95		
14	95		
10	91		
6.3	86		
5	83		
3.35	77		
2	70		
1.18	65		
0.6	57	Particle density (assumed) 2.67 Mg/m ³	
0.425	51		
0.3	47		
0.212	42		
0.15	35		
0.063	24		

Dry Mass of sample, g. 12839

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	45
Silt	24
Clay	0

Grading Analysis		
D100	mm	
D60	mm	0.806
D30	mm	0.0989
D10	mm	0.0173
Uniformity Coefficient		47
Curvature Coefficient		0.7

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP37**

Site Name **New Deer 2**

Sample No. **9**

Soil Description **Brown clayey gravelly SAND**

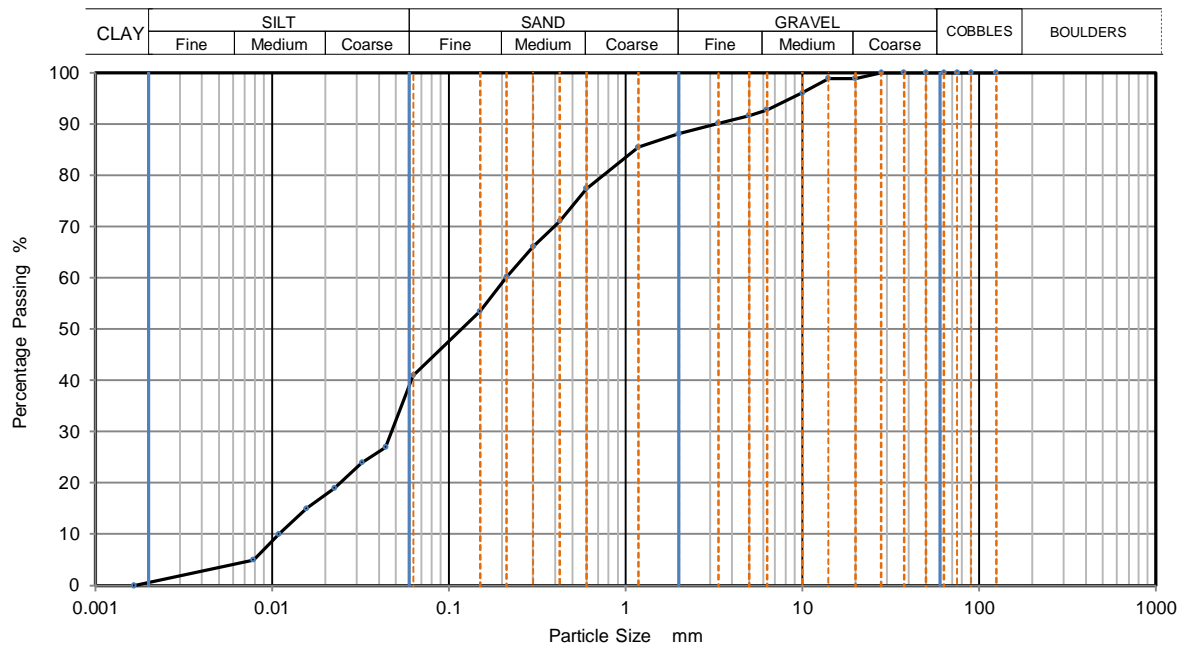
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093466**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	27
90	100	0.0324	24
75	100	0.0225	19
63	100	0.0157	15
50	100	0.0109	10
37.5	100	0.0078	5
28	100	0.0016	0
20	99		
14	99		
10	96		
6.3	93		
5	92		
3.35	90		
2	88		
1.18	86		
0.6	77	Particle density (assumed) 2.67 Mg/m ³	
0.425	71		
0.3	66		
0.212	60		
0.15	54		
0.063	41		

Dry Mass of sample, g. 9412

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	47
Silt	40
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.21
D30	mm	0.0478
D10	mm	0.0108
Uniformity Coefficient		19
Curvature Coefficient		1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP38**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown gravelly sandy CLAY**

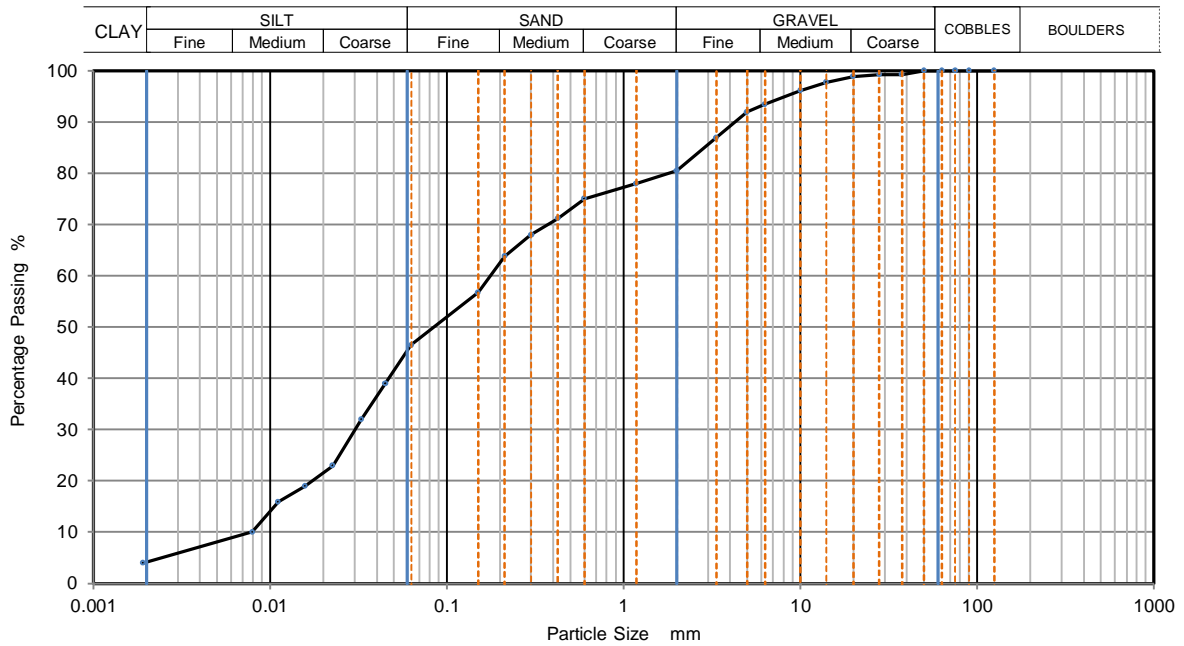
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086079**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	39
90	100	0.0328	32
75	100	0.0226	23
63	100	0.0158	19
50	100	0.0111	16
37.5	99	0.0079	10
28	99	0.0019	4
20	99		
14	98		
10	96		
6.3	93		
5	92		
3.35	87		
2	81		
1.18	78		
0.6	75	Particle density (assumed) 2.67 Mg/m ³	
0.425	71		
0.3	68		
0.212	64		
0.15	57		
0.063	47		

Dry Mass of sample, g. 6395

Sample Proportions	% dry mass
Very coarse	0
Gravel	20
Sand	34
Silt	42
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.176
D30	mm	0.0307
D10	mm	0.00787
Uniformity Coefficient		22
Curvature Coefficient		0.68

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP38**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown gravelly sandy CLAY**

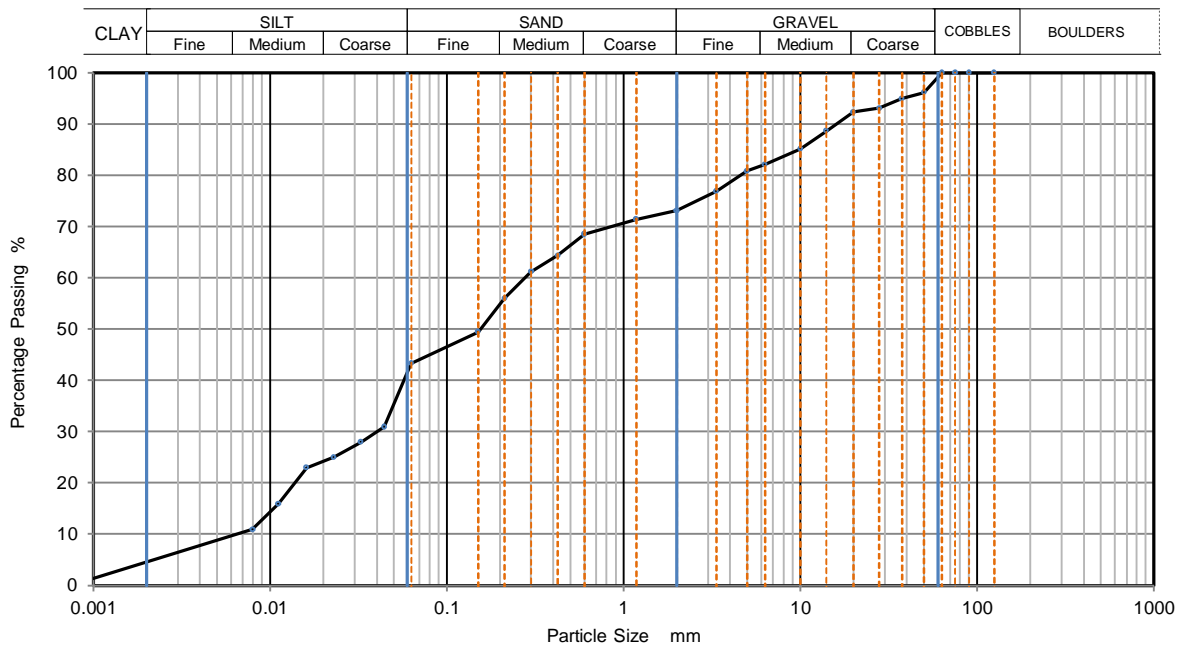
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086081**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	31
90	100	0.0326	28
75	100	0.0229	25
63	100	0.0161	23
50	96	0.0111	16
37.5	95	0.0080	11
28	93	0.0009	1
20	92		
14	89		
10	85		
6.3	82		
5	81		
3.35	77		
2	73		
1.18	71		
0.6	69	Particle density (assumed) 2.67 Mg/m ³	
0.425	64		
0.3	61		
0.212	56		
0.15	50		
0.063	43		

Dry Mass of sample, g. 6432

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	30
Silt	39
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.277
D30	mm	0.0411
D10	mm	0.00684
Uniformity Coefficient		40
Curvature Coefficient		0.89

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP38**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Grey sandy gravelly SILT**

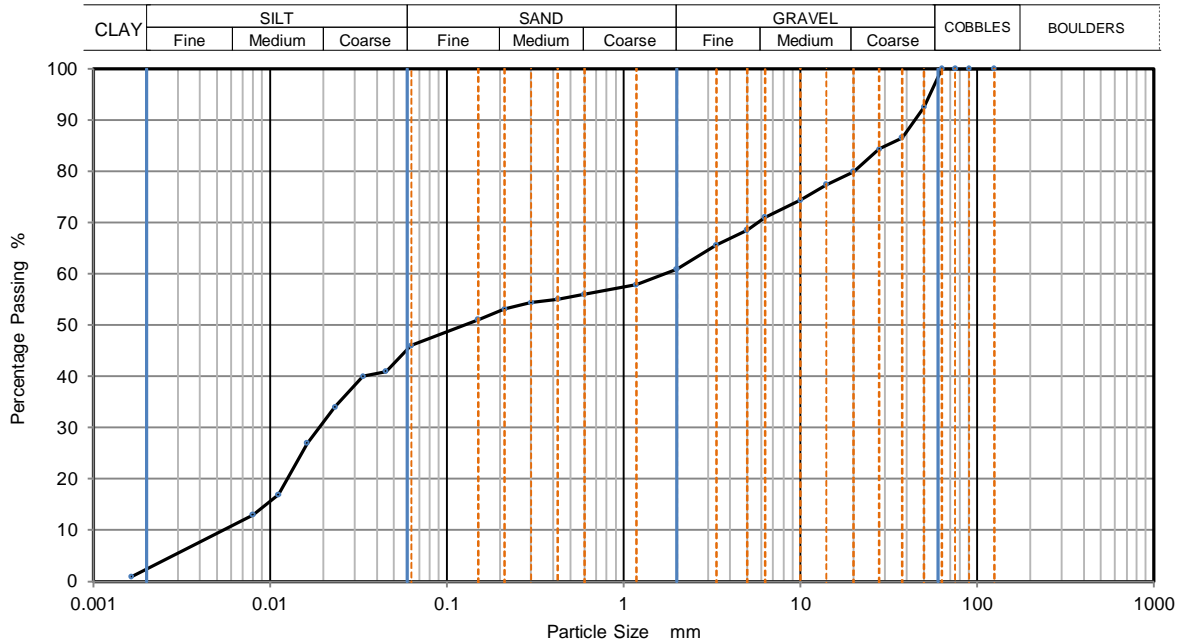
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1086083**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0453	41
90	100	0.0335	40
75	100	0.0234	34
63	100	0.0162	27
50	93	0.0111	17
37.5	87	0.0080	13
28	84	0.0016	1
20	80		
14	77		
10	74		
6.3	71		
5	69		
3.35	66		
2	61		
1.18	58		
0.6	56	Particle density (assumed) 2.67 Mg/m ³	
0.425	55		
0.3	54		
0.212	53		
0.15	51		
0.063	46		

Dry Mass of sample, g. 4328

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	15
Silt	43
Clay	3

Grading Analysis		
D100	mm	
D60	mm	1.71
D30	mm	0.0188
D10	mm	0.00541
Uniformity Coefficient		320
Curvature Coefficient		0.038

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP39**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown gravelly sandy clayey SILT with cobble**

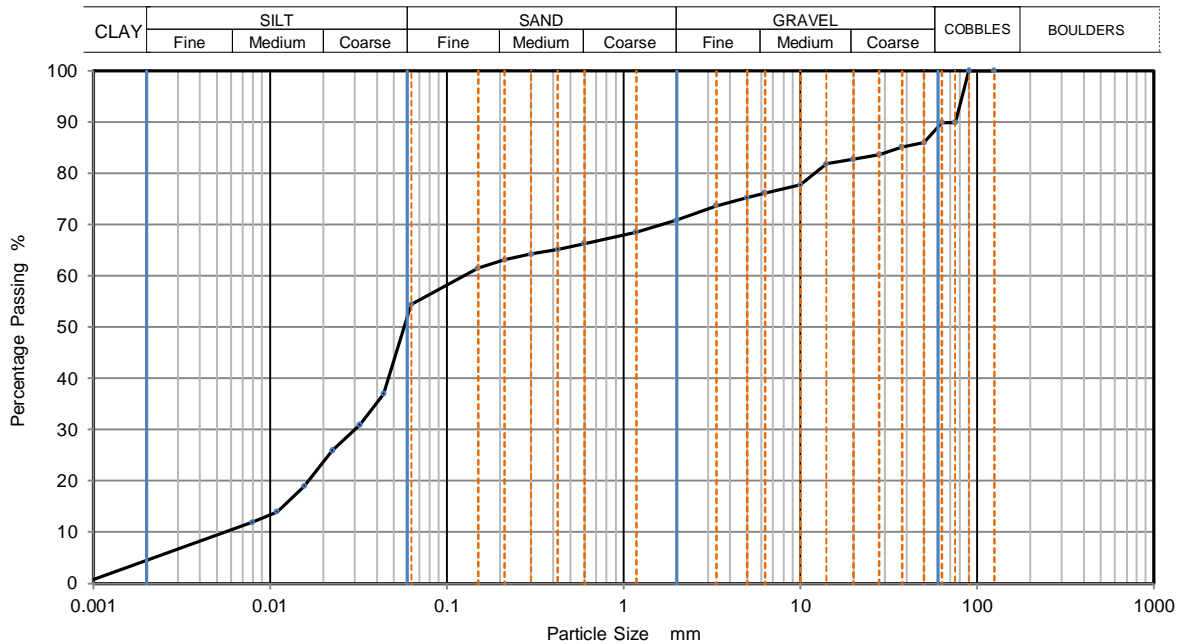
Depth, m **0.50**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093252**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	37
90	100	0.0322	31
75	90	0.0225	26
63	90	0.0156	19
50	86	0.0109	14
37.5	85	0.0079	12
28	84	0.0009	0
20	83		
14	82		
10	78		
6.3	76		
5	75		
3.35	74		
2	71		
1.18	69		
0.6	66	Particle density (assumed) 2.67 Mg/m ³	
0.425	65		
0.3	64		
0.212	63		
0.15	62		
0.063	54		

Dry Mass of sample, g. 10529

Sample Proportions	% dry mass
Very coarse	10
Gravel	19
Sand	16
Silt	50
Clay	5

Grading Analysis	
D100	mm
D60	mm 0.125
D30	mm 0.0295
D10	mm 0.00534
Uniformity Coefficient	23
Curvature Coefficient	1.3

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP39**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty sandy gravelly SILTY with cobble**

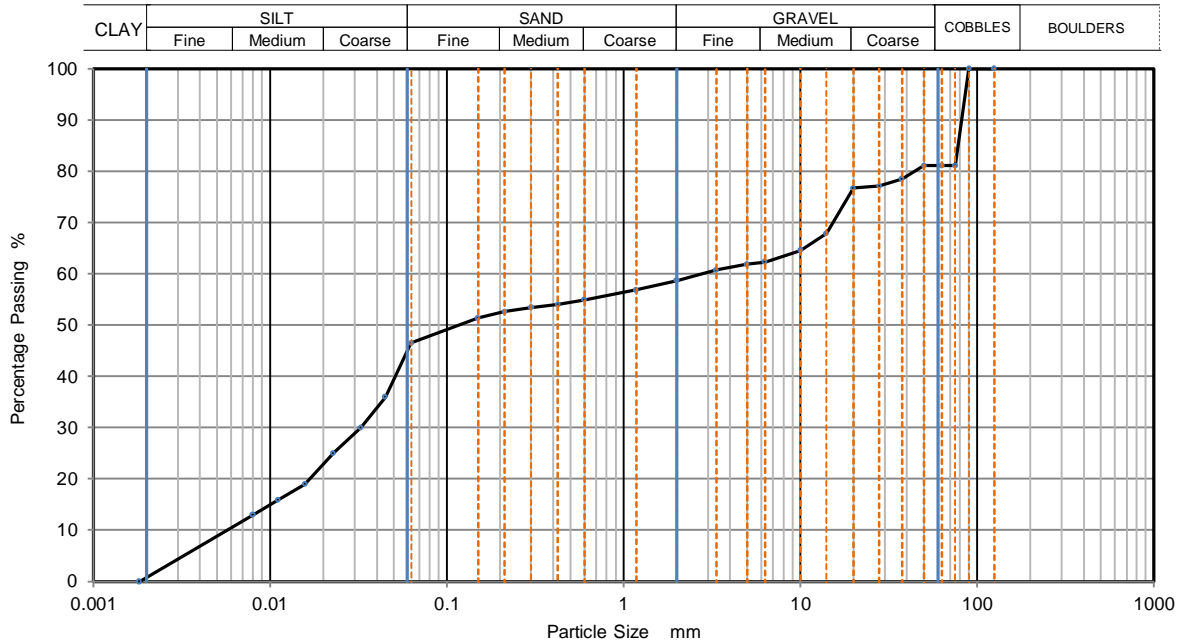
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093256**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	36
90	100	0.0326	30
75	81	0.0227	25
63	81	0.0158	19
50	81	0.0111	16
37.5	79	0.0080	13
28	77	0.0018	0
20	77		
14	68		
10	65		
6.3	62		
5	62		
3.35	61		
2	59		
1.18	57		
0.6	55	Particle density (assumed) 2.67 Mg/m ³	
0.425	54		
0.3	53		
0.212	53		
0.15	51		
0.063	47		

Dry Mass of sample, g. 9680

Sample Proportions	% dry mass
Very coarse	19
Gravel	22
Sand	12
Silt	46
Clay	1

Grading Analysis	
D100	mm
D60	mm 2.81
D30	mm 0.0318
D10	mm 0.00568
Uniformity Coefficient	500
Curvature Coefficient	0.063

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP40**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown gravelly sandy SILT**

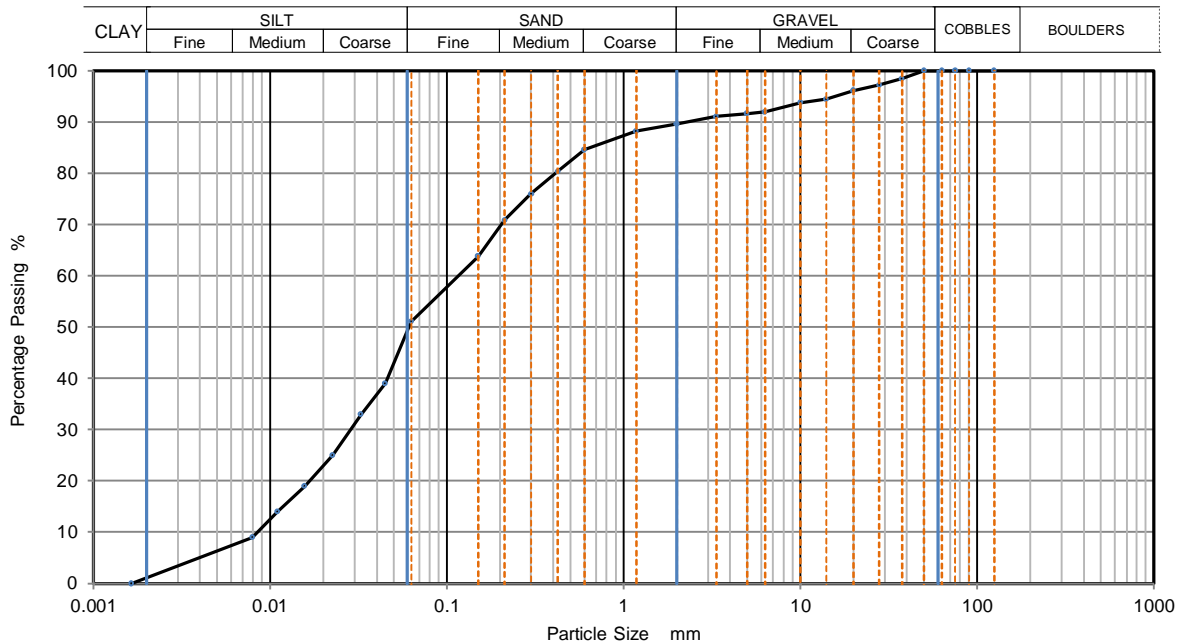
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093260**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	39
90	100	0.0326	33
75	100	0.0226	25
63	100	0.0157	19
50	100	0.0110	14
37.5	98	0.0079	9
28	97	0.0016	0
20	96		
14	94		
10	94		
6.3	92		
5	92		
3.35	91		
2	90		
1.18	88		
0.6	85	Particle density (assumed) 2.67 Mg/m ³	
0.425	80		
0.3	76		
0.212	71		
0.15	64		
0.063	51		

Dry Mass of sample, g. 8431

Sample Proportions	% dry mass
Very coarse	0
Gravel	10
Sand	39
Silt	50
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.116
D30	mm	0.0284
D10	mm	0.00822
Uniformity Coefficient		14
Curvature Coefficient		0.85

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP40**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown sandy silty GRAVEL**

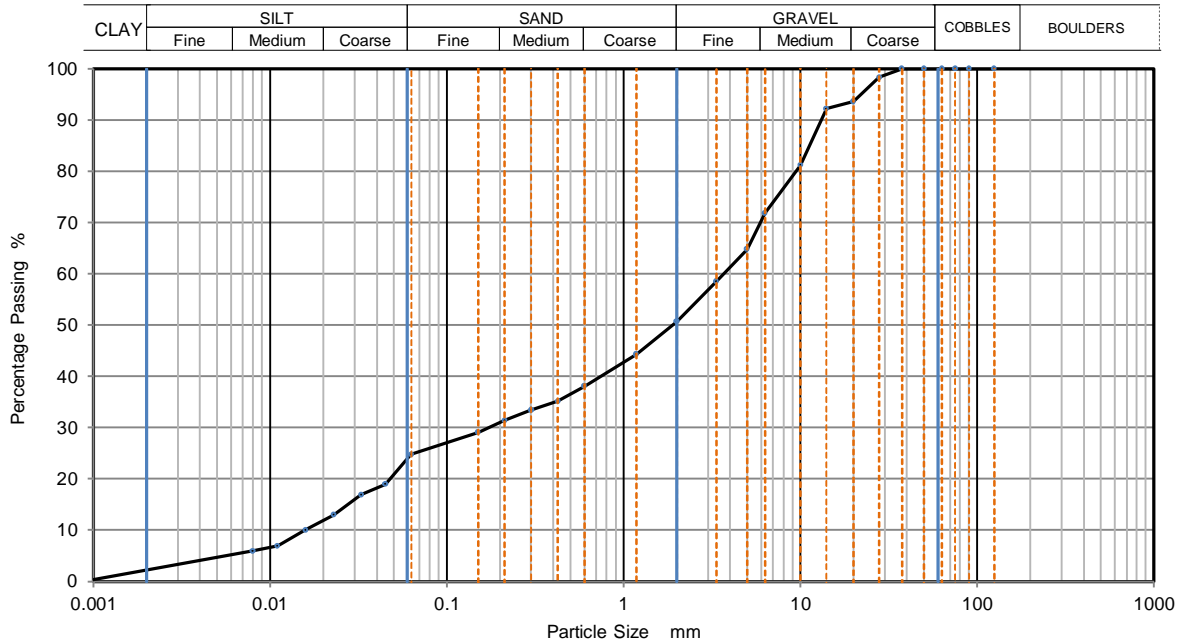
Depth, m **2.00**

Specimen Reference **1** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093264**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0447	19
90	100	0.0329	17
75	100	0.0228	13
63	100	0.0159	10
50	100	0.0110	7
37.5	100	0.0080	6
28	98	0.0009	0
20	94		
14	92		
10	81		
6.3	72		
5	65		
3.35	59		
2	51		
1.18	44		
0.6	38		
0.425	35	Particle density (assumed)	
0.3	33	2.67	Mg/m3
0.212	31		
0.15	29		
0.063	25		

Dry Mass of sample, g. 9798

Sample Proportions	% dry mass
Very coarse	0
Gravel	49
Sand	26
Silt	23
Clay	2

Grading Analysis		
D100	mm	
D60	mm	3.68
D30	mm	0.172
D10	mm	0.0153
Uniformity Coefficient		240
Curvature Coefficient		0.53

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP41**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown silty gravelly SAND**

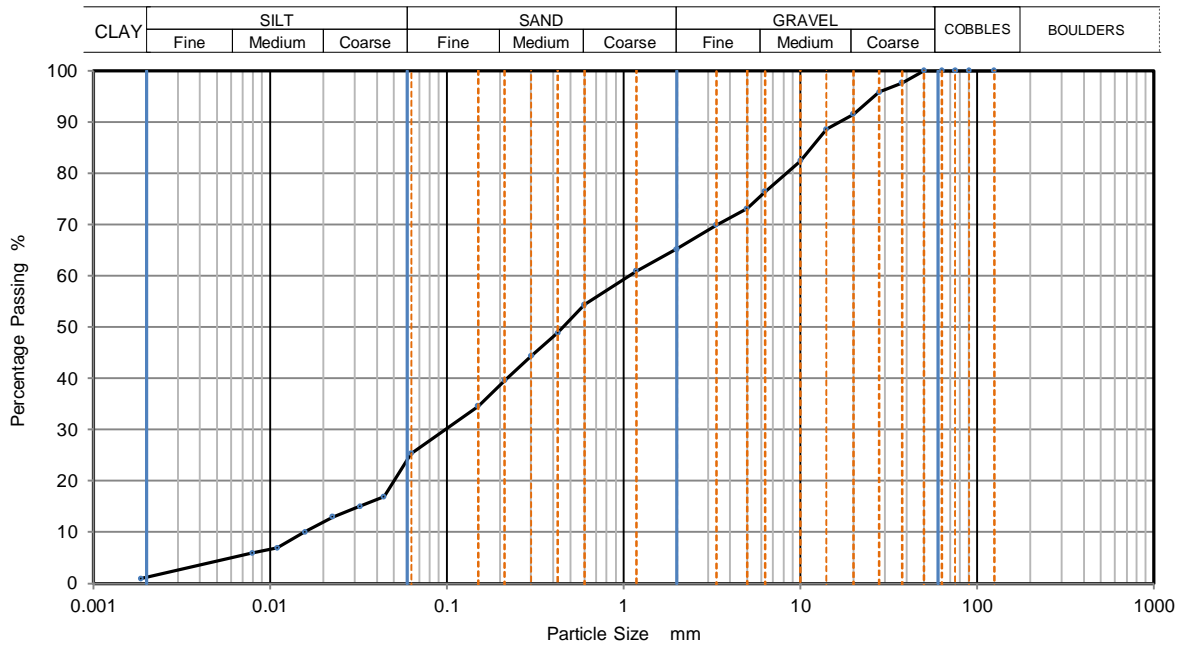
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093270**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	17
90	100	0.0324	15
75	100	0.0226	13
63	100	0.0158	10
50	100	0.0110	7
37.5	98	0.0079	6
28	96	0.0019	1
20	92		
14	89		
10	82		
6.3	76		
5	73		
3.35	70		
2	65		
1.18	61		
0.6	54	Particle density (assumed) 2.67 Mg/m ³	
0.425	49		
0.3	44		
0.212	40		
0.15	35		
0.063	25		

Dry Mass of sample, g. 14797

Sample Proportions	% dry mass
Very coarse	0
Gravel	35
Sand	40
Silt	25
Clay	1

Grading Analysis	
D100	mm
D60	mm 1.07
D30	mm 0.0969
D10	mm 0.0153
Uniformity Coefficient	70
Curvature Coefficient	0.57

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP41**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty sandy GRAVEL**

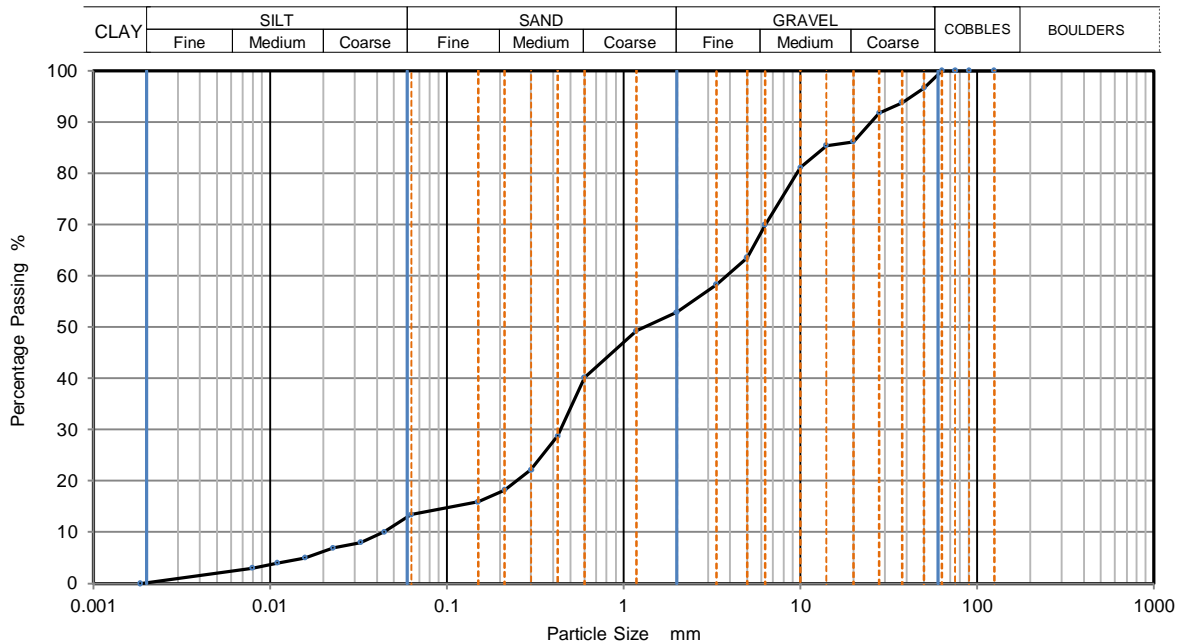
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093272**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	10
90	100	0.0325	8
75	100	0.0227	7
63	100	0.0158	5
50	97	0.0110	4
37.5	94	0.0079	3
28	92	0.0018	0
20	86		
14	85		
10	81		
6.3	70		
5	64		
3.35	58		
2	53		
1.18	49		
0.6	40	Particle density (assumed) 2.67 Mg/m ³	
0.425	29		
0.3	22		
0.212	18		
0.15	16		
0.063	14		

Dry Mass of sample, g. 18034

Sample Proportions	% dry mass
Very coarse	0
Gravel	47
Sand	39
Silt	13
Clay	1

Grading Analysis	
D100	mm
D60	mm 3.82
D30	mm 0.44
D10	mm 0.046
Uniformity Coefficient	83
Curvature Coefficient	1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP42**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown sandy clayey GRAVEL with cobble**

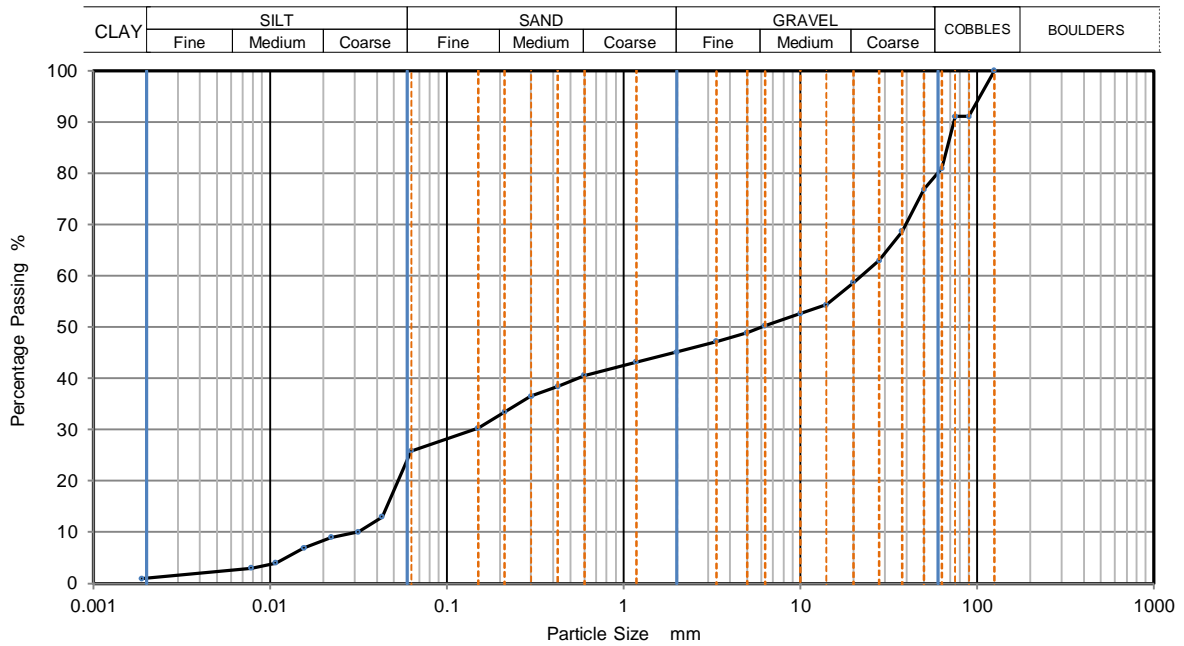
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093478**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0430	13
90	91	0.0316	10
75	91	0.0221	9
63	81	0.0155	7
50	77	0.0108	4
37.5	69	0.0078	3
28	63	0.0019	1
20	59		
14	54		
10	53		
6.3	50		
5	49		
3.35	47		
2	45		
1.18	43		
0.6	41	Particle density (assumed) 2.67 Mg/m ³	
0.425	38		
0.3	37		
0.212	34		
0.15	30		
0.063	26		

Dry Mass of sample, g. 14363

Sample Proportions	% dry mass
Very coarse	19
Gravel	36
Sand	19
Silt	25
Clay	1

Grading Analysis		
D100	mm	125
D60	mm	22.2
D30	mm	0.143
D10	mm	0.0293
Uniformity Coefficient		760
Curvature Coefficient		0.031

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP42**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown clayey sandy GRAVEL with cobble**

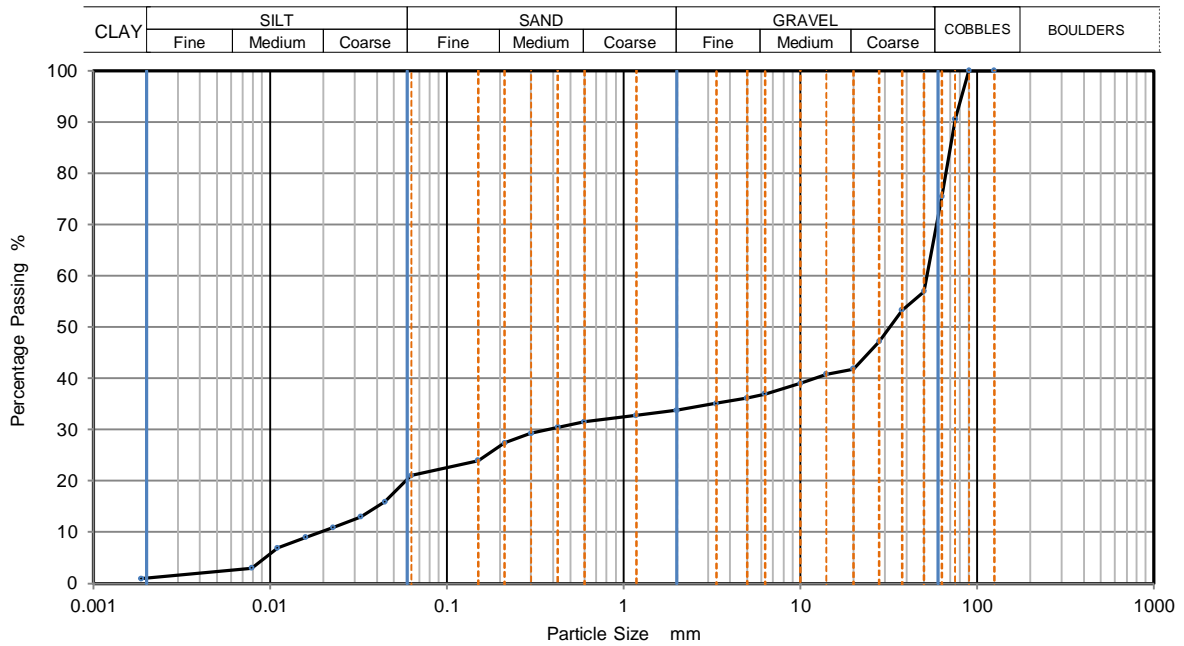
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093480**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	16
90	100	0.0325	13
75	91	0.0227	11
63	76	0.0159	9
50	57	0.0110	7
37.5	53	0.0079	3
28	47	0.0019	1
20	42		
14	41		
10	39		
6.3	37		
5	36		
3.35	35		
2	34		
1.18	33		
0.6	32	Particle density (assumed) 2.67 Mg/m ³	
0.425	31		
0.3	29		
0.212	27		
0.15	24		
0.063	21		

Dry Mass of sample, g. 15579

Sample Proportions	% dry mass
Very coarse	25
Gravel	42
Sand	13
Silt	20
Clay	1

Grading Analysis	
D100	mm
D60	mm 51.9
D30	mm 0.37
D10	mm 0.0176
Uniformity Coefficient	3000
Curvature Coefficient	0.15

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP43**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey sandy GRAVEL**

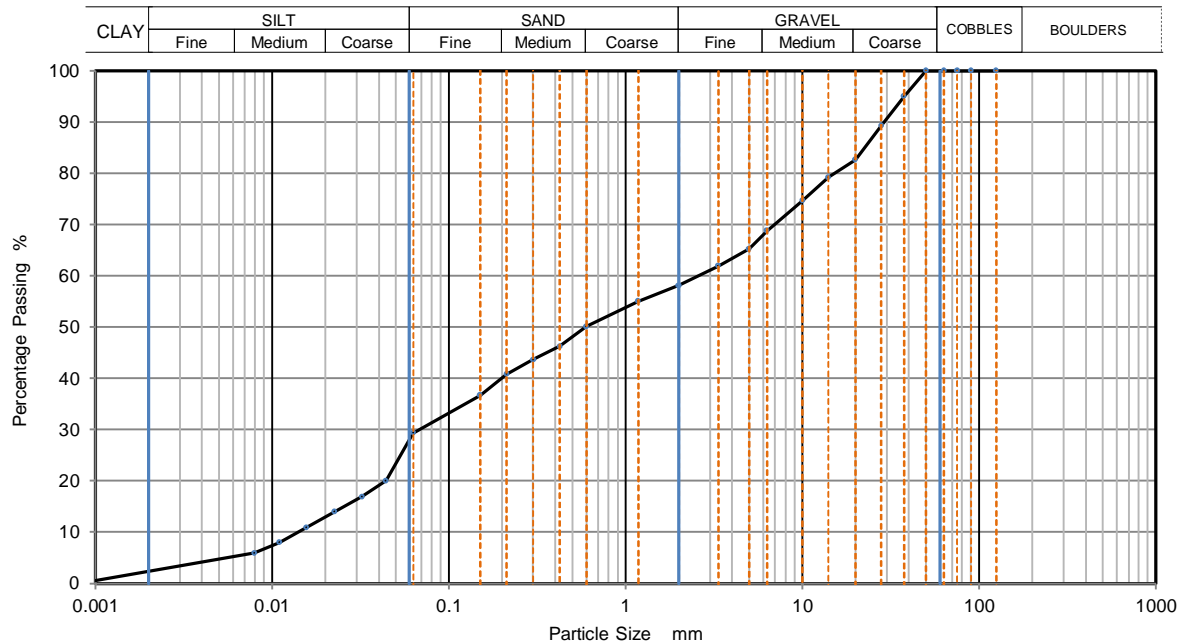
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093286**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	20
90	100	0.0324	17
75	100	0.0225	14
63	100	0.0157	11
50	100	0.0110	8
37.5	95	0.0079	6
28	89	0.0008	0
20	83		
14	79		
10	75		
6.3	69		
5	65		
3.35	62		
2	58		
1.18	55		
0.6	50	Particle density (assumed) 2.67 Mg/m ³	
0.425	46		
0.3	44		
0.212	41		
0.15	37		
0.063	29		

Dry Mass of sample, g. 7752

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	29
Silt	27
Clay	3

Grading Analysis	
D100	mm
D60	mm 2.56
D30	mm 0.0678
D10	mm 0.0138
Uniformity Coefficient	190
Curvature Coefficient	0.13

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP43**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Grey sandy silty GRAVEL**

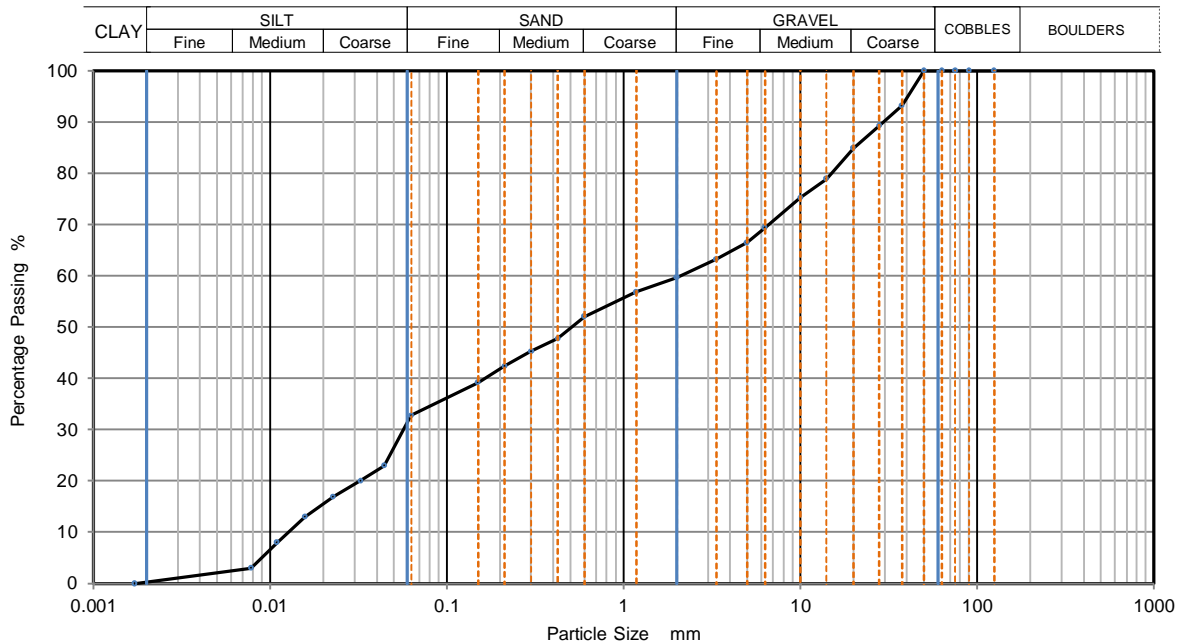
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093288**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	23
90	100	0.0325	20
75	100	0.0227	17
63	100	0.0158	13
50	100	0.0109	8
37.5	93	0.0078	3
28	89	0.0017	0
20	85		
14	79		
10	75		
6.3	69		
5	67		
3.35	63		
2	60		
1.18	57		
0.6	52	Particle density (assumed) 2.67 Mg/m ³	
0.425	48		
0.3	45		
0.212	42		
0.15	39		
0.063	33		

Dry Mass of sample, g. 13312

Sample Proportions	% dry mass
Very coarse	0
Gravel	40
Sand	27
Silt	33
Clay	0

Grading Analysis		
D100	mm	
D60	mm	2.08
D30	mm	0.0569
D10	mm	0.0126
Uniformity Coefficient		170
Curvature Coefficient		0.12

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP43**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown silty sandy GRAVEL with cobble**

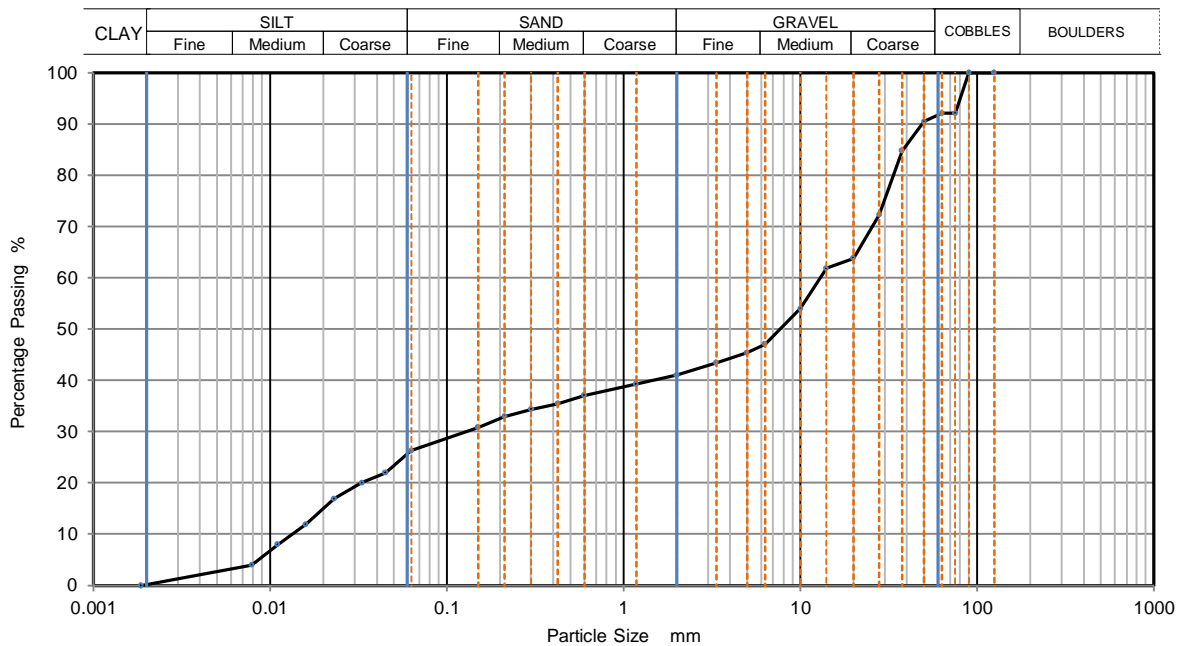
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093292**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	22
90	100	0.0330	20
75	92	0.0231	17
63	92	0.0159	12
50	91	0.0110	8
37.5	85	0.0079	4
28	72	0.0019	0
20	64		
14	62		
10	54		
6.3	47		
5	45		
3.35	43		
2	41		
1.18	39		
0.6	37		
0.425	36	Particle density (assumed) 2.67 Mg/m ³	
0.3	34		
0.212	33		
0.15	31		
0.063	26		

Dry Mass of sample, g. 17575

Sample Proportions	% dry mass
Very coarse	8
Gravel	51
Sand	15
Silt	26
Clay	0

Grading Analysis		
D100	mm	
D60	mm	13
D30	mm	0.127
D10	mm	0.0129
Uniformity Coefficient		1000
Curvature Coefficient		0.097

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP44A**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown gravelly sandy clayey SILT**

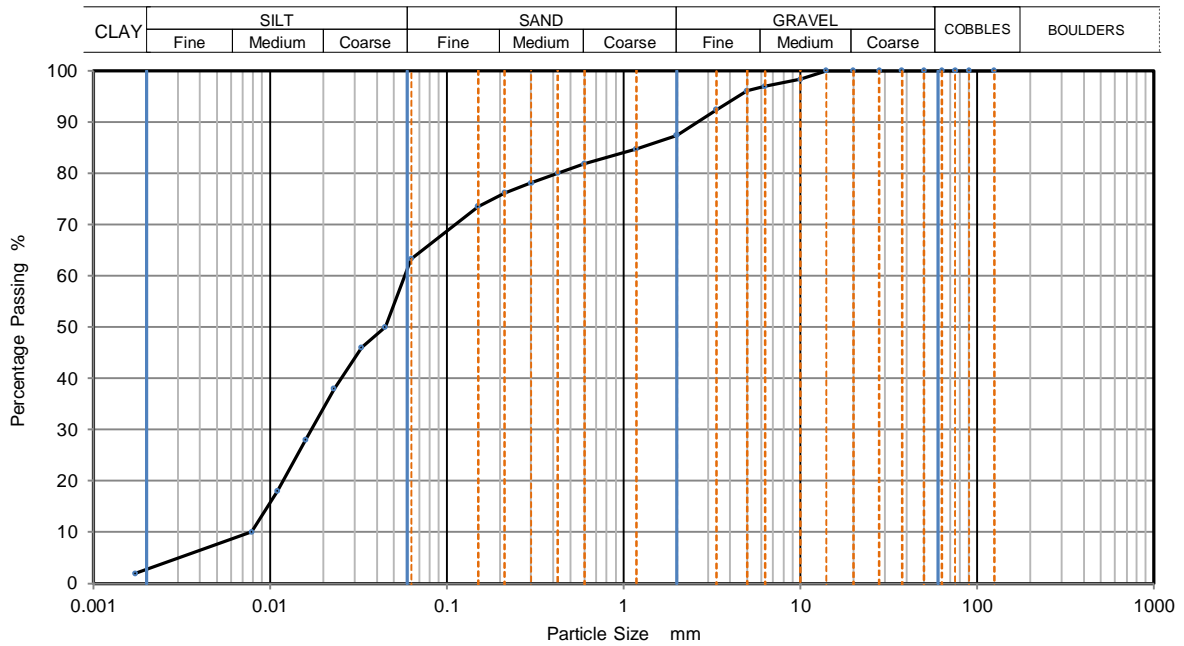
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103002**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	50
90	100	0.0329	46
75	100	0.0229	38
63	100	0.0159	28
50	100	0.0110	18
37.5	100	0.0079	10
28	100	0.0017	2
20	100		
14	100		
10	98		
6.3	97		
5	96		
3.35	92		
2	87		
1.18	85		
0.6	82	Particle density (assumed) 2.67 Mg/m ³	
0.425	80		
0.3	78		
0.212	76		
0.15	74		
0.063	63		

Dry Mass of sample, g. 2528

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	24
Silt	61
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.0579
D30	mm	0.0171
D10	mm	0.00787
Uniformity Coefficient		7.4
Curvature Coefficient		0.64

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP44A**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown gravelly sandy SILT**

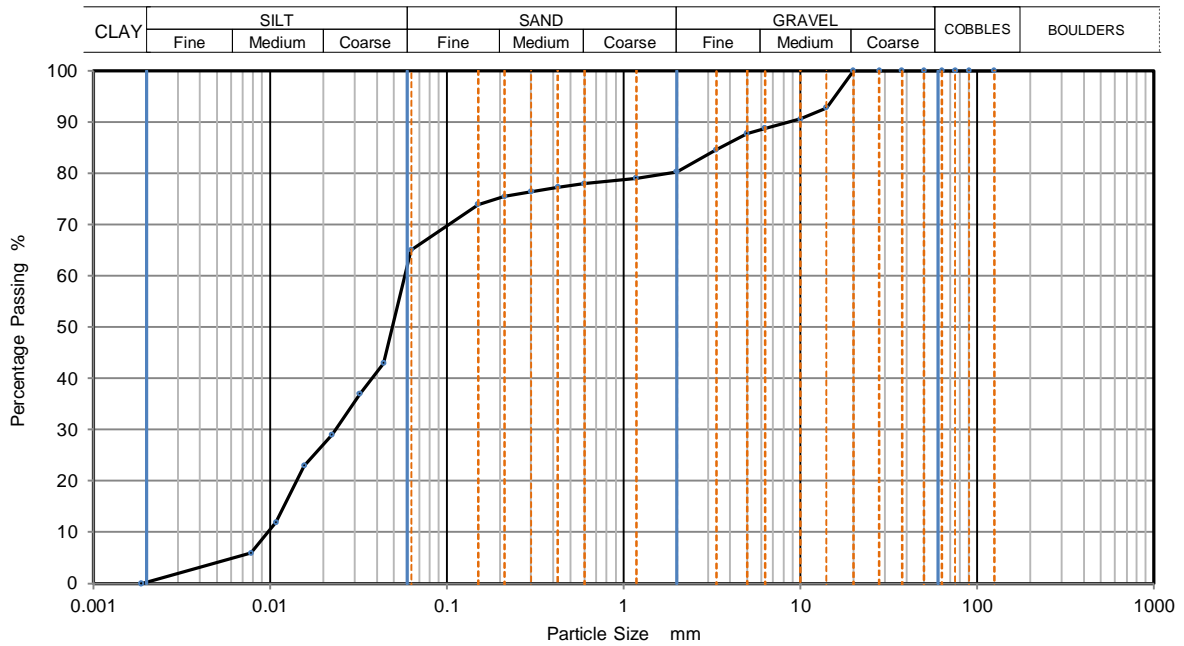
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1103006**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	43
90	100	0.0322	37
75	100	0.0224	29
63	100	0.0156	23
50	100	0.0108	12
37.5	100	0.0078	6
28	100	0.0019	0
20	100		
14	93		
10	91		
6.3	89		
5	88		
3.35	85		
2	80		
1.18	79		
0.6	78		
0.425	77	Particle density (assumed)	
0.3	76	2.67	Mg/m3
0.212	76		
0.15	74		
0.063	65		

Dry Mass of sample, g. 2070

Sample Proportions	% dry mass
Very coarse	0
Gravel	20
Sand	15
Silt	65
Clay	0

Grading Analysis	
D100	mm
D60	mm 0.058
D30	mm 0.0236
D10	mm 0.00955
Uniformity Coefficient	6.1
Curvature Coefficient	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP45**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey SAND & GRAVEL with cobble**

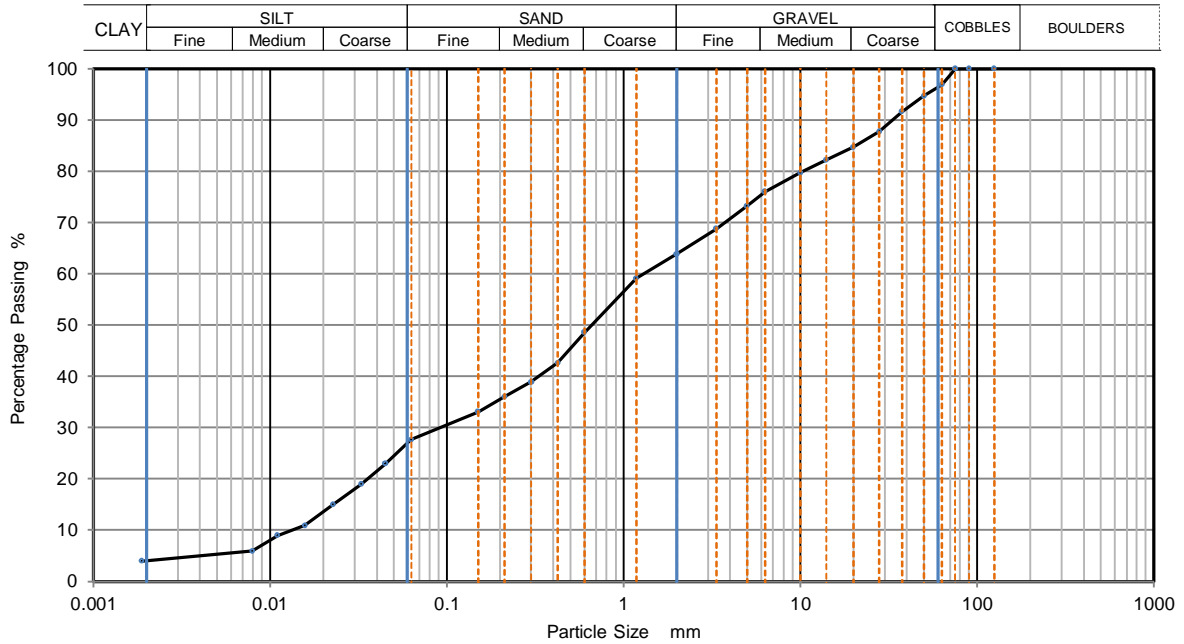
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102338**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0448	23
90	100	0.0328	19
75	100	0.0227	15
63	97	0.0158	11
50	95	0.0110	9
37.5	92	0.0079	6
28	88	0.0019	4
20	85		
14	82		
10	80		
6.3	76		
5	73		
3.35	69		
2	64		
1.18	59		
0.6	49	Particle density (assumed) 2.67 Mg/m ³	
0.425	43		
0.3	39		
0.212	36		
0.15	33		
0.063	28		

Dry Mass of sample, g. 16877

Sample Proportions	% dry mass
Very coarse	3
Gravel	33
Sand	36
Silt	24
Clay	4

Grading Analysis		
D100	mm	
D60	mm	1.31
D30	mm	0.0909
D10	mm	0.013
Uniformity Coefficient		100
Curvature Coefficient		0.49

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP45**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown sandy clayey GRAVEL with cobble**

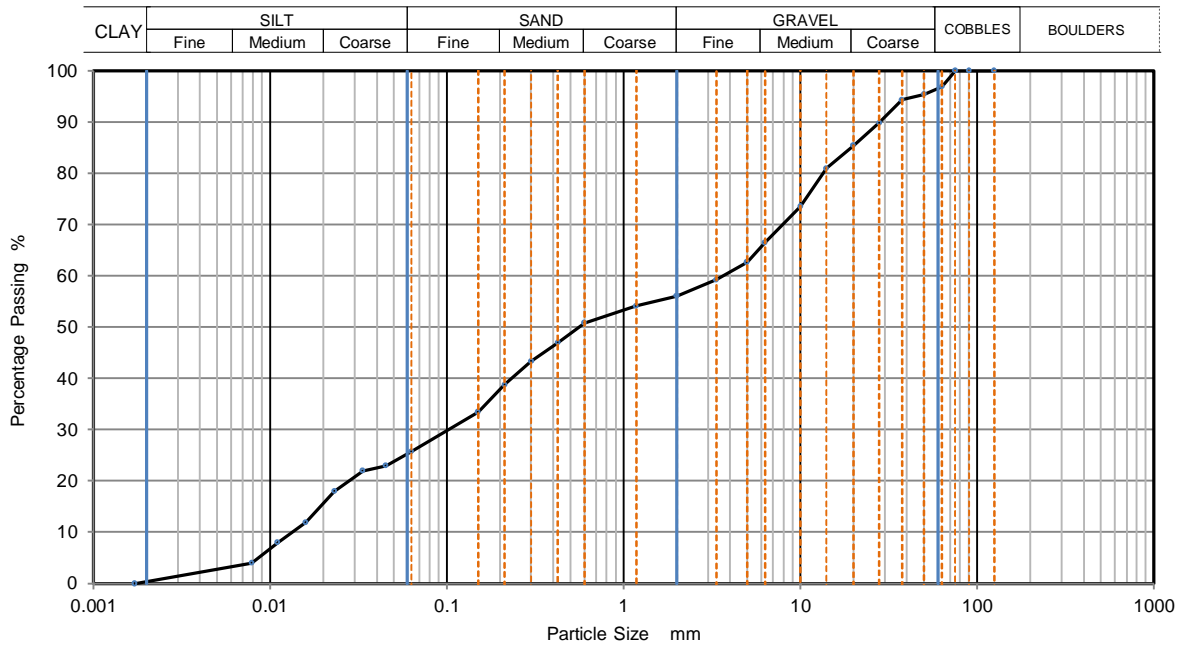
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102342**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0453	23
90	100	0.0334	22
75	100	0.0232	18
63	97	0.0159	12
50	95	0.0110	8
37.5	94	0.0079	4
28	90	0.0017	0
20	85		
14	81		
10	74		
6.3	67		
5	63		
3.35	59		
2	56		
1.18	54		
0.6	51	Particle density (assumed) 2.67 Mg/m ³	
0.425	47		
0.3	43		
0.212	39		
0.15	33		
0.063	26		

Dry Mass of sample, g. 14387

Sample Proportions	% dry mass
Very coarse	3
Gravel	41
Sand	30
Silt	25
Clay	0

Grading Analysis	
D100	mm
D60	mm 3.68
D30	mm 0.102
D10	mm 0.0133
Uniformity Coefficient	280
Curvature Coefficient	0.21

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP45**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown silty sandy GRAVEL with cobble**

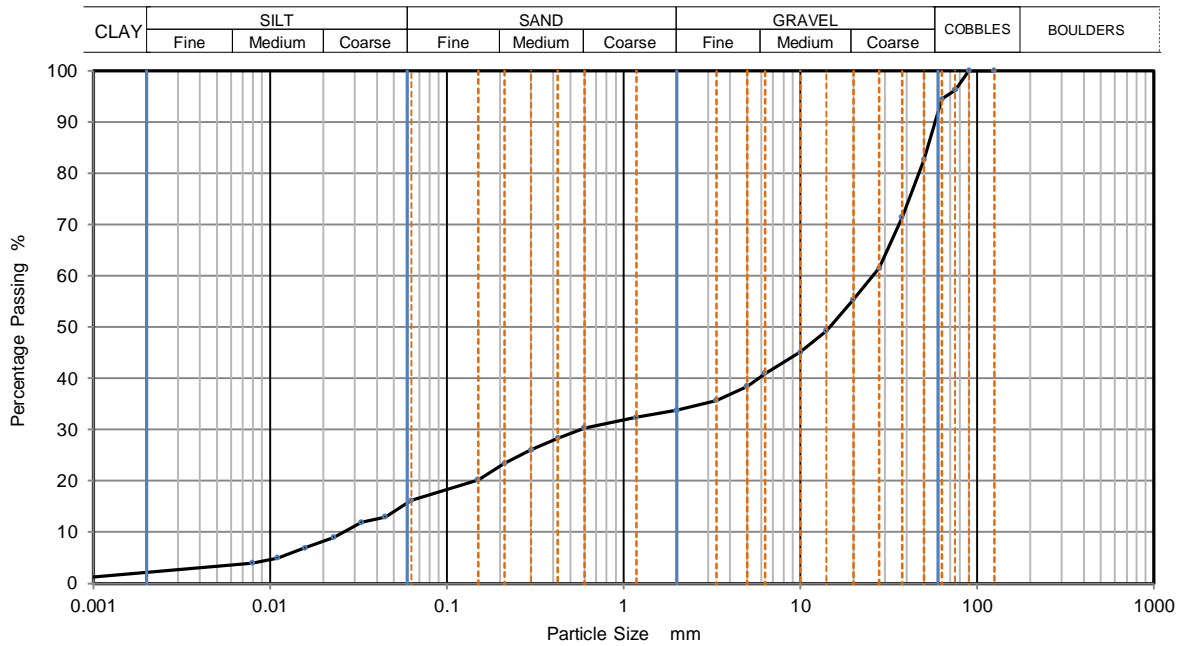
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102344**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	13
90	100	0.0329	12
75	96	0.0228	9
63	94	0.0158	7
50	83	0.0110	5
37.5	71	0.0079	4
28	62	0.0008	1
20	55		
14	49		
10	45		
6.3	41		
5	38		
3.35	36		
2	34		
1.18	32		
0.6	30	Particle density (assumed) 2.67 Mg/m ³	
0.425	28		
0.3	26		
0.212	24		
0.15	20		
0.063	16		

Dry Mass of sample, g. 13907

Sample Proportions	% dry mass
Very coarse	6
Gravel	61
Sand	18
Silt	14
Clay	2

Grading Analysis	
D100	mm
D60	mm 25.8
D30	mm 0.563
D10	mm 0.0253
Uniformity Coefficient	1000
Curvature Coefficient	0.49

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP46**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey SAND & GRAVEL**

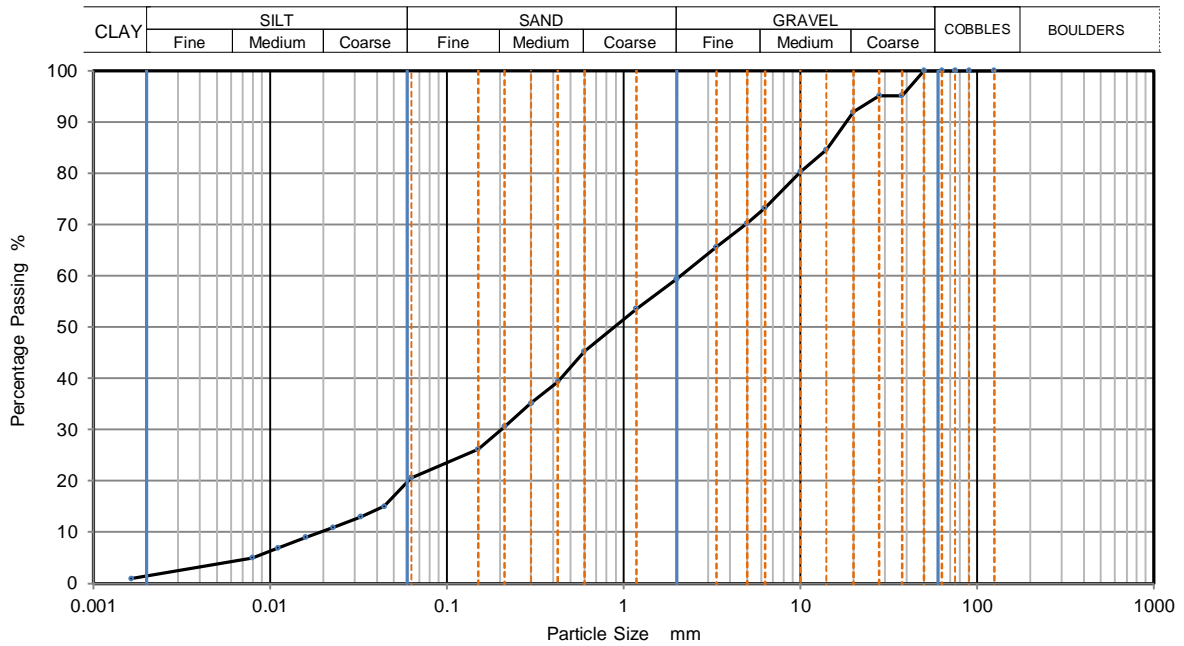
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102346**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0442	15
90	100	0.0325	13
75	100	0.0227	11
63	100	0.0159	9
50	100	0.0111	7
37.5	95	0.0079	5
28	95	0.0016	1
20	92		
14	85		
10	80		
6.3	73		
5	70		
3.35	66		
2	59		
1.18	54		
0.6	45	Particle density (assumed) 2.67 Mg/m ³	
0.425	39		
0.3	35		
0.212	31		
0.15	26		
0.063	21		

Dry Mass of sample, g. 7119

Sample Proportions	% dry mass
Very coarse	0
Gravel	41
Sand	39
Silt	20
Clay	1

Grading Analysis		
D100	mm	
D60	mm	2.11
D30	mm	0.202
D10	mm	0.0186
Uniformity Coefficient		110
Curvature Coefficient		1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP46**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown sandy clayey GRAVEL with cobble**

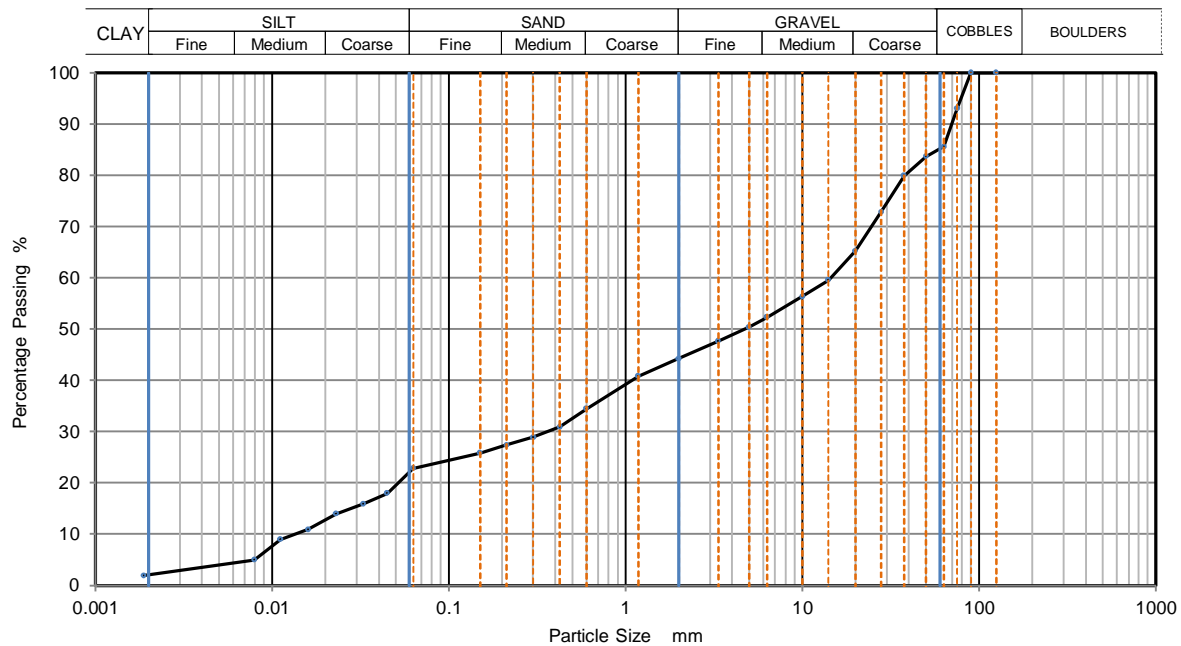
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102350**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	18
90	100	0.0329	16
75	93	0.0230	14
63	86	0.0160	11
50	84	0.0111	9
37.5	80	0.0079	5
28	73	0.0019	2
20	65		
14	60		
10	56		
6.3	52		
5	50		
3.35	48		
2	44		
1.18	41		
0.6	35	Particle density (assumed) 2.67 Mg/m ³	
0.425	31		
0.3	29		
0.212	27		
0.15	26		
0.063	23		

Dry Mass of sample, g. 15950

Sample Proportions	% dry mass
Very coarse	14
Gravel	41
Sand	21
Silt	21
Clay	2

Grading Analysis	
D100	mm
D60	mm 14.4
D30	mm 0.363
D10	mm 0.0134
Uniformity Coefficient	1100
Curvature Coefficient	0.68

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP47**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey sandy GRAVEL with cobble**

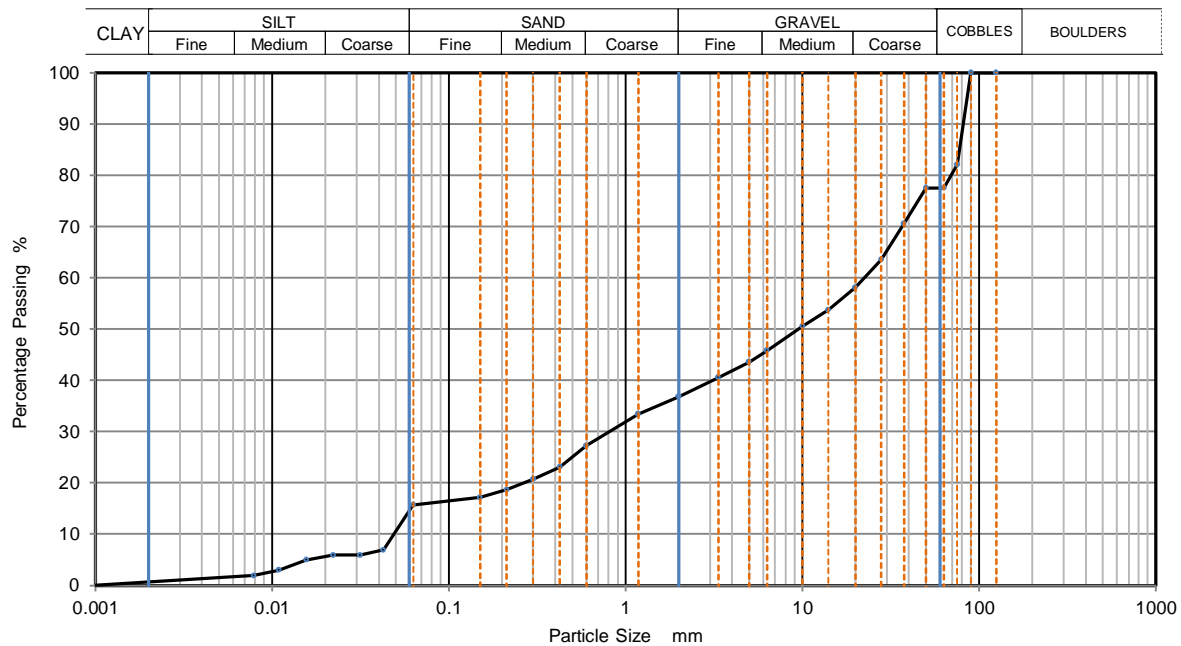
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102354**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0428	7
90	100	0.0316	6
75	82	0.0222	6
63	78	0.0156	5
50	78	0.0109	3
37.5	71	0.0079	2
28	64	0.0009	0
20	58		
14	54		
10	51		
6.3	46		
5	44		
3.35	41		
2	37		
1.18	33		
0.6	27	Particle density (assumed) 2.67 Mg/m ³	
0.425	23		
0.3	21		
0.212	19		
0.15	17		
0.063	16		

Dry Mass of sample, g. 15905

Sample Proportions	% dry mass
Very coarse	23
Gravel	41
Sand	21
Silt	15
Clay	1

Grading Analysis	
D100	mm
D60	mm 22.4
D30	mm 0.809
D10	mm 0.0485
Uniformity Coefficient	460
Curvature Coefficient	0.6

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP47**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty SAND + GRAVEL**

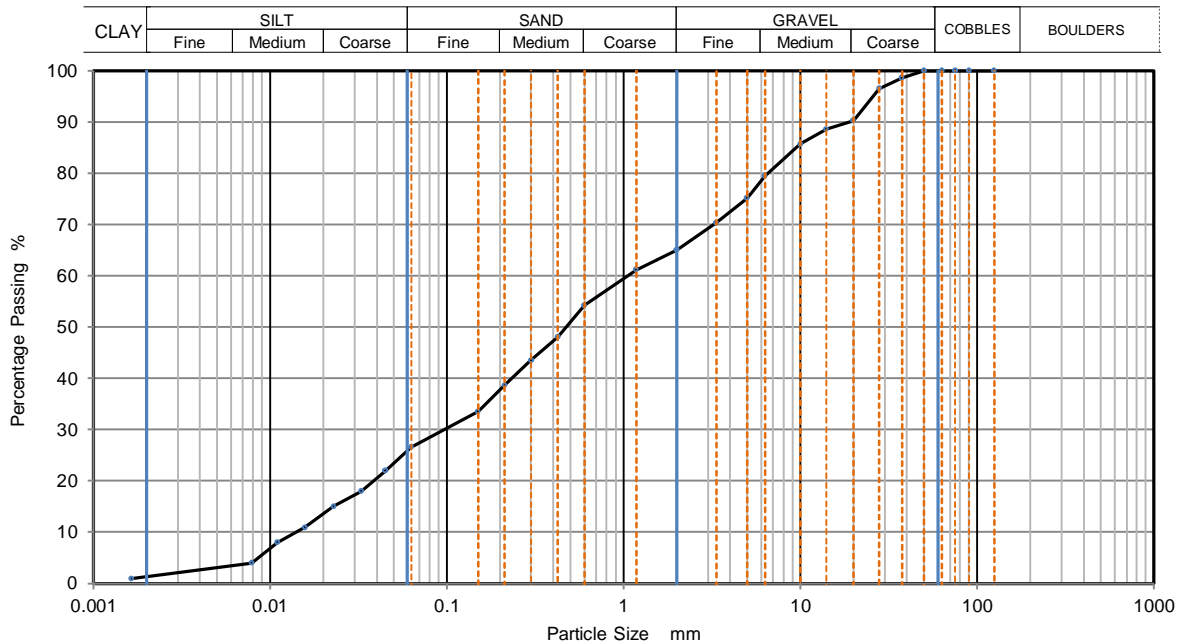
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102358**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0448	22
90	100	0.0328	18
75	100	0.0228	15
63	100	0.0158	11
50	100	0.0110	8
37.5	99	0.0079	4
28	97	0.0016	1
20	90		
14	89		
10	86		
6.3	80		
5	75		
3.35	70		
2	65		
1.18	61		
0.6	54	Particle density (assumed) 2.67 Mg/m ³	
0.425	48		
0.3	44		
0.212	39		
0.15	34		
0.063	27		

Dry Mass of sample, g. 6182

Sample Proportions	% dry mass
Very coarse	0
Gravel	35
Sand	38
Silt	25
Clay	1

Grading Analysis		
D100	mm	
D60	mm	1.05
D30	mm	0.0956
D10	mm	0.0143
Uniformity Coefficient		74
Curvature Coefficient		0.61

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP48**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey sandy GRAVEL with cobble**

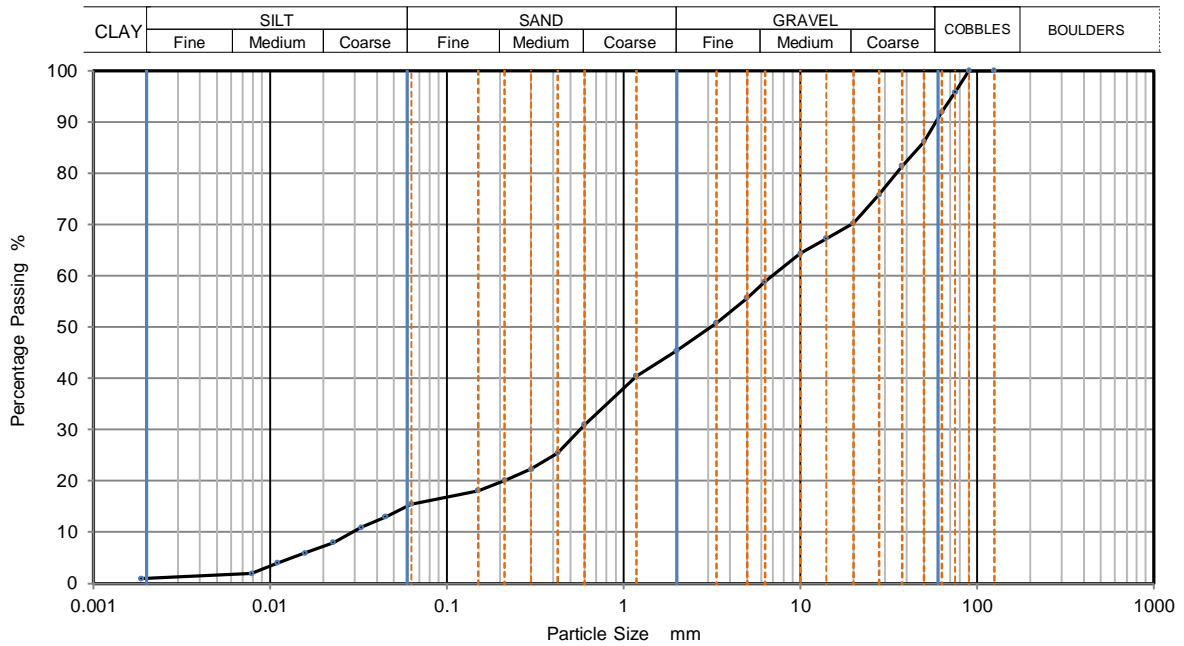
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093486**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	13
90	100	0.0328	11
75	96	0.0227	8
63	92	0.0158	6
50	86	0.0110	4
37.5	81	0.0079	2
28	76	0.0019	1
20	70		
14	67		
10	64		
6.3	59		
5	56		
3.35	51		
2	45		
1.18	41		
0.6	31	Particle density (assumed) 2.67 Mg/m ³	
0.425	26		
0.3	22		
0.212	20		
0.15	18		
0.063	16		

Dry Mass of sample, g. 14620

Sample Proportions	% dry mass
Very coarse	8
Gravel	47
Sand	30
Silt	15
Clay	1

Grading Analysis	
D100	mm
D60	mm 6.92
D30	mm 0.566
D10	mm 0.0296
Uniformity Coefficient	230
Curvature Coefficient	1.6

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP48**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty SAND + GRAVEL**

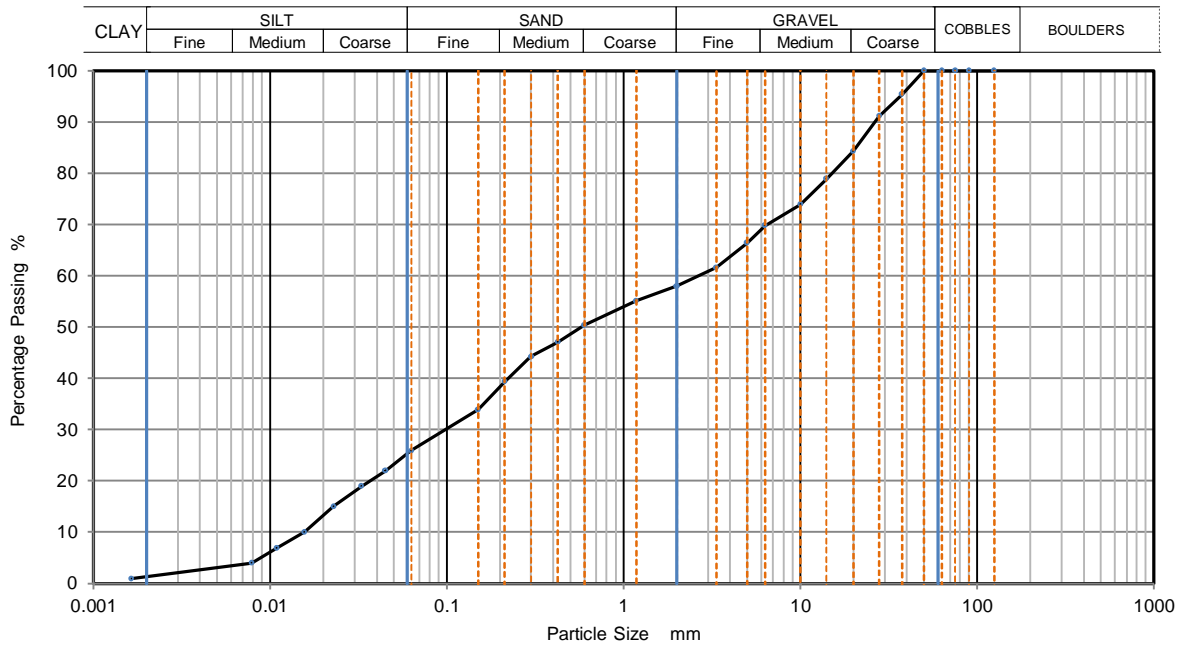
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093490**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	22
90	100	0.0329	19
75	100	0.0228	15
63	100	0.0157	10
50	100	0.0109	7
37.5	95	0.0079	4
28	91	0.0016	1
20	84		
14	79		
10	74		
6.3	70		
5	66		
3.35	62		
2	58		
1.18	55		
0.6	50	Particle density (assumed) 2.67 Mg/m ³	
0.425	47		
0.3	44		
0.212	39		
0.15	34		
0.063	26		

Dry Mass of sample, g. 6452

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	32
Silt	25
Clay	1

Grading Analysis		
D100	mm	
D60	mm	2.66
D30	mm	0.098
D10	mm	0.016
Uniformity Coefficient		170
Curvature Coefficient		0.23

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP48**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown clayey sandy GRAVEL**

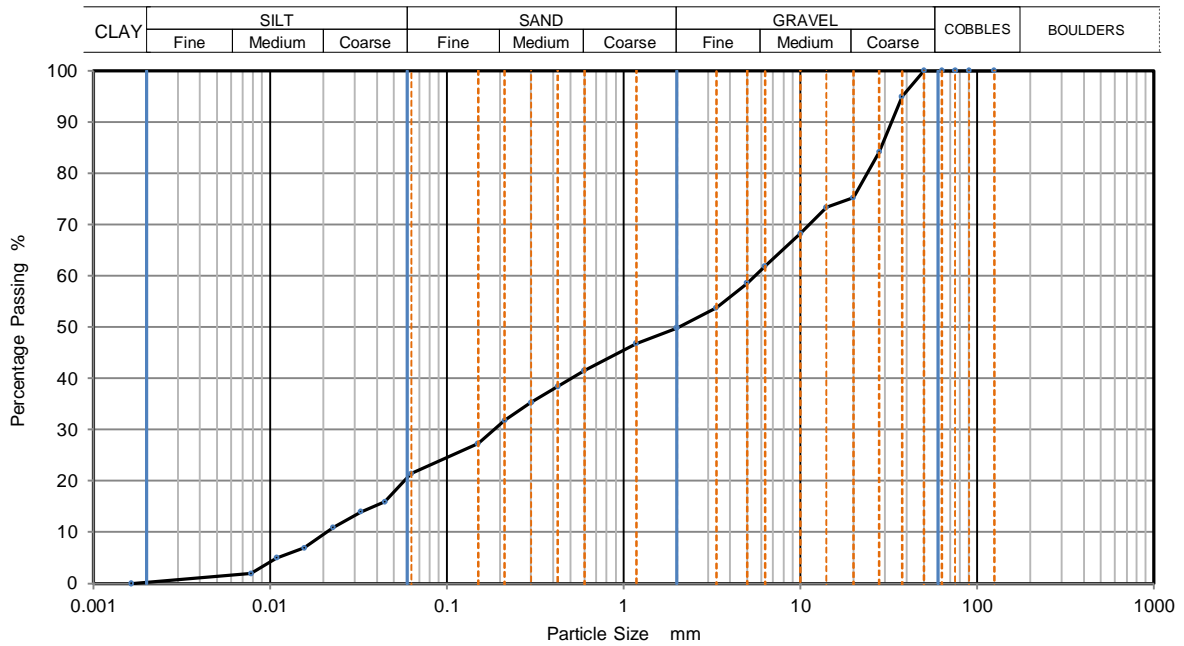
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093492**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0444	16
90	100	0.0326	14
75	100	0.0227	11
63	100	0.0156	7
50	100	0.0109	5
37.5	95	0.0078	2
28	84	0.0016	0
20	75		
14	73		
10	68		
6.3	62		
5	59		
3.35	54		
2	50		
1.18	47		
0.6	42		
0.425	38	Particle density (assumed) 2.67 Mg/m ³	
0.3	35		
0.212	32		
0.15	27		
0.063	21		

Dry Mass of sample, g. 6922

Sample Proportions	% dry mass
Very coarse	0
Gravel	50
Sand	28
Silt	21
Clay	0

Grading Analysis	
D100	mm
D60	mm 5.52
D30	mm 0.185
D10	mm 0.0199
Uniformity Coefficient	280
Curvature Coefficient	0.31

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP50**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown clayey sandy GRAVEL with cobble**

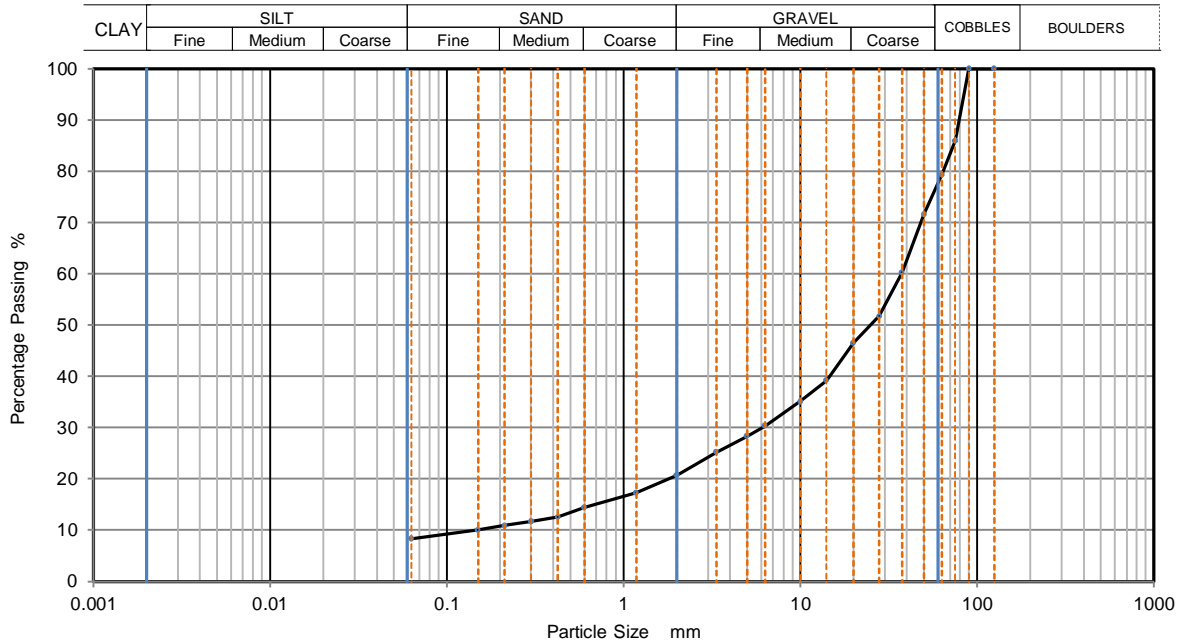
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **K1093439**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	86		
63	79		
50	72		
37.5	60		
28	52		
20	47		
14	39		
10	35		
6.3	30		
5	28		
3.35	25		
2	21		
1.18	17		
0.6	15		
0.425	13		
0.3	12		
0.212	11		
0.15	10		
0.063	8		
		Particle density (assumed) 2.67 Mg/m ³	

Dry Mass of sample, g. 12941

Sample Proportions	% dry mass
Very coarse	21
Gravel	59
Sand	12
Fines <0.063mm	8

Grading Analysis	
D100	mm
D60	mm 37.1
D30	mm 6.05
D10	mm 0.149
Uniformity Coefficient	250
Curvature Coefficient	6.6

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP52**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown clayey sandy GRAVEL with cobble**

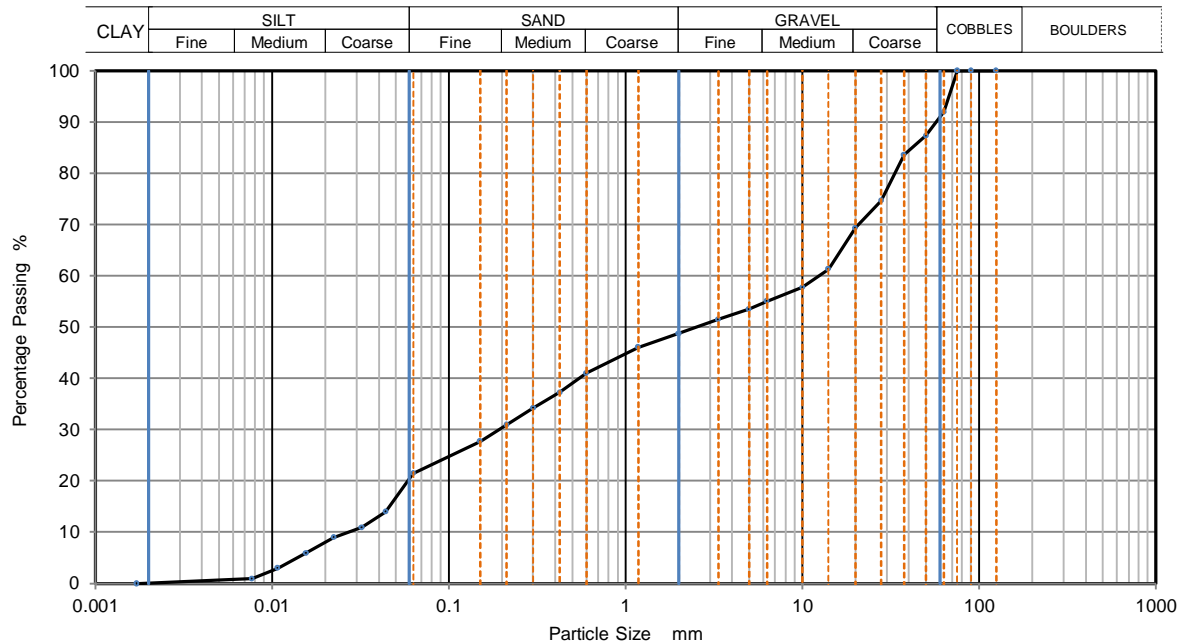
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102851**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	14
90	100	0.0321	11
75	100	0.0223	9
63	92	0.0155	6
50	87	0.0108	3
37.5	84	0.0077	1
28	75	0.0017	0
20	69		
14	61		
10	58		
6.3	55		
5	54		
3.35	52		
2	49		
1.18	46		
0.6	41	Particle density (assumed) 2.67 Mg/m ³	
0.425	37		
0.3	34		
0.212	31		
0.15	28		
0.063	22		

Dry Mass of sample, g. 13373

Sample Proportions	% dry mass
Very coarse	8
Gravel	43
Sand	27
Silt	21
Clay	0

Grading Analysis	
D100	mm
D60	mm 12.3
D30	mm 0.191
D10	mm 0.0263
Uniformity Coefficient	470
Curvature Coefficient	0.11

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP52**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown silty sandy GRAVEL**

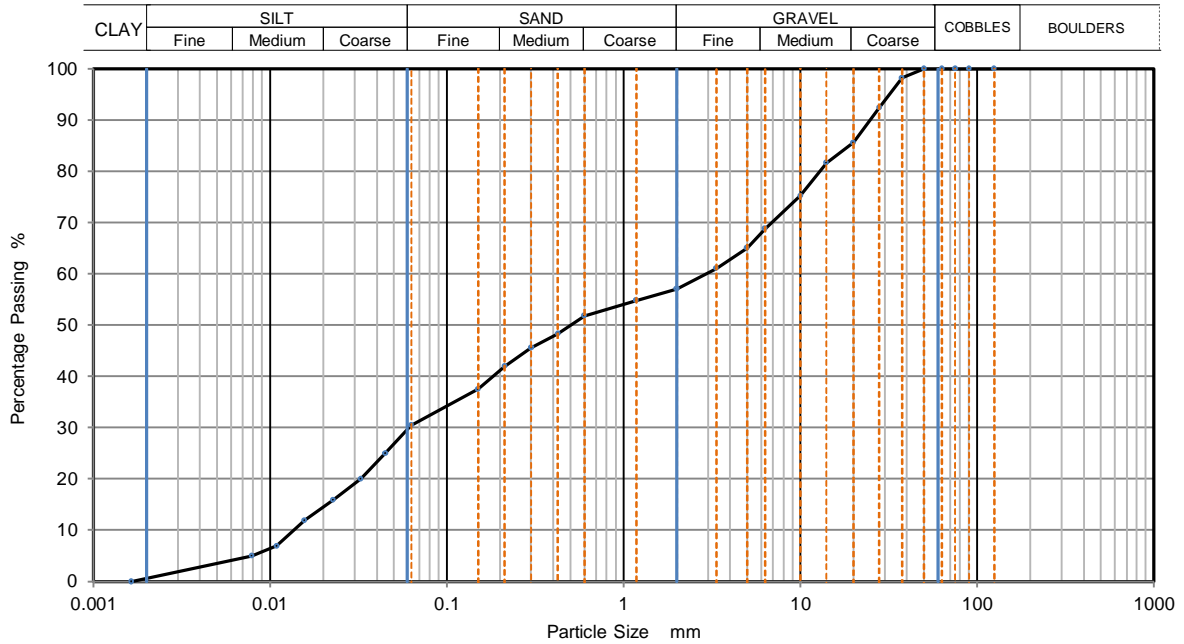
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102855**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0448	25
90	100	0.0326	20
75	100	0.0227	16
63	100	0.0157	12
50	100	0.0109	7
37.5	98	0.0079	5
28	92	0.0016	0
20	86		
14	82		
10	75		
6.3	69		
5	65		
3.35	61		
2	57		
1.18	55		
0.6	52		
0.425	48	Particle density (assumed) 2.67 Mg/m ³	
0.3	46		
0.212	42		
0.15	38		
0.063	31		

Dry Mass of sample, g. 4688

Sample Proportions	% dry mass
Very coarse	0
Gravel	43
Sand	27
Silt	30
Clay	1

Grading Analysis		
D100	mm	
D60	mm	2.9
D30	mm	0.061
D10	mm	0.0139
Uniformity Coefficient		210
Curvature Coefficient		0.092

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP52**

Site Name **New Deer 2**

Sample No. **8**

Soil Description **Brown silty sandy GRAVEL**

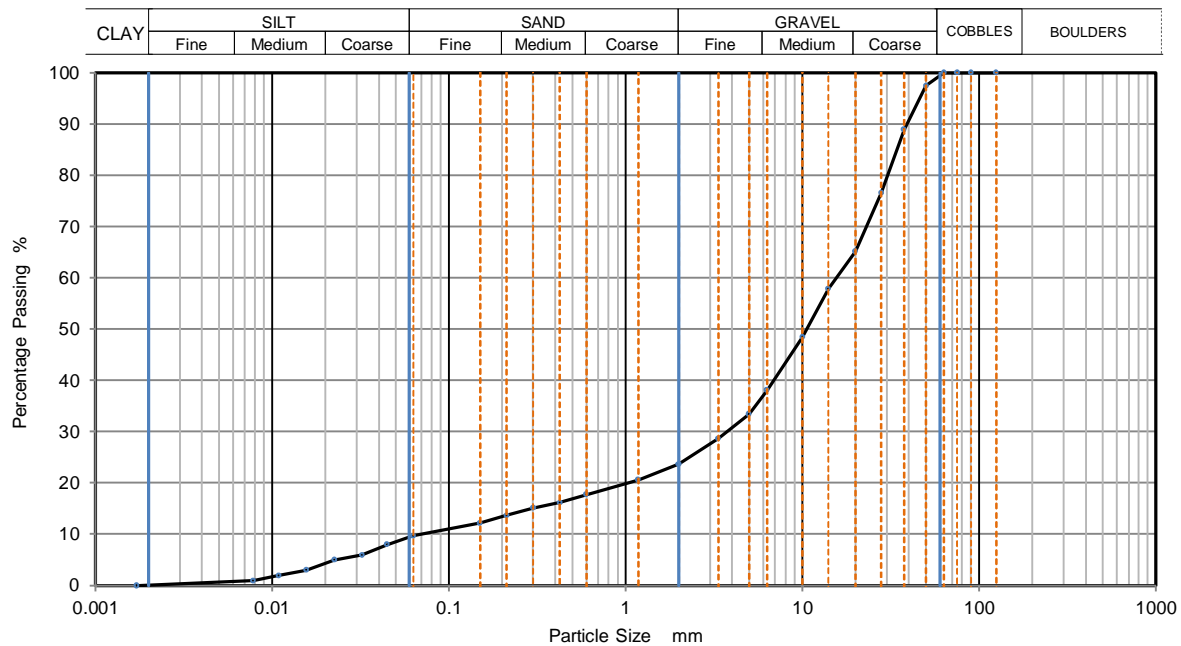
Depth, m **3.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102857**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0446	8
90	100	0.0324	6
75	100	0.0225	5
63	100	0.0156	3
50	97	0.0109	2
37.5	89	0.0078	1
28	77	0.0017	0
20	65		
14	58		
10	48		
6.3	38		
5	34		
3.35	29		
2	24		
1.18	21		
0.6	18	Particle density (assumed) 2.67 Mg/m ³	
0.425	16		
0.3	15		
0.212	14		
0.15	12		
0.063	10		

Dry Mass of sample, g. 13979

Sample Proportions	% dry mass
Very coarse	0
Gravel	76
Sand	14
Silt	10
Clay	0

Grading Analysis	
D100	mm
D60	mm 15.5
D30	mm 3.73
D10	mm 0.0701
Uniformity Coefficient	220
Curvature Coefficient	13

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP53**

Site Name **New Deer 2**

Sample No. **2**

Soil Description **Brown gravelly sandy CLAY/ SILT**

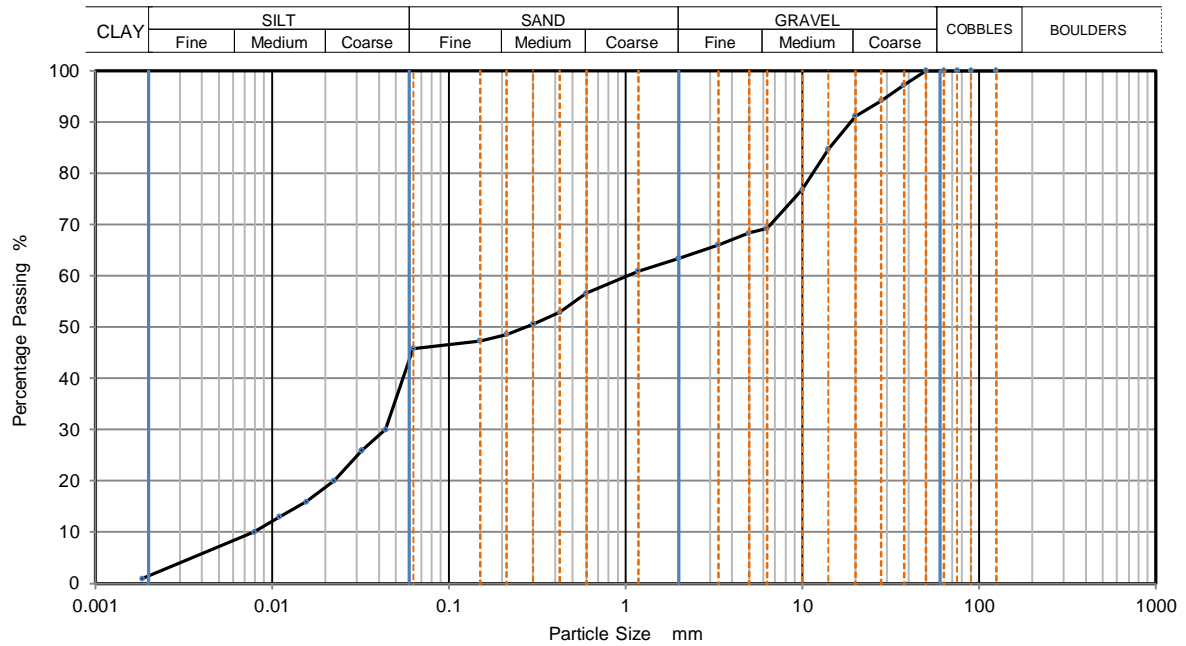
Depth, m **0.50**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102261**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0439	30
90	100	0.0322	26
75	100	0.0224	20
63	100	0.0156	16
50	100	0.0110	13
37.5	97	0.0079	10
28	94	0.0018	1
20	91		
14	85		
10	77		
6.3	69		
5	68		
3.35	66		
2	63		
1.18	61		
0.6	57	Particle density (assumed) 2.67 Mg/m ³	
0.425	53		
0.3	51		
0.212	49		
0.15	47		
0.063	46		

Dry Mass of sample, g. 13032

Sample Proportions	% dry mass
Very coarse	0
Gravel	37
Sand	18
Silt	44
Clay	2

Grading Analysis		
D100	mm	
D60	mm	1.02
D30	mm	0.0438
D10	mm	0.00793
Uniformity Coefficient		130
Curvature Coefficient		0.24

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP53**

Site Name **New Deer 2**

Sample No. **6**

Soil Description **Brown sandy silty GRAVEL**

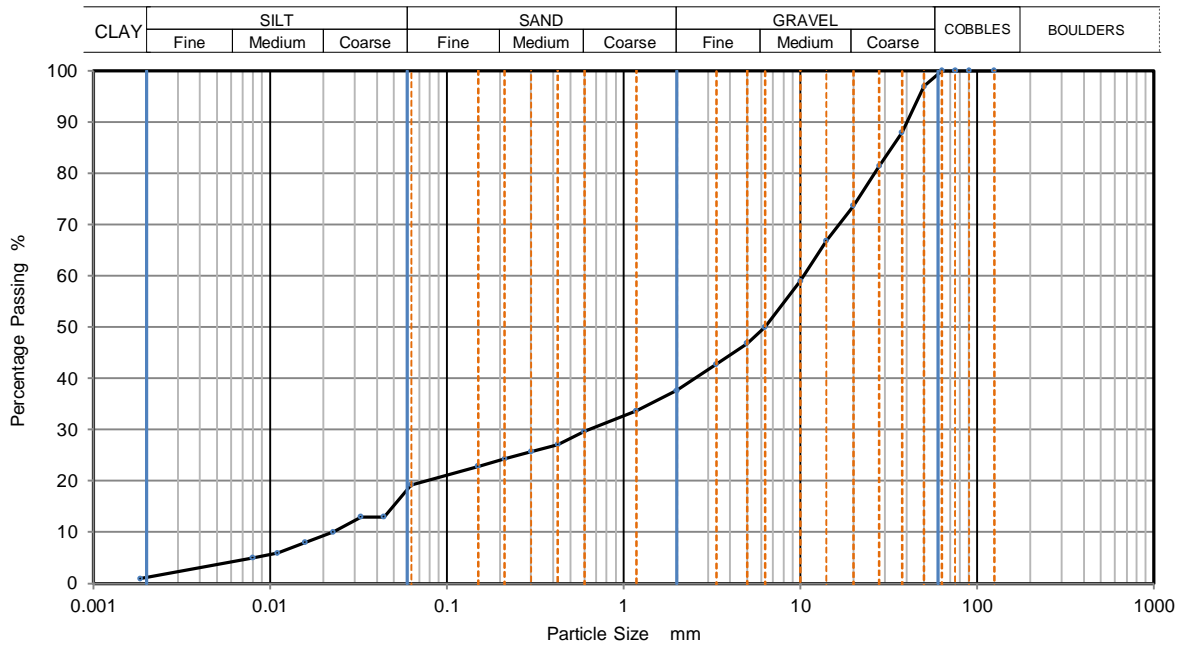
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1102265**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0441	13
90	100	0.0326	13
75	100	0.0227	10
63	100	0.0158	8
50	97	0.0110	6
37.5	88	0.0080	5
28	81	0.0018	1
20	74		
14	67		
10	59		
6.3	50		
5	47		
3.35	43		
2	38		
1.18	34		
0.6	30	Particle density (assumed) 2.67 Mg/m ³	
0.425	27		
0.3	26		
0.212	24		
0.15	23		
0.063	19		

Dry Mass of sample, g. 11033

Sample Proportions	% dry mass
Very coarse	0
Gravel	62
Sand	18
Silt	19
Clay	1

Grading Analysis	
D100	mm
D60	mm 10.4
D30	mm 0.63
D10	mm 0.0221
Uniformity Coefficient	470
Curvature Coefficient	1.7

Remarks
Preparation and testing in accordance with BS1377 unless noted below



PARTICLE SIZE DISTRIBUTION

Job Ref **RGN.330G**

Borehole/Pit No. **TP54**

Site Name **New Deer 2**

Sample No. **4**

Soil Description **Brown sandy silty GRAVEL with cobble**

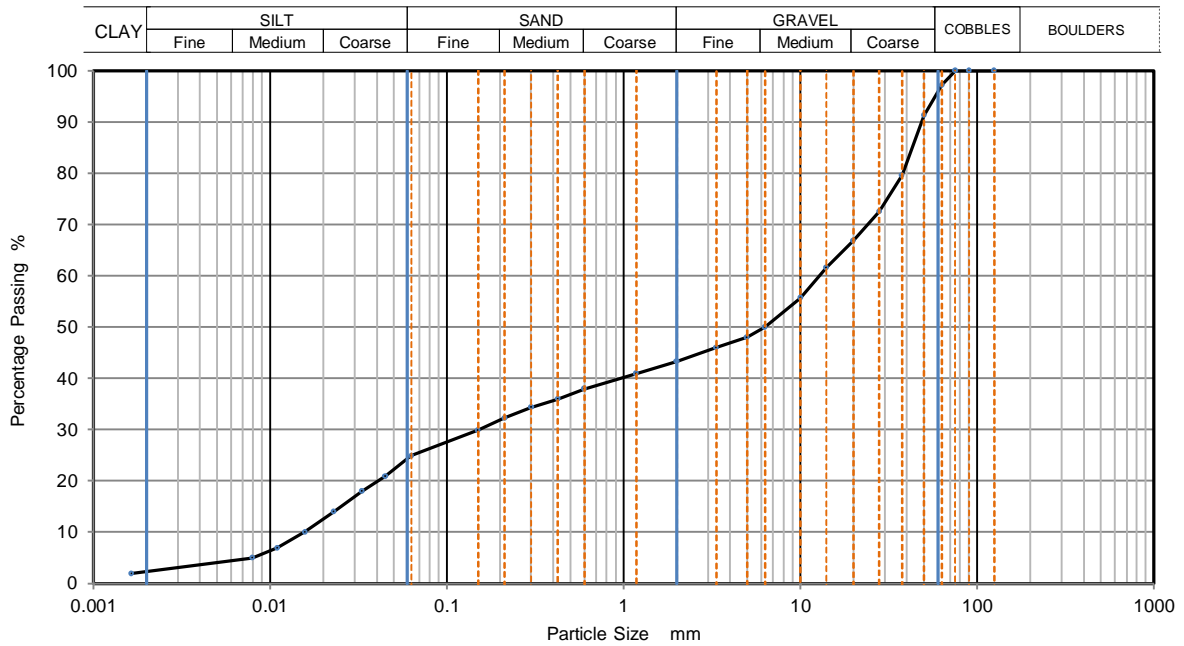
Depth, m **1.00**

Specimen Reference **2** Specimen Depth **m**

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **K1093379**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0449	21
90	100	0.0330	18
75	100	0.0228	14
63	97	0.0158	10
50	91	0.0110	7
37.5	80	0.0079	5
28	73	0.0016	2
20	67		
14	62		
10	56		
6.3	50		
5	48		
3.35	46		
2	43		
1.18	41		
0.6	38	Particle density (assumed) 2.67 Mg/m ³	
0.425	36		
0.3	34		
0.212	32		
0.15	30		
0.063	25		

Dry Mass of sample, g. 12995

Sample Proportions	% dry mass
Very coarse	3
Gravel	54
Sand	18
Silt	23
Clay	2

Grading Analysis	
D100	mm
D60	mm 12.8
D30	mm 0.153
D10	mm 0.0158
Uniformity Coefficient	810
Curvature Coefficient	0.12

Remarks
Preparation and testing in accordance with BS1377 unless noted below



Amended Report

Report No.: 23-34451-4

Initial Date of Issue: 19-Oct-2023 **Date of Re-Issue:** 14-Dec-2023

Re-Issue Details: This report has been revised and directly supersedes 23-34451-3 in its entirety

Client: BAM Ritchies

Client Address: Glasgow Road
Kilsyth
Glasgow
Lanarkshire
G65 9BL

Contact(s): Barry Clark
Jack Ross
Kevin Jack

Project: 330G New Deer

Quotation No.: Q22-29625 **Date Received:** 16-Oct-2023

Order No.: RIT 313 893 058 **Date Instructed:** 16-Oct-2023

No. of Samples: 12

Turnaround (Wkdays): 5 **Results Due:** 20-Oct-2023

Date Approved: 19-Oct-2023

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies		Chemtest Job No.:											
Quotation No.: Q22-29625	Chemtest Sample ID.:	23-34451	23-34451	23-34451	23-34451	23-34451	23-34451	23-34451	23-34451	23-34451	23-34451		
Order No.: RIT 313 893 058	Client Sample Ref.:	1716646	1716647	1716648	1716649	1716650	1716651	1716652	1716653	1716654			
	Client Sample ID.:	K1102816	K1102332	K1093472	K1102283	K1093253	K1093261	K1093265	K1093267	K1093273			
	Sample Location:	K1102816	K1102332	K1093472	K1102283	K1093253	K1093261	K1093265	K1093267	K1093273			
	Sample Type:	TP29	TP31	TP33	TP34	TP39	TP40	TP40	TP41	TP41			
	Top Depth (m):	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
	Bottom Depth (m):	3.00	2.00	2.00	3.00	1.00	1.00	3.00	0.50	3.00			
	Date Sampled:	3.00	2.00	2.00	3.00	1.00	1.00	3.00	0.50	3.00			
		04-Sep-2023	05-Sep-2023	05-Sep-2023	31-Aug-2023	02-Sep-2023	07-Sep-2023	07-Sep-2023	03-Sep-2023	03-Sep-2023			
Determinand	Accred.	SOP	Units	LOD									
Moisture	N	2030	%	0.020	9.6	16	12	16	16	13	6.4	13	12
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
pH at 20C	M	2010		4.0	[B] 6.5	[B] 6.1			[B] 5.8	[B] 5.9		[B] 5.3	
Magnesium (Water Soluble)	N	2120	g/l	0.010	[B] < 0.010				[B] < 0.010				
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	[B] < 0.010				[B] < 0.010				
Total Sulphur	U	2175	%	0.010	[B] < 0.010				[B] < 0.010				
Chloride (Water Soluble)	M	2220	g/l	0.010	[B] < 0.010				[B] < 0.010				
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010				< 0.010				
Ammonium (Water Soluble)	M	2220	g/l	0.01	< 0.01				< 0.01				
Sulphate (Total)	U	2430	%	0.010			[B] < 0.010						[B] 0.065
Sulphate (Acid Soluble)	U	2430	%	0.010	[B] < 0.010				[B] < 0.010				
Organic Matter	M	2625	%	0.40			[B] < 0.40				[B] < 0.40		

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies	Chemtest Job No.:		23-34451	23-34451	23-34451		
Quotation No.: Q22-29625	Chemtest Sample ID.:		1716655	1716656	1716657		
Order No.: RIT 313 893 058	Client Sample Ref.:		K1102266	K1093381	K1093452		
	Client Sample ID.:		K1102266	K1093381	K1093452		
	Sample Location:		TP53	TP54	TP22		
	Sample Type:		SOIL	SOIL	SOIL		
	Top Depth (m):		3.00	2.00	1.00		
	Bottom Depth (m):		3.00	2.00	1.00		
	Date Sampled:		28-Aug-2023	28-Aug-2023	01-Sep-2023		
Determinand	Accred.	SOP	Units	LOD			
Moisture	N	2030	%	0.020	9.9	14	11
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones and Roots	Stones
Soil Texture	N	2040		N/A	Gravel	Sand	Sand
pH at 20C	M	2010		4.0	[B] 6.2	[B] 5.8	[B] 5.8
Magnesium (Water Soluble)	N	2120	g/l	0.010	[B] < 0.010		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	[B] < 0.010		
Total Sulphur	U	2175	%	0.010	[B] < 0.010		
Chloride (Water Soluble)	M	2220	g/l	0.010	[B] < 0.010		
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010		
Ammonium (Water Soluble)	M	2220	g/l	0.01	< 0.01		
Sulphate (Total)	U	2430	%	0.010			
Sulphate (Acid Soluble)	U	2430	%	0.010	[B] < 0.010		
Organic Matter	M	2625	%	0.40			

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1716646	K1102816	K1102816	TP29	04-Sep-2023	B	Plastic Tub 500g
1716647	K1102332	K1102332	TP31	05-Sep-2023	B	Plastic Tub 500g
1716648	K1093472	K1093472	TP33	05-Sep-2023	B	Plastic Tub 500g
1716649	K1102283	K1102283	TP34	31-Aug-2023	B	Plastic Tub 500g
1716650	K1093253	K1093253	TP39	02-Sep-2023	B	Plastic Tub 500g
1716651	K1093261	K1093261	TP40	07-Sep-2023	B	Plastic Tub 500g
1716652	K1093265	K1093265	TP40	07-Sep-2023	B	Plastic Tub 500g
1716653	K1093267	K1093267	TP41	03-Sep-2023	B	Plastic Tub 500g
1716654	K1093273	K1093273	TP41	03-Sep-2023	B	Plastic Tub 500g
1716655	K1102266	K1102266	TP53	28-Aug-2023	B	Plastic Tub 500g
1716656	K1093381	K1093381	TP54	28-Aug-2023	B	Plastic Tub 500g
1716657	K1093452	K1093452	TP22	01-Sep-2023	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurement by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Amended Report

Report No.: 23-34454-6

Initial Date of Issue: 20-Oct-2023 **Date of Re-Issue:** 12-Dec-2023

Re-Issue Details: This report has been revised and directly supersedes 23-34454-5 in its entirety

Client: BAM Ritchies

Client Address: Glasgow Road
Kilsyth
Glasgow
Lanarkshire
G65 9BL

Contact(s): Barry Clark
Jack Ross
Kevin Jack

Project: 330G New Deer

Quotation No.: Q22-29625 **Date Received:** 16-Oct-2023

Order No.: RIT 313 893 058 **Date Instructed:** 16-Oct-2023

No. of Samples: 12

Turnaround (Wkdays): 5 **Results Due:** 20-Oct-2023

Date Approved: 20-Oct-2023

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies		Chemtest Job No.:		23-34454	23-34454	23-34454	23-34454	23-34454	23-34454	23-34454	23-34454	23-34454	23-34454
Quotation No.: Q22-29625		Chemtest Sample ID.:		1716673	1716674	1716675	1716676	1716677	1716678	1716679	1716680	1716681	
Order No.: RIT 313 893 058		Client Sample Ref.:		K108674	K1102323	K1102325	K1086061	K1093425	K1102258	K1102301	K1102306	K1102822	
		Client Sample ID.:		K108674	K1102323	K1102325	K1086061	K1093425	K1102258	K1102301	K1102306	K1102822	
		Sample Location:		TP11	TP12	TP12	TP13	TP14	TP15	TP16	TP16	TP19	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		2.00	2.00	3.00	1.00	3.00	3.00	0.50	2.00	2.00	
		Bottom Depth (m):		2.00	2.00	3.00	1.00	3.00	3.00	0.50	2.00	2.00	
		Date Sampled:		04-Sep-2023	02-Sep-2023	02-Sep-2023	04-Sep-2023	28-Aug-2023	28-Aug-2023	02-Sep-2023	02-Sep-2023	06-Sep-2023	
Determinand	Accred.	SOP	Units	LOD									
Moisture	N	2030	%	0.020	7.7	5.7	6.1	13	16	11	10	9.9	12
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	None	Stones	Stones	Stones	Stones	Stones	Stones and Roots	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
pH at 20C	M	2010		4.0		[B] 5.6		[B] 6.5			[B] 5.5		
Magnesium (Water Soluble)	N	2120	g/l	0.010				[B] < 0.010			[B] < 0.010		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010				[B] < 0.010			[B] < 0.010		
Total Sulphur	U	2175	%	0.010				[B] < 0.010			[B] < 0.010		
Chloride (Water Soluble)	M	2220	g/l	0.010				[B] < 0.010			[B] < 0.010		
Nitrate (Water Soluble)	N	2220	g/l	0.010				< 0.010			< 0.010		
Ammonium (Water Soluble)	M	2220	g/l	0.01				< 0.01			< 0.01		
Sulphate (Total)	U	2430	%	0.010			[B] < 0.010			[B] < 0.010			[B] 0.060
Sulphate (Acid Soluble)	U	2430	%	0.010				[B] < 0.010			[B] < 0.010		
Organic Matter	M	2625	%	0.40	[B] < 0.40				[B] < 0.40			[B] < 0.40	

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies	Chemtest Job No.:		23-34454	23-34454	23-34454		
Quotation No.: Q22-29625	Chemtest Sample ID.:		1716682	1716683	1716684		
Order No.: RIT 313 893 058	Client Sample Ref.:		K1093413	K1093399	K1093448		
	Client Sample ID.:		K1093413	K1093399	K1093448		
	Sample Location:		TP23	TP25	TP27		
	Sample Type:		SOIL	SOIL	SOIL		
	Top Depth (m):		1.00	2.00	3.00		
	Bottom Depth (m):		1.00	2.00	3.00		
	Date Sampled:		28-Aug-2023	28-Aug-2023	01-Sep-2023		
Determinand	Accred.	SOP	Units	LOD			
Moisture	N	2030	%	0.020	8.4	17	7.5
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH at 20C	M	2010		4.0	[B] 5.7		
Magnesium (Water Soluble)	N	2120	g/l	0.010	[B] < 0.010		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	[B] < 0.010		
Total Sulphur	U	2175	%	0.010	[B] < 0.010		
Chloride (Water Soluble)	M	2220	g/l	0.010	[B] < 0.010		
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010		
Ammonium (Water Soluble)	M	2220	g/l	0.01	< 0.01		
Sulphate (Total)	U	2430	%	0.010		[B] < 0.010	
Sulphate (Acid Soluble)	U	2430	%	0.010	[B] < 0.010		
Organic Matter	M	2625	%	0.40			[B] < 0.40

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1716673	K108674	K108674	TP11	04-Sep-2023	B	Plastic Tub 500g
1716674	K1102323	K1102323	TP12	02-Sep-2023	B	Plastic Tub 500g
1716675	K1102325	K1102325	TP12	02-Sep-2023	B	Plastic Tub 500g
1716676	K1086061	K1086061	TP13	04-Sep-2023	B	Plastic Tub 500g
1716677	K1093425	K1093425	TP14	28-Aug-2023	B	Plastic Tub 500g
1716678	K1102258	K1102258	TP15	28-Aug-2023	B	Plastic Tub 500g
1716679	K1102301	K1102301	TP16	02-Sep-2023	B	Plastic Tub 500g
1716680	K1102306	K1102306	TP16	02-Sep-2023	B	Plastic Tub 500g
1716681	K1102822	K1102822	TP19	06-Sep-2023	B	Plastic Tub 500g
1716682	K1093413	K1093413	TP23	28-Aug-2023	B	Plastic Tub 500g
1716683	K1093399	K1093399	TP25	28-Aug-2023	B	Plastic Tub 500g
1716684	K1093448	K1093448	TP27	01-Sep-2023	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurement by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 23-36817-1

Initial Date of Issue: 08-Nov-2023

Re-Issue Details:

Client BAM Ritchies

Client Address: Glasgow Road
Kilsyth
Glasgow
Lanarkshire
G65 9BL

Contact(s): Barry Clark
Jack Ross
Kevin Jack

Project 330G New Deer

Quotation No.: **Date Received:** 03-Nov-2023

Order No.: RIT 315 688 379 **Date Instructed:** 03-Nov-2023

No. of Samples: 4

Turnaround (Wkdays): 5 **Results Due:** 09-Nov-2023

Date Approved: 08-Nov-2023

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies		Chemtest Job No.:		23-36817	23-36817	23-36817	23-36817	
Quotation No.:		Chemtest Sample ID.:		1726389	1726390	1726391	1726392	
Order No.: RIT 315 688 379		Client Sample Ref.:		K1086100	K1086106	K1103014	K1103052	
		Client Sample ID.:		K1086100	K1086106	K1103014	K1103052	
		Sample Location:		TP02	TP02	TP06	TP09	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.50	1.50	1.50	1.50	
		Bottom Depth (m):		0.50	1.50	1.50	1.50	
Determinand	Accred.	SOP	Units	LOD				
Moisture	N	2030	%	0.020	15	7.8	8.6	9.1
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones and Roots	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Loam	Loam	Loam	Loam
pH at 20C	M	2010		4.0	[A] 5.9	[A] 5.6	[A] 5.6	[A] 5.4
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1726389	K1086100	K1086100	TP02		A	Plastic Tub 500g
1726390	K1086106	K1086106	TP02		A	Plastic Tub 500g
1726391	K1103014	K1103014	TP06		A	Plastic Tub 500g
1726392	K1103052	K1103052	TP09		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES

Report Information

Key

U	UKAS accredited
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N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 23-39056-1

Initial Date of Issue: 29-Nov-2023

Re-Issue Details:

Client BAM Ritchies

Client Address: Glasgow Road
Kilsyth
Glasgow
Lanarkshire
G65 9BL

Contact(s): Barry Clark
Jack Ross
Kevin Jack

Project 330G New Deer

Quotation No.: **Date Received:** 24-Nov-2023

Order No.: RIT 317 505 290 **Date Instructed:** 24-Nov-2023

No. of Samples: 5

Turnaround (Wkdays): 5 **Results Due:** 30-Nov-2023

Date Approved: 29-Nov-2023

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies		Chemtest Job No.:		23-39056	23-39056	23-39056	23-39056	23-39056	
Quotation No.:		Chemtest Sample ID.:		1735973	1735974	1735975	1735976	1735977	
Order No.: RIT 317 505 290		Client Sample Ref.:		K1102830	K1102832	K1102836	K1102840	K1093481	
		Client Sample ID.:		K1102830	K1102832	K1102836	K1102840	K1093481	
		Sample Location:		TP30	TP30	TP32	TP32	TP42	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		2.00	3.00	1.00	3.00	2.00	
Determinand	Accred.	SOP	Units	LOD					
Moisture	N	2030	%	0.020	9.7	13	12	11	12
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand
pH at 20C	M	2010		4.0	[A] 6.7	[A] 7.2		[A] 6.5	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010		[A] 0.014			
Sulphate (Total)	U	2430	%	0.010		[A] 0.016	[A] < 0.010		
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] 0.012			
Organic Matter	M	2625	%	0.40					[A] < 0.40

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1735973	K1102830	K1102830	TP30		A	Plastic Tub 500g
1735974	K1102832	K1102832	TP30		A	Plastic Tub 500g
1735975	K1102836	K1102836	TP32		A	Plastic Tub 500g
1735976	K1102840	K1102840	TP32		A	Plastic Tub 500g
1735977	K1093481	K1093481	TP42		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 23-39058-1

Initial Date of Issue: 29-Nov-2023

Re-Issue Details:

Client BAM Ritchies

Client Address: Glasgow Road
Kilsyth
Glasgow
Lanarkshire
G65 9BL

Contact(s): Barry Clark
Jack Ross
Kevin Jack

Project 330G New Deer

Quotation No.: **Date Received:** 24-Nov-2023

Order No.: RIT 317 505 290 **Date Instructed:** 24-Nov-2023

No. of Samples: 12

Turnaround (Wkdays): 5 **Results Due:** 30-Nov-2023

Date Approved: 29-Nov-2023

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies		Chemtest Job No.:		23-39058	23-39058	23-39058	23-39058	23-39058	23-39058	23-39058	23-39058	23-39058	23-39058	23-39058
Quotation No.:		Chemtest Sample ID.:		1735983	1735984	1735985	1735986	1735987	1735988	1735989	1735990	1735991	1735992	
Order No.: RIT 317 505 290		Client Sample Ref.:		WA1039711	WA1039712	K1101626	K1101627	K1101628	K1101629	K1101630	K1101631	K1101632	K1101657	
		Client Sample ID.:		WA1039711	WA1039712	K1101626	K1101627	K1101628	K1101629	K1101630	K1101631	K1101632	K1101657	
		Sample Location:		BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH09	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		7.20	8.70	10.20	11.70	13.20	14.70	16.20	17.70	19.20	1.00	
Determinand	Accred.	SOP	Units	LOD										
Moisture	N	2030	%	0.020	8.1	8.7	15	8.7	11	7.9	9.0	8.9	6.0	5.9
Soil Colour	N	2040		N/A	Beige	Brown	Brown	Brown	Brown	Beige	Brown	Brown	Beige	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
pH at 20C	M	2010		4.0	[A] 7.7		[A] 7.6	[A] 7.5		[A] 7.6		[A] 8.2	[A] 7.6	[A] 6.4
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	[A] < 0.010			[A] < 0.010					[A] < 0.010	[A] < 0.010
Sulphate (Total)	U	2430	%	0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010	[A] < 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] < 0.010			[A] < 0.010					[A] < 0.010	[A] < 0.010

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies	Chemtest Job No.:		23-39058	23-39058		
Quotation No.:	Chemtest Sample ID.:		1735993	1735994		
Order No.: RIT 317 505 290	Client Sample Ref.:		K1101660	K1102578		
	Client Sample ID.:		K1101660	K1102578		
	Sample Location:		BH09	BH19		
	Sample Type:		SOIL	SOIL		
	Top Depth (m):		2.70	7.20		
Determinand	Accred.	SOP	Units	LOD		
Moisture	N	2030	%	0.020	7.0	6.4
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand
pH at 20C	M	2010		4.0		[A] 6.6
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010		
Sulphate (Total)	U	2430	%	0.010	[A] < 0.010	
Sulphate (Acid Soluble)	U	2430	%	0.010		

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1735983	WA1039711	WA1039711	BH07		A	Plastic Tub 500g
1735984	WA1039712	WA1039712	BH07		A	Plastic Tub 500g
1735985	K1101626	K1101626	BH07		A	Plastic Tub 500g
1735986	K1101627	K1101627	BH07		A	Plastic Tub 500g
1735987	K1101628	K1101628	BH07		A	Plastic Tub 500g
1735988	K1101629	K1101629	BH07		A	Plastic Tub 500g
1735989	K1101630	K1101630	BH07		A	Plastic Tub 500g
1735990	K1101631	K1101631	BH07		A	Plastic Tub 500g
1735991	K1101632	K1101632	BH07		A	Plastic Tub 500g
1735992	K1101657	K1101657	BH09		A	Plastic Tub 500g
1735993	K1101660	K1101660	BH09		A	Plastic Tub 500g
1735994	K1102578	K1102578	BH19		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
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S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
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I/S	Insufficient Sample
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SOP	Standard operating procedure
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The results relate only to the items tested

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None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 23-39059-1

Initial Date of Issue: 29-Nov-2023

Re-Issue Details:

Client BAM Ritchies

Client Address: Glasgow Road
Kilsyth
Glasgow
Lanarkshire
G65 9BL

Contact(s): Barry Clark
Jack Ross
Kevin Jack

Project 330G New Deer

Quotation No.: **Date Received:** 24-Nov-2023

Order No.: RIT 317 505 290 **Date Instructed:** 24-Nov-2023

No. of Samples: 12

Turnaround (Wkdays): 5 **Results Due:** 30-Nov-2023

Date Approved: 29-Nov-2023

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies	Chemtest Job No.:													
Quotation No.:	Chemtest Sample ID.:													
Order No.: RIT 317 505 290	Client Sample Ref.:	23-39059	23-39059	23-39059	23-39059	23-39059	23-39059	23-39059	23-39059	23-39059	23-39059	23-39059	23-39059	
	Client Sample ID.:	1735995	1735996	1735997	1735998	1735999	1736000	1736001	1736002	1736003	1736004			
	Sample Location:	K1099880	K1100738	K1100741	K1100696	K1100705	K1100707	K1100718	K1100723	K1100725	K1100733			
	Sample Type:	K1099880	K1100738	K1100741	K1100696	K1100705	K1100707	K1100718	K1100723	K1100725	K1100733			
	Top Depth (m):	BH23	BH26	BH26	BH28	BH29	BH29	BH30	BH31	BH31	BH31			
	Bottom Depth (m):	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
		5.00	1.60	5.00	1.00	1.00	2.00	1.40	0.50	1.00	6.80			
						1.10	2.30	1.85	0.60	1.10	7.00			
Determinand	Accred.	SOP	Units	LOD										
Moisture	N	2030	%	0.020	14	18	12	12	11	11	14	1.8	14	14
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Beige	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Roots and Stones	Stones	Stones and Wood	Stones	None	Stones	Stones
Soil Texture	N	2040		N/A	Loam	Clay	Clay	Loam	Loam	Loam	Loam	Loam	Loam	Loam
pH at 20C	M	2010		4.0	[A] 6.9		[A] 5.6	[A] 5.5	[A] 5.8	[A] 5.9			[A] 6.4	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010			[A] < 0.010	[A] < 0.010		[A] < 0.010				
Sulphate (Total)	U	2430	%	0.010		[A] < 0.010	[A] < 0.010	[A] 0.013		[A] < 0.010	[A] 0.010	[A] < 0.010		[A] < 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010			[A] < 0.010	[A] < 0.010		[A] < 0.010				

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies	Chemtest Job No.:		23-39059	23-39059		
Quotation No.:	Chemtest Sample ID.:		1736005	1736006		
Order No.: RIT 317 505 290	Client Sample Ref.:		K1100734	K1100745		
	Client Sample ID.:		K1100734	K1100745		
	Sample Location:		BH31	BH32		
	Sample Type:		SOIL	SOIL		
	Top Depth (m):		8.00	1.90		
	Bottom Depth (m):			2.34		
Determinand	Accred.	SOP	Units	LOD		
Moisture	N	2030	%	0.020	17	11
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Loam
pH at 20C	M	2010		4.0	[A] 8.6	
Sulphate (2:1 Water Soluble) as SO ₄	M	2120	g/l	0.010	[A] < 0.010	
Sulphate (Total)	U	2430	%	0.010	[A] < 0.010	[A] < 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] < 0.010	

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1735995	K1099880	K1099880	BH23		A	Plastic Tub 500g
1735996	K1100738	K1100738	BH26		A	Plastic Tub 500g
1735997	K1100741	K1100741	BH26		A	Plastic Tub 500g
1735998	K1100696	K1100696	BH28		A	Plastic Tub 500g
1735999	K1100705	K1100705	BH29		A	Plastic Tub 500g
1736000	K1100707	K1100707	BH29		A	Plastic Tub 500g
1736001	K1100718	K1100718	BH30		A	Plastic Tub 500g
1736002	K1100723	K1100723	BH31		A	Plastic Tub 500g
1736003	K1100725	K1100725	BH31		A	Plastic Tub 500g
1736004	K1100733	K1100733	BH31		A	Plastic Tub 500g
1736005	K1100734	K1100734	BH31		A	Plastic Tub 500g
1736006	K1100745	K1100745	BH32		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 23-39073-1

Initial Date of Issue: 29-Nov-2023

Re-Issue Details:

Client BAM Ritchies

Client Address: Glasgow Road
Kilsyth
Glasgow
Lanarkshire
G65 9BL

Contact(s): Barry Clark
Jack Ross
Kevin Jack

Project 330G New Deer

Quotation No.: **Date Received:** 24-Nov-2023

Order No.: RIT 317 505 290 **Date Instructed:** 24-Nov-2023

No. of Samples: 12

Turnaround (Wkdays): 5 **Results Due:** 30-Nov-2023

Date Approved: 29-Nov-2023

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies		Chemtest Job No.:												
Quotation No.:	Chemtest Sample ID.:	23-39073	23-39073	23-39073	23-39073	23-39073	23-39073	23-39073	23-39073	23-39073	23-39073	23-39073	23-39073	
Order No.: RIT 317 505 290	Client Sample Ref.:	1736046	1736047	1736048	1736049	1736050	1736051	1736052	1736053	1736054	1736055			
	Client Sample ID.:	K1093882	K1096696	K1101637	K1101638	K10961365	K1101671	K1099916	K1099918	K1099892	K1100708			
	Sample Location:	BH26	BH12	BH13	BH13	BH16	BH17	BH24	BH24	BH36	BH20			
	Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
	Top Depth (m):	5.00	1.90	1.20	2.70	1.00	2.70	3.00	4.00	1.40	0.50			
	Bottom Depth (m):	5.45	2.00							1.85	0.60			
Determinand	Accred.	SOP	Units	LOD										
Moisture	N	2030	%	0.020	9.5	9.6	9.9	10	16	16	20	21	14	14
Soil Colour	N	2040		N/A	Brown	Beige	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
pH at 20C	M	2010		4.0	[A] 6.5	[A] 6.3		[A] 6.6	[A] 5.7	[A] 6.7	[A] 7.1		[A] 6.7	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	[A] < 0.010			[A] < 0.010		[A] < 0.010				
Sulphate (Total)	U	2430	%	0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010		[A] 0.016		[A] < 0.010		[A] 0.048
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] < 0.010			[A] < 0.010		[A] 0.017				

Results - Soil

Project: 330G New Deer

Client: BAM Ritchies	Chemtest Job No.:		23-39073	23-39073		
Quotation No.:	Chemtest Sample ID.:		1736056	1736057		
Order No.: RIT 317 505 290	Client Sample Ref.:		K1100720	K1099887		
	Client Sample ID.:		K1100720	K1099887		
	Sample Location:		BH23	BH22		
	Sample Type:		SOIL	SOIL		
	Top Depth (m):		0.40	2.00		
	Bottom Depth (m):		1.40	2.30		
Determinand	Accred.	SOP	Units	LOD		
Moisture	N	2030	%	0.020	13	14
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand
pH at 20C	M	2010		4.0	[A] 6.4	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	[A] < 0.010	
Sulphate (Total)	U	2430	%	0.010	[A] 0.26	[A] < 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.16	

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1736046	K1093882	K1093882	BH26		A	Plastic Tub 500g
1736047	K1096696	K1096696	BH12		A	Plastic Tub 500g
1736048	K1101637	K1101637	BH13		A	Plastic Tub 500g
1736049	K1101638	K1101638	BH13		A	Plastic Tub 500g
1736050	K10961365	K10961365	BH16		A	Plastic Tub 500g
1736051	K1101671	K1101671	BH17		A	Plastic Tub 500g
1736052	K1099916	K1099916	BH24		A	Plastic Tub 500g
1736053	K1099918	K1099918	BH24		A	Plastic Tub 500g
1736054	K1099892	K1099892	BH36		A	Plastic Tub 500g
1736055	K1100708	K1100708	BH20		A	Plastic Tub 1000g
1736056	K1100720	K1100720	BH23		A	Plastic Tub 500g
1736057	K1099887	K1099887	BH22		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	pH Meter
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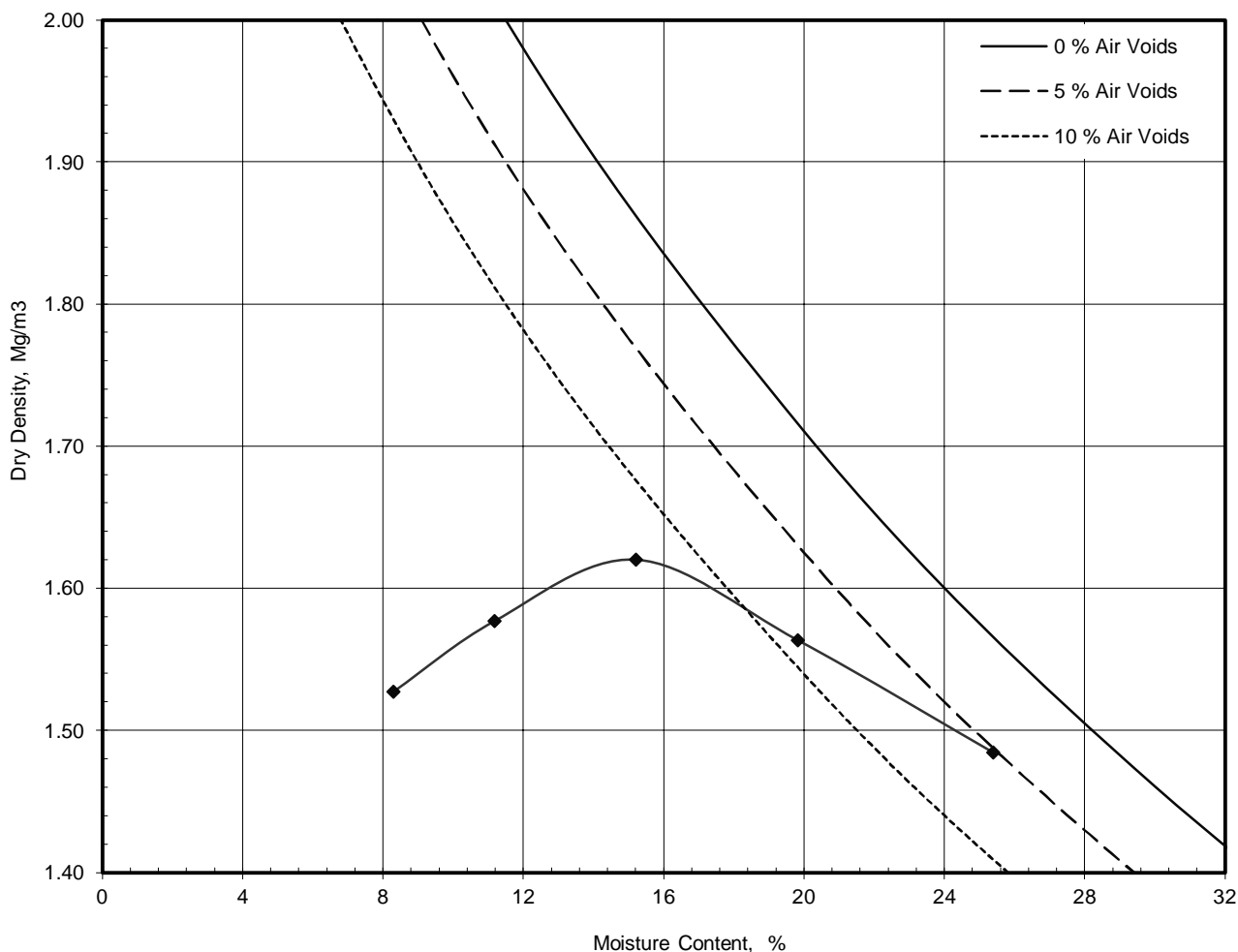


Dry Density / Moisture Content Relationship Light Compaction

Job Ref	RGN.330G
Borehole / Pit No	BH03
Sample No	2
Depth	0.50 m
Sample Type	B
Keylab ID	K1102600

Site Name	New Deer 2	
Soil Description	Brown gravelly SAND M/G	
Specimen Ref.	2	Specimen Depth
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	

Compaction Test Reference/No. _____



Preparation	Material used was air dried
Mould Type	1 LITRE
Samples Used	Single sample tested
Material Retained on 37.5 mm Sieve	%
Material Retained on 20.0 mm Sieve	%
Particle Density - Assumed	Mg/m³

Maximum Dry Density	1.62
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Optimum Moisture Content	15
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	Remarks	
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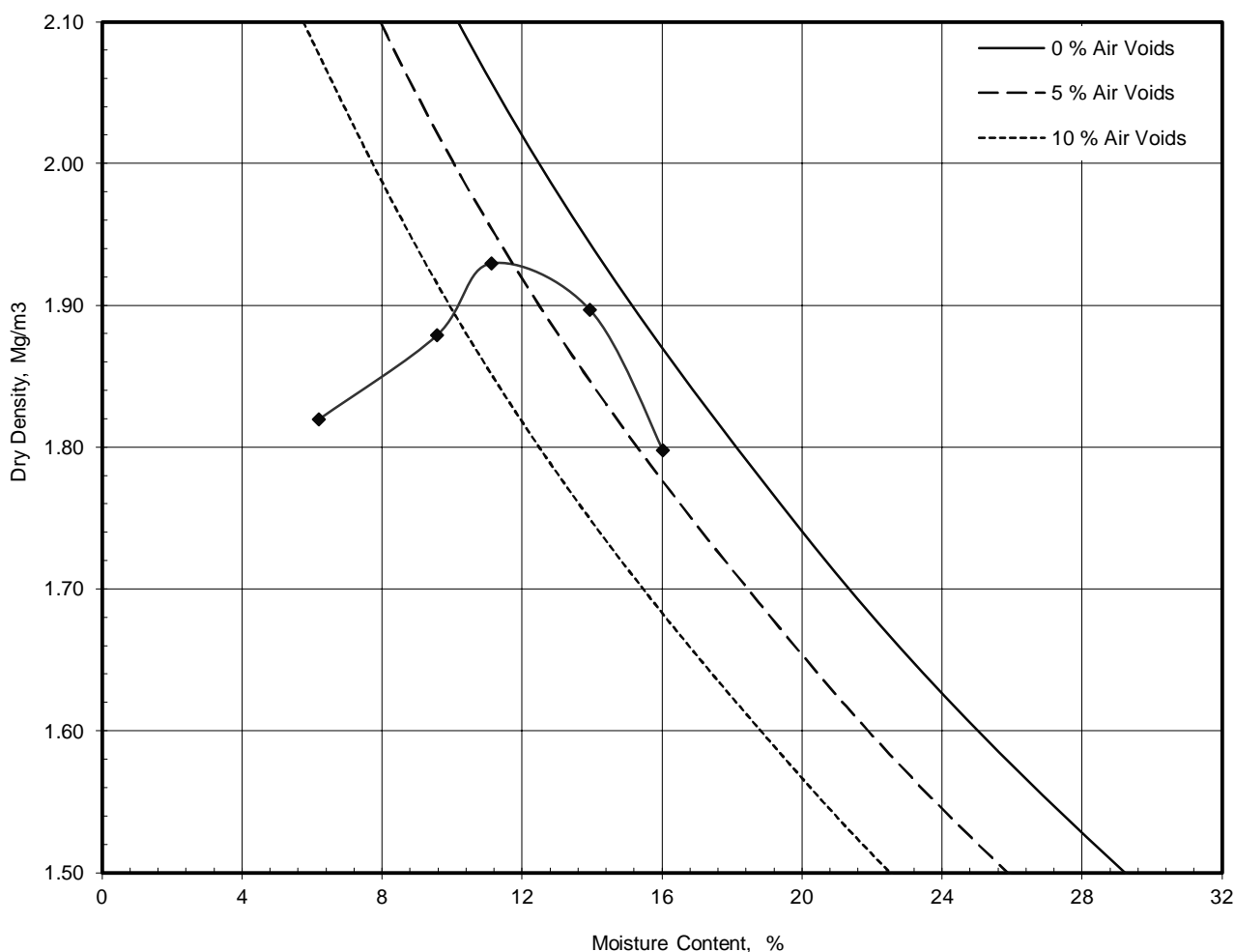


**Dry Density / Moisture Content Relationship
Light Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH03
Sample No	4
Depth	1.00 m
Sample Type	B
Keylab ID	K1102602

Site Name	New Deer 2	
Soil Description	Brown gravelly clayey SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	

Compaction Test Reference/No. _____



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.67

Maximum Dry Density	Mg/m³	1.93
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Optimum Moisture Content	%	11
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	Remarks	
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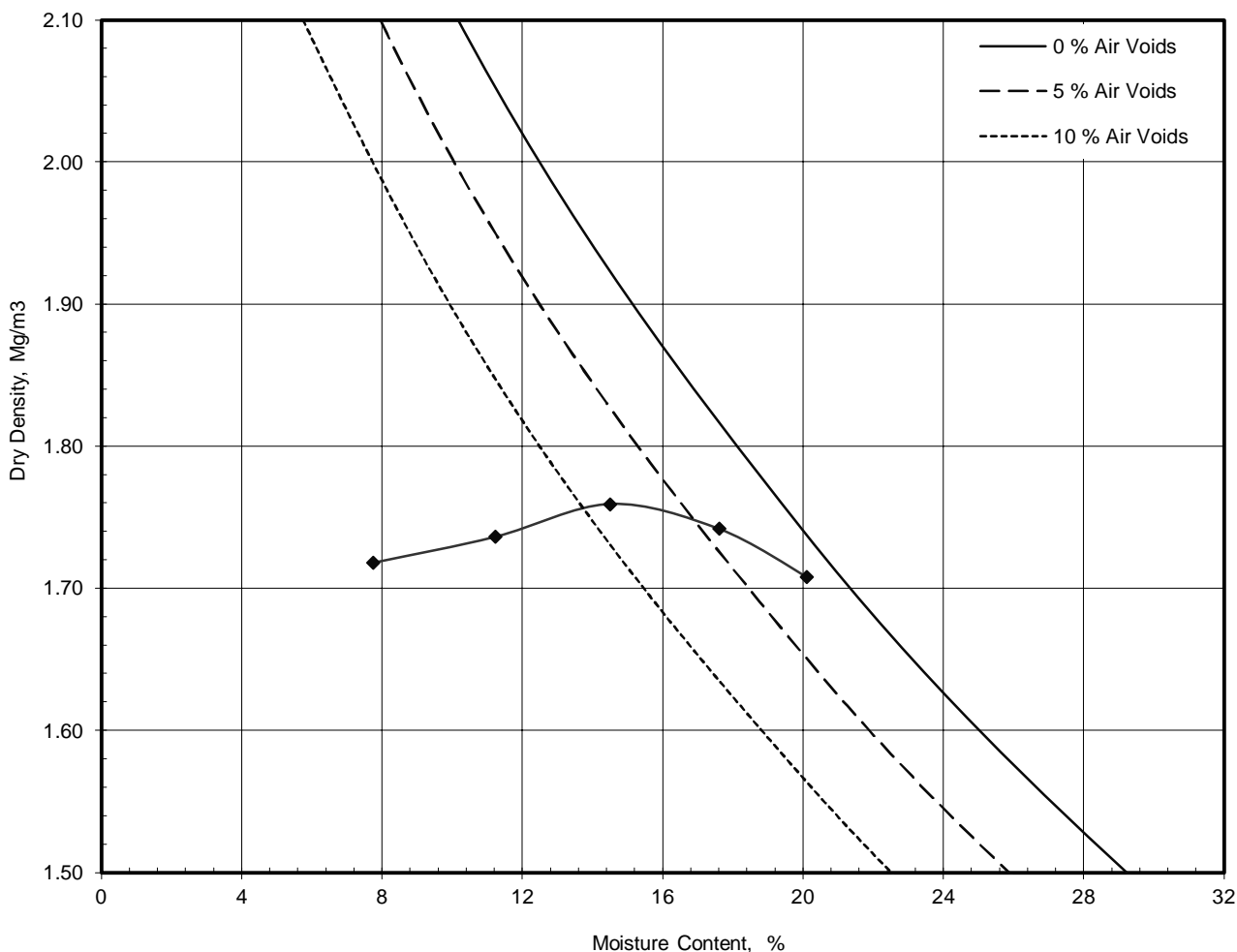


**Dry Density / Moisture Content Relationship
Light Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH04
Sample No	2
Depth	0.50 m
Sample Type	B
Keylab ID	K1102590

Site Name	New Deer 2	
Soil Description	Brown gravelly clayey SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	

Compaction Test Reference/No. _____



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.67

Maximum Dry Density	Mg/m³	1.76
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Optimum Moisture Content	%	14
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	Remarks	
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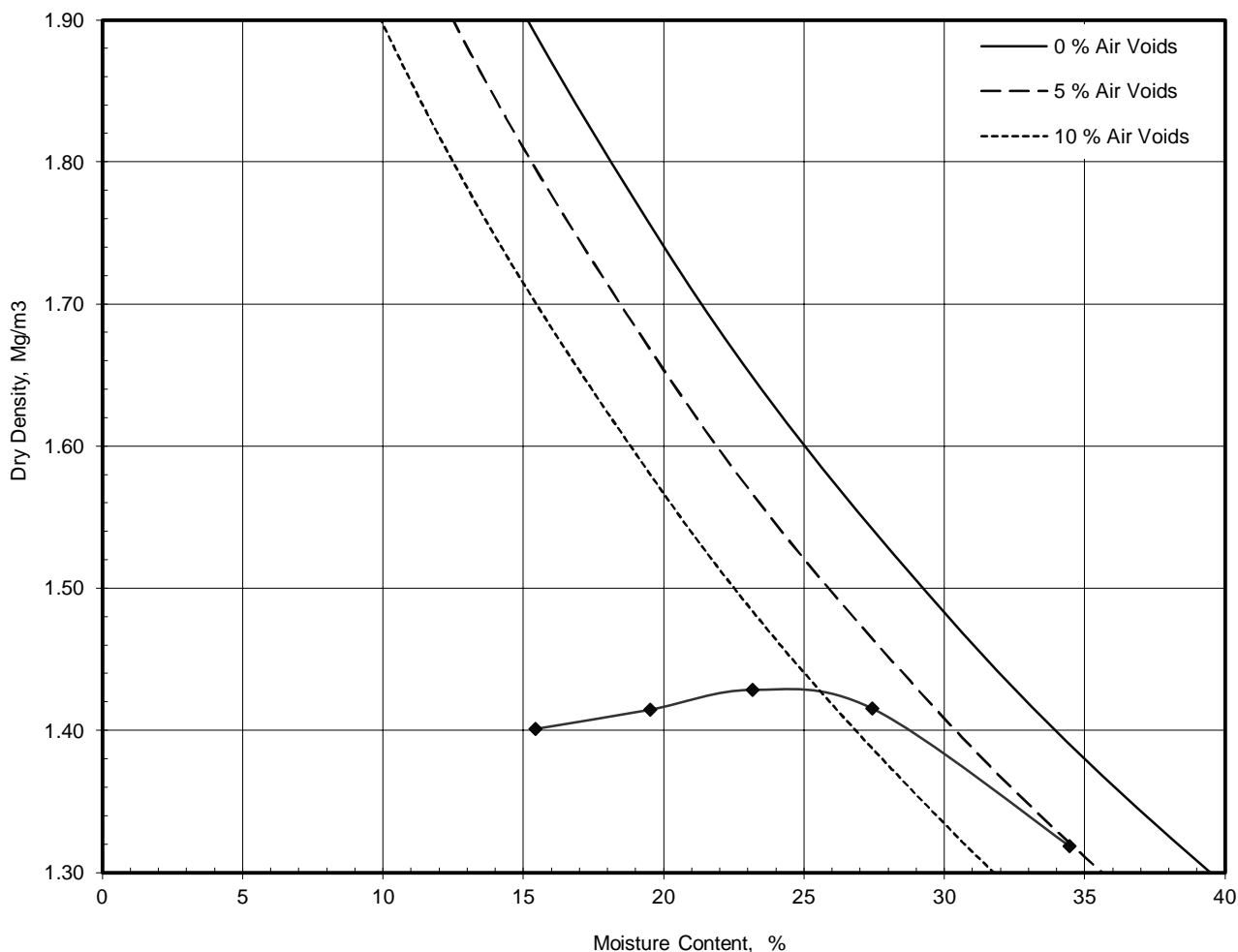


**Dry Density / Moisture Content Relationship
Light Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH06
Sample No	1
Depth	0.20 m
Sample Type	B
Keylab ID	K1101640

Site Name	New Deer 2		
Soil Description	Brown clayey gravelly SAND		
Specimen Ref.	2	Specimen Depth	m
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer		

Compaction Test Reference/No. _____



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	3
Material Retained on 20.0 mm Sieve	%	6
Particle Density - Assumed	Mg/m ³	2.67

Maximum Dry Density	Mg/m ³	1.43
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Optimum Moisture Content	%	24
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Remarks

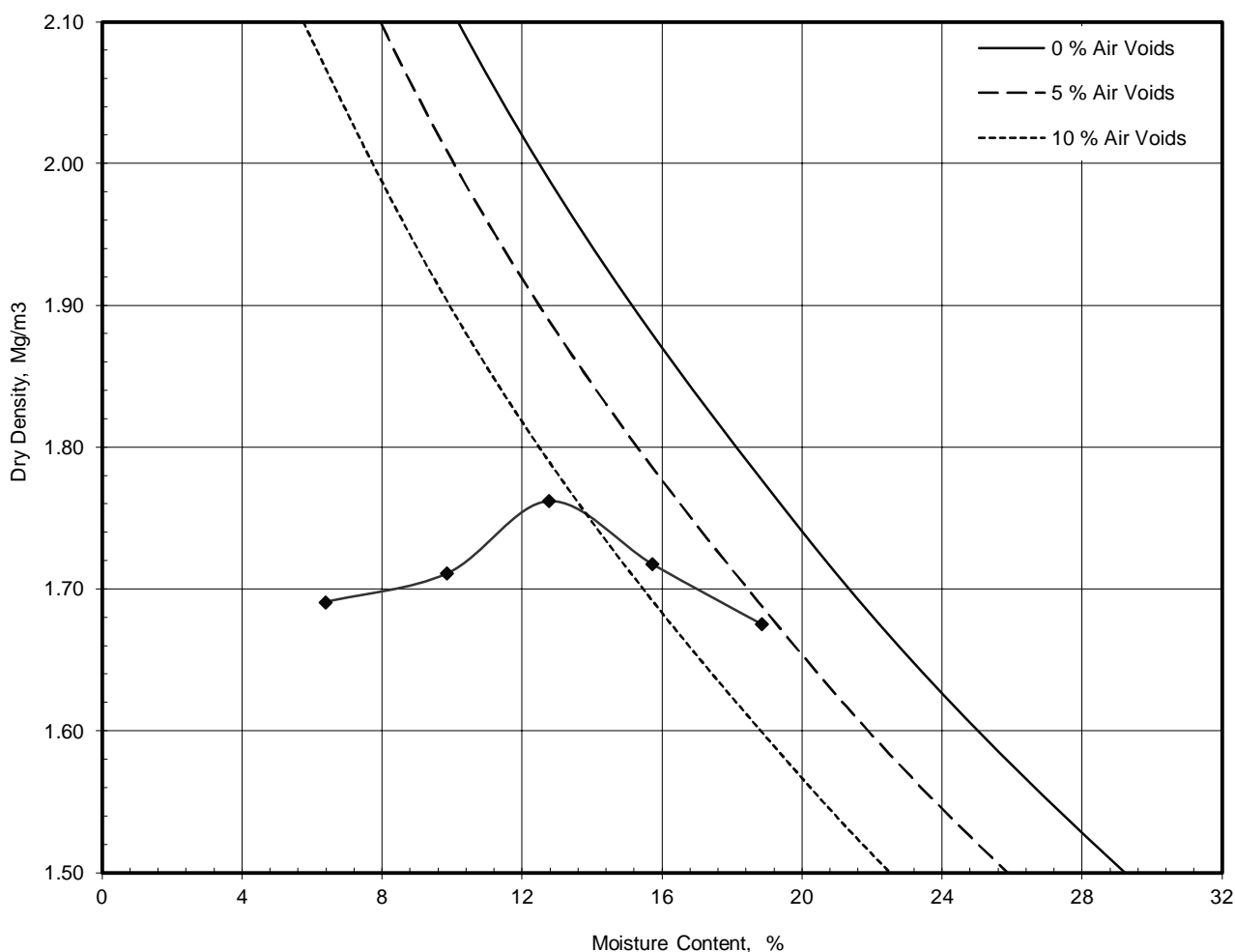


**Dry Density / Moisture Content Relationship
Light Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH08
Sample No	2
Depth	0.50 m
Sample Type	B
Keylab ID	K1101662

Site Name	New Deer 2	
Soil Description	Brown gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	

Compaction Test Reference/No. _____



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m³	2.67

Maximum Dry Density	Mg/m³	1.76
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Optimum Moisture Content	%	13
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Remarks _____

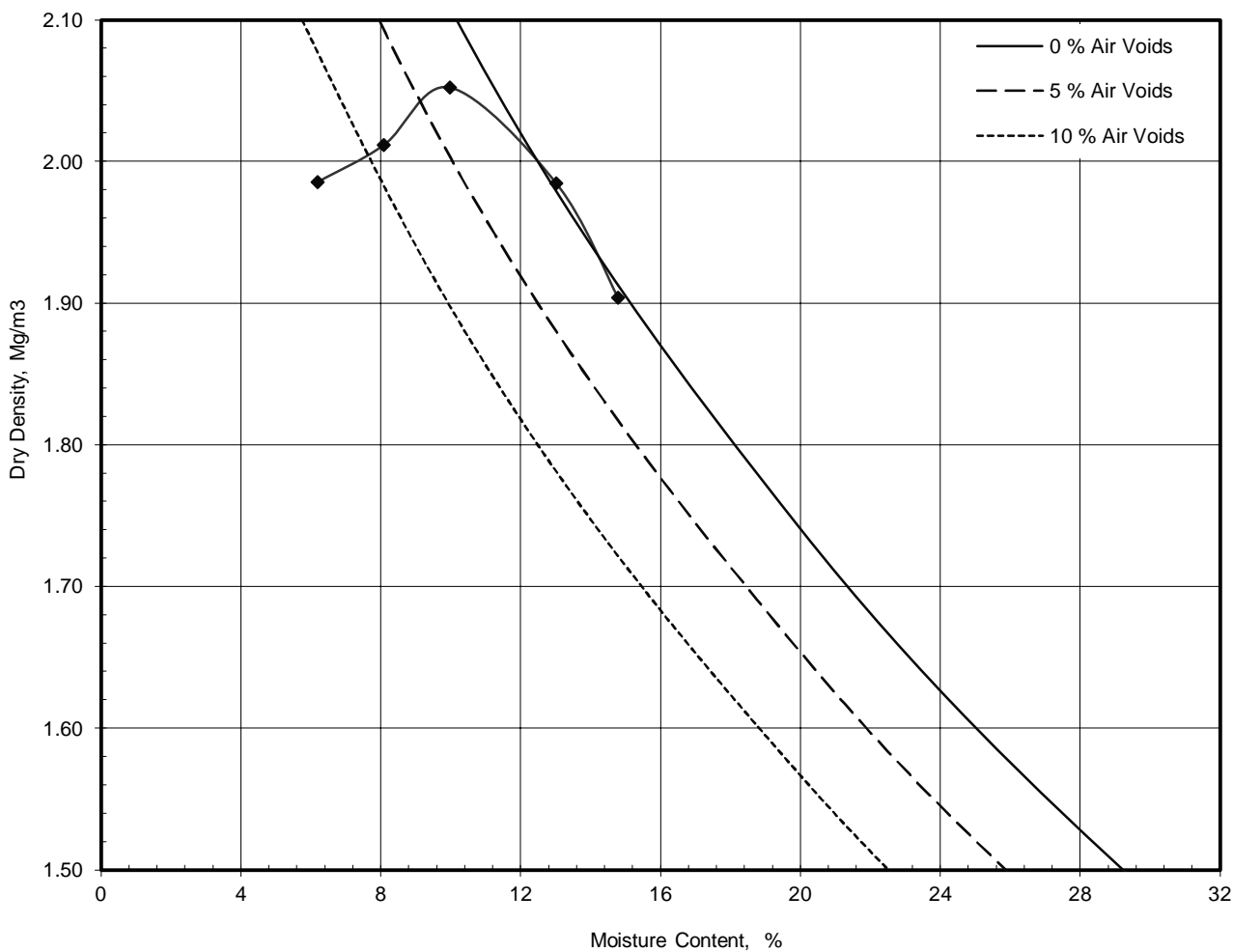


**Dry Density / Moisture Content Relationship
Light Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH10
Sample No	3
Depth	0.90 m
Sample Type	L
Keylab ID	K1099939

Site Name	New Deer 2	
Soil Description	Brown gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer	

Compaction Test Reference/No. _____



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	4
Material Retained on 20.0 mm Sieve	%	22
Particle Density - Assumed	Mg/m³	2.67

Maximum Dry Density	Mg/m³	2.06
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Optimum Moisture Content	%	10
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	Remarks	
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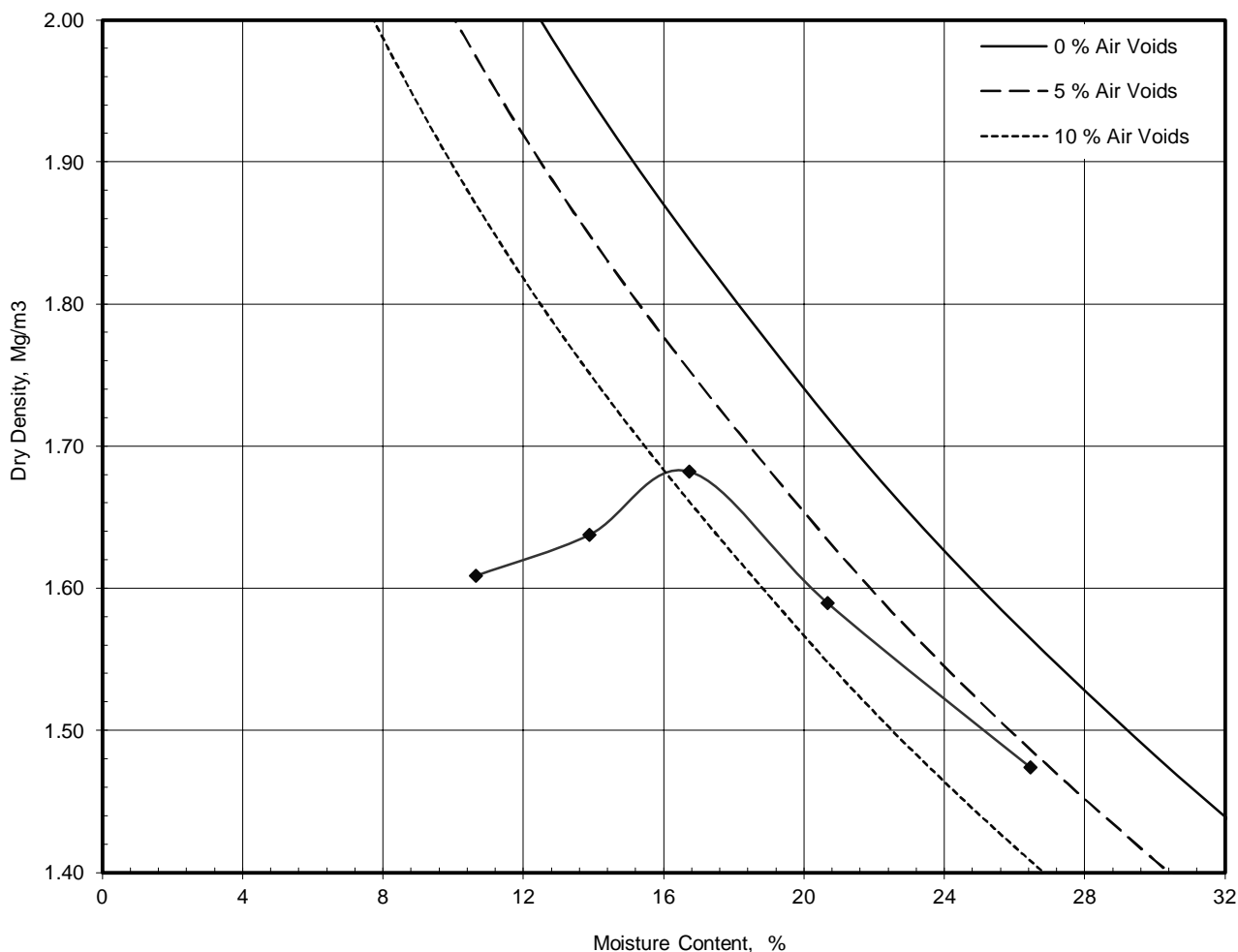


Dry Density / Moisture Content Relationship Light Compaction

Job Ref	RGN.330G
Borehole / Pit No	BH11
Sample No	1
Depth	0.40 m
Sample Type	L
Keylab ID	K099946

Site Name	New Deer 2
Soil Description	Brown gravelly clayey SAND
Specimen Ref.	2
Specimen Depth	m
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer

Compaction Test Reference/No. _____



Preparation	Material used was air dried
Mould Type	1 LITRE
Samples Used	Single sample tested
Material Retained on 37.5 mm Sieve	%
Material Retained on 20.0 mm Sieve	%
Particle Density - Assumed	Mg/m ³

Maximum Dry Density	1.69
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Optimum Moisture Content	16
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	Remarks	
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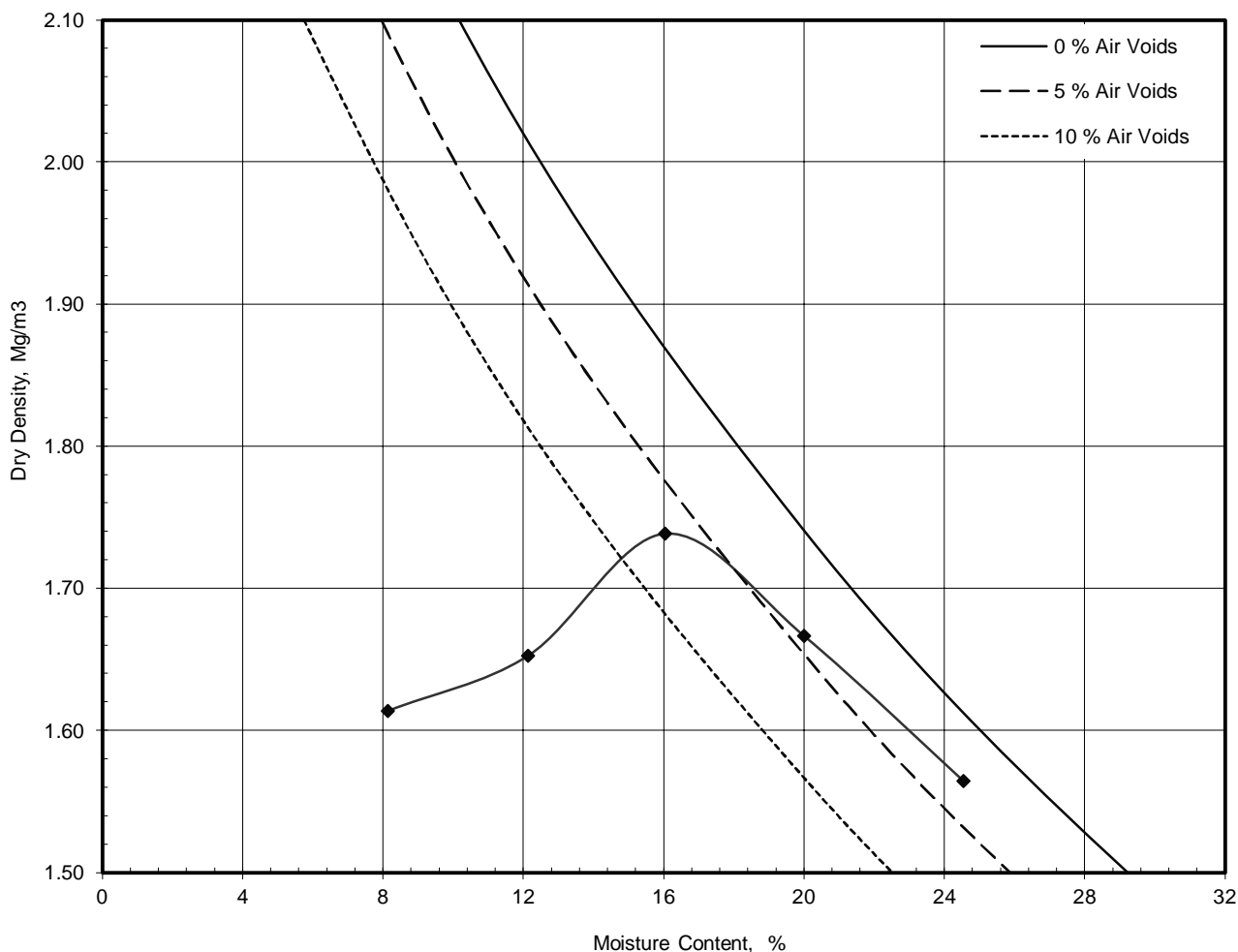


Dry Density / Moisture Content Relationship Light Compaction

Job Ref	RGN.330G
Borehole / Pit No	BH13
Sample No	K1101636
Depth	1.00 m
Sample Type	B
Keylab ID	K1101636

Site Name	New Deer 2	
Soil Description	Brown gravelly sandy CLAY	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	

Compaction Test Reference/No. _____



Preparation	Material used was air dried
Mould Type	1 LITRE
Samples Used	Single sample tested
Material Retained on 37.5 mm Sieve	%
Material Retained on 20.0 mm Sieve	%
Particle Density - Assumed	Mg/m³

Maximum Dry Density	1.74
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Optimum Moisture Content	16
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	Remarks	
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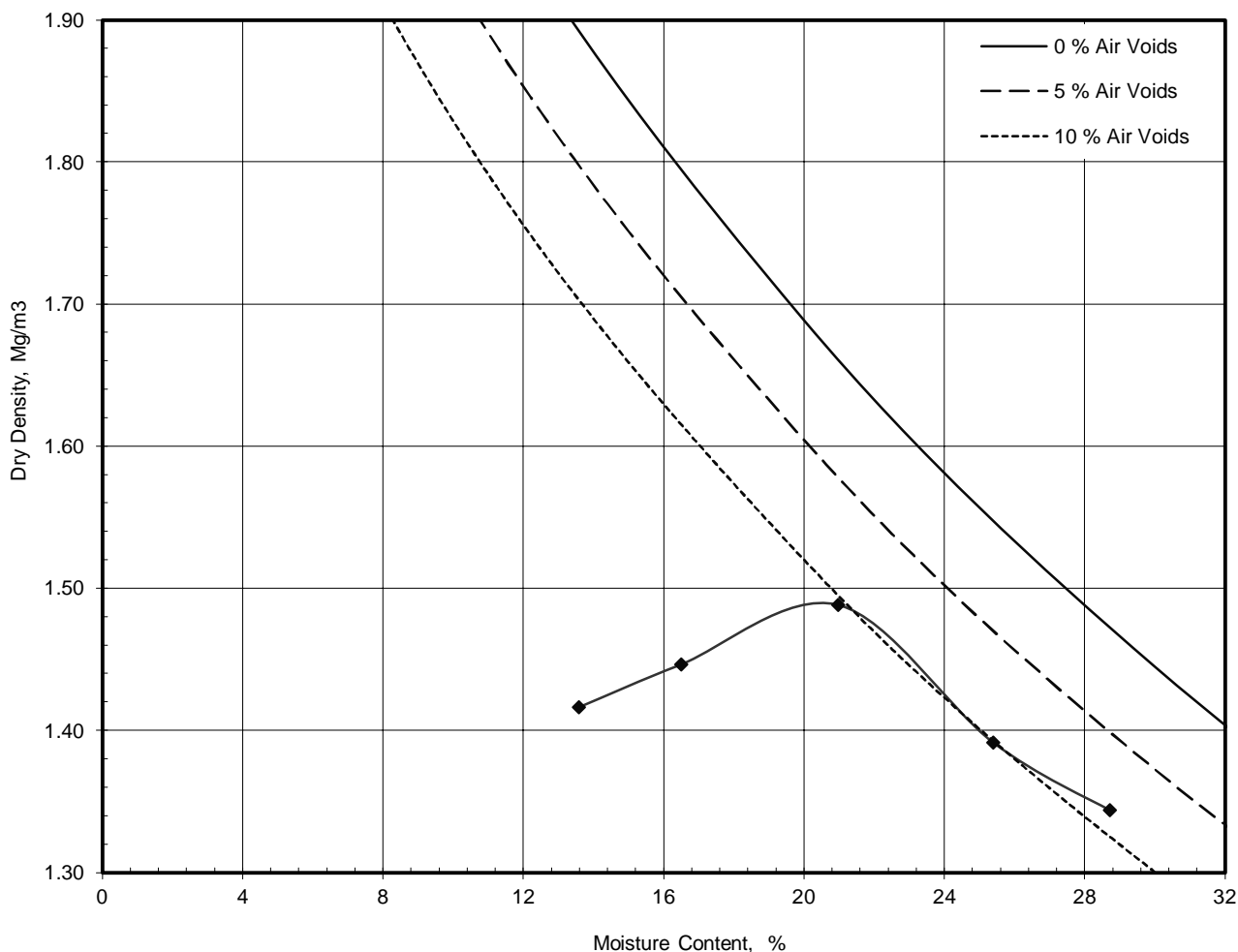


Dry Density / Moisture Content Relationship Light Compaction

Job Ref	RGN.330G
Borehole / Pit No	BH16
Sample No	2
Depth	0.50 m
Sample Type	B
Keylab ID	K1096134

Site Name	New Deer 2	
Soil Description	Grey gravelly sandy CLAY	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	

Compaction Test Reference/No. _____



Preparation	Material used was air dried
Mould Type	1 LITRE
Samples Used	Single sample tested
Material Retained on 37.5 mm Sieve	%
Material Retained on 20.0 mm Sieve	%
Particle Density - Assumed	Mg/m³

Maximum Dry Density	1.49
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Optimum Moisture Content	20
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	Remarks	
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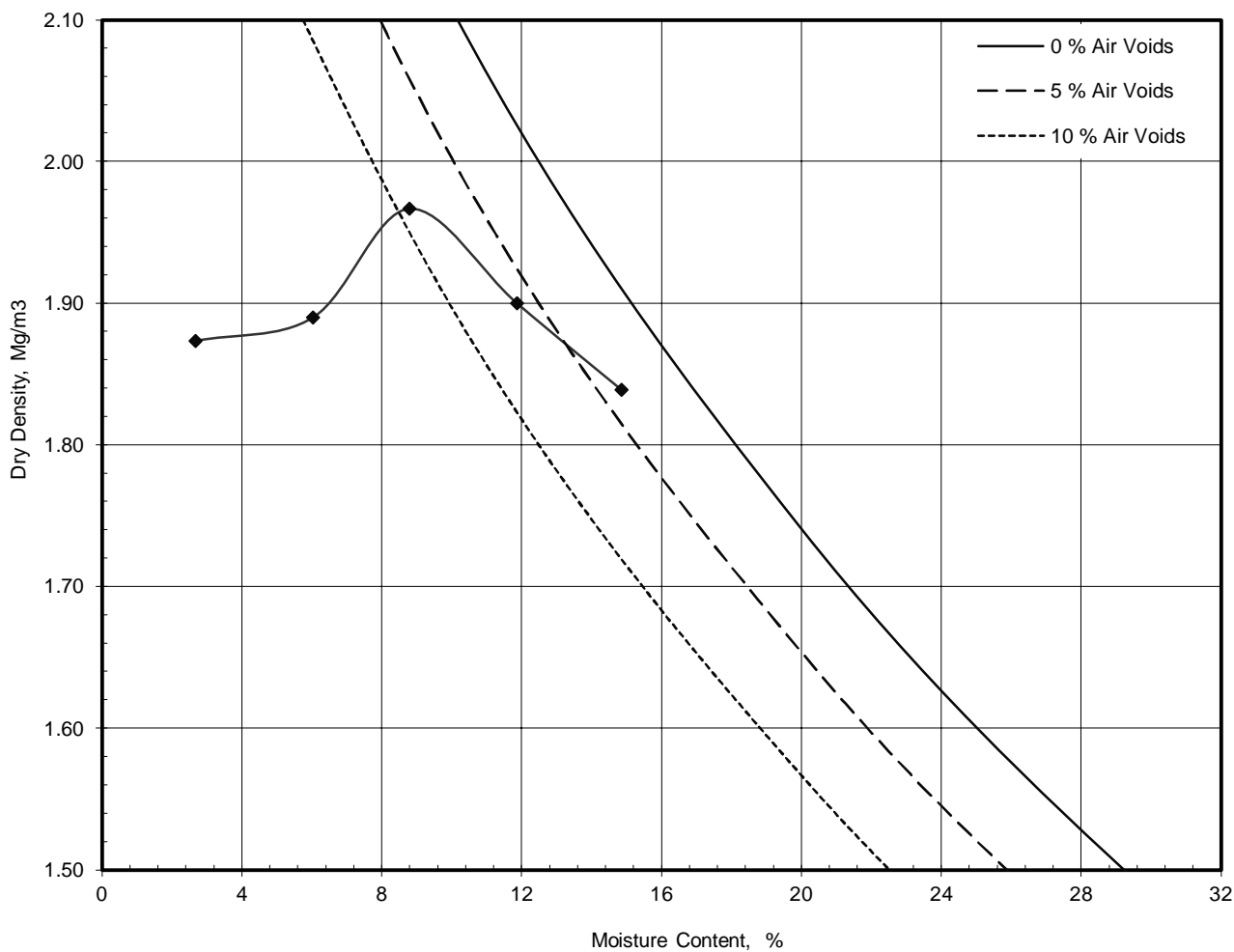


Dry Density / Moisture Content Relationship Light Compaction

Job Ref	RGN.330G
Borehole / Pit No	TP09
Sample No	8
Depth	1.50 m
Sample Type	LB
Keylab ID	K1103053

Site Name	New Deer 2	
Soil Description	Brown clayey gravelly SAND	
Specimen Ref.	3	Specimen Depth
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	

Compaction Test Reference/No. _____



Preparation	Material used was air dried
Mould Type	1 LITRE
Samples Used	Single sample tested
Material Retained on 37.5 mm Sieve	%
Material Retained on 20.0 mm Sieve	%
Particle Density - Assumed	Mg/m³

Maximum Dry Density	Mg/m³	1.97
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Optimum Moisture Content	%	8.8
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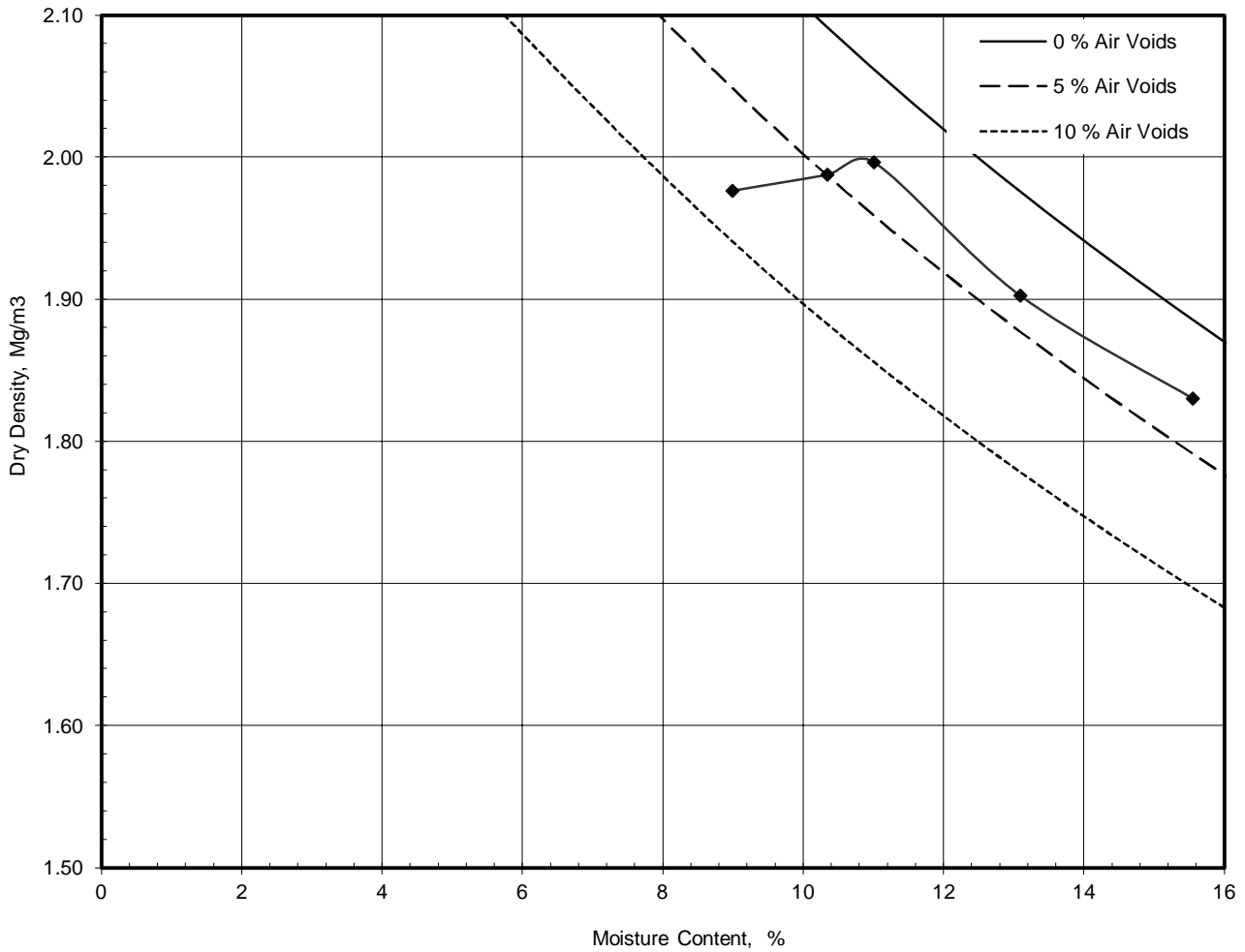
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP04
Sample No	9
Depth	1.50 m
Sample Type	LB
Keylab ID	K1102371
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown clayey gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	4
Material Retained on 20.0 mm Sieve	%	8
Particle Density - Assumed	Mg/m ³	2.67

Maximum Dry Density	Mg/m ³	2.00
Optimum Moisture Content	%	11

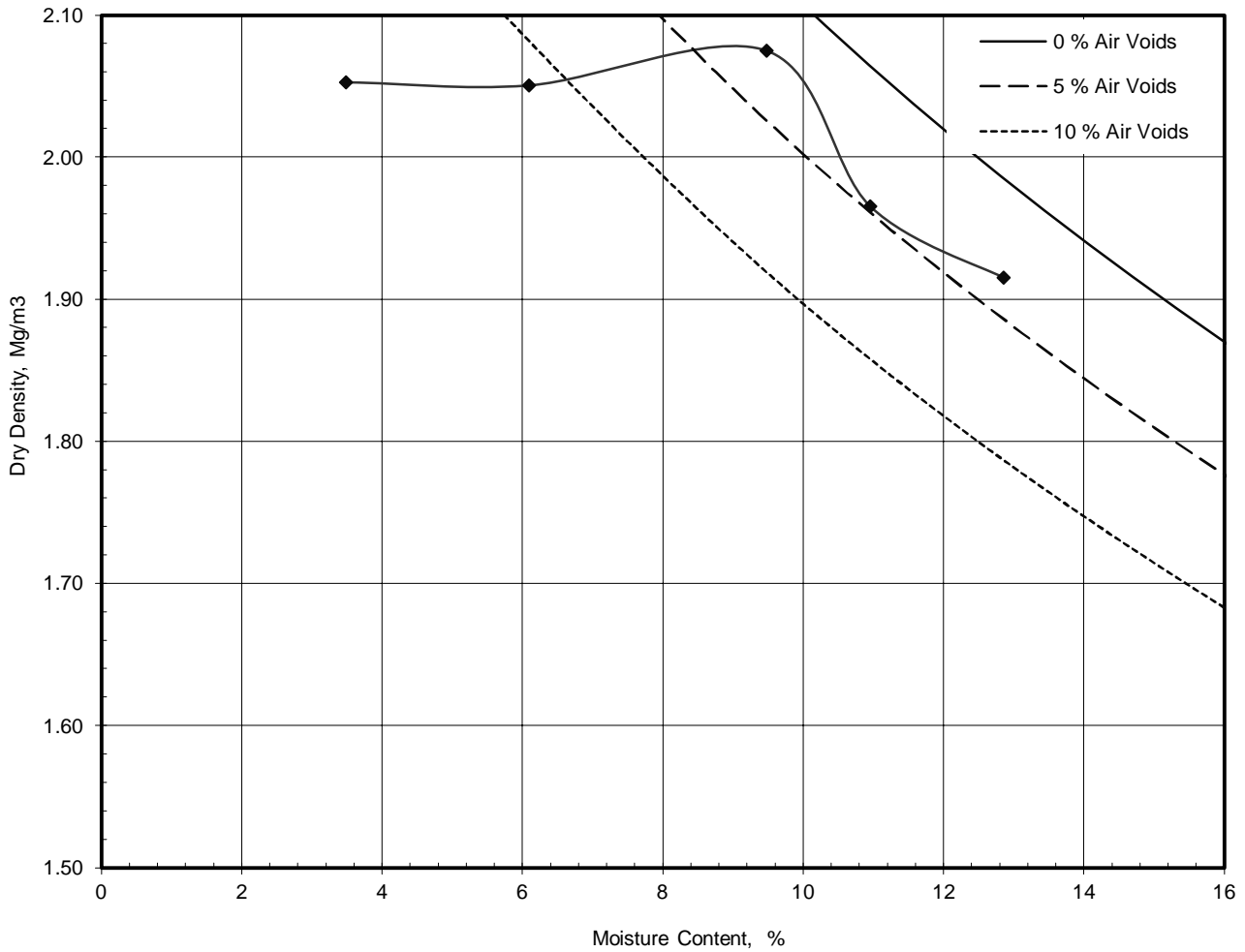
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP06
Sample No	5
Depth	1.50 m
Sample Type	LB
Keylab ID	K1103010
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown clayey gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m ³	2.67

Maximum Dry Density	Mg/m ³	2.08
Optimum Moisture Content	%	9.1

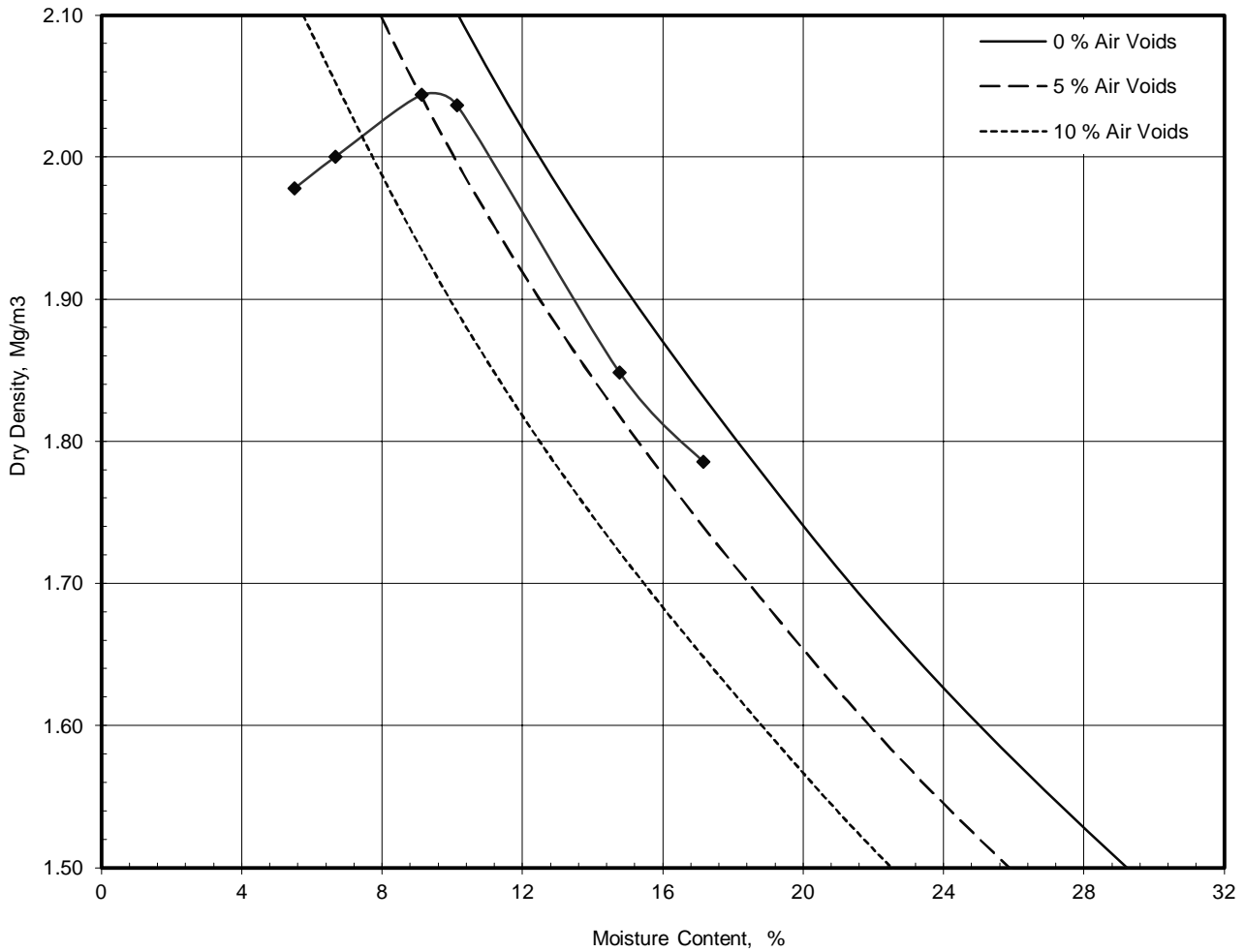
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP08
Sample No	6
Depth	1.50 m
Sample Type	LB
Keylab ID	K1103038
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	6
Material Retained on 20.0 mm Sieve	%	18
Particle Density - Assumed	Mg/m³	2.67
Maximum Dry Density	Mg/m³	2.05
Optimum Moisture Content	%	9.6

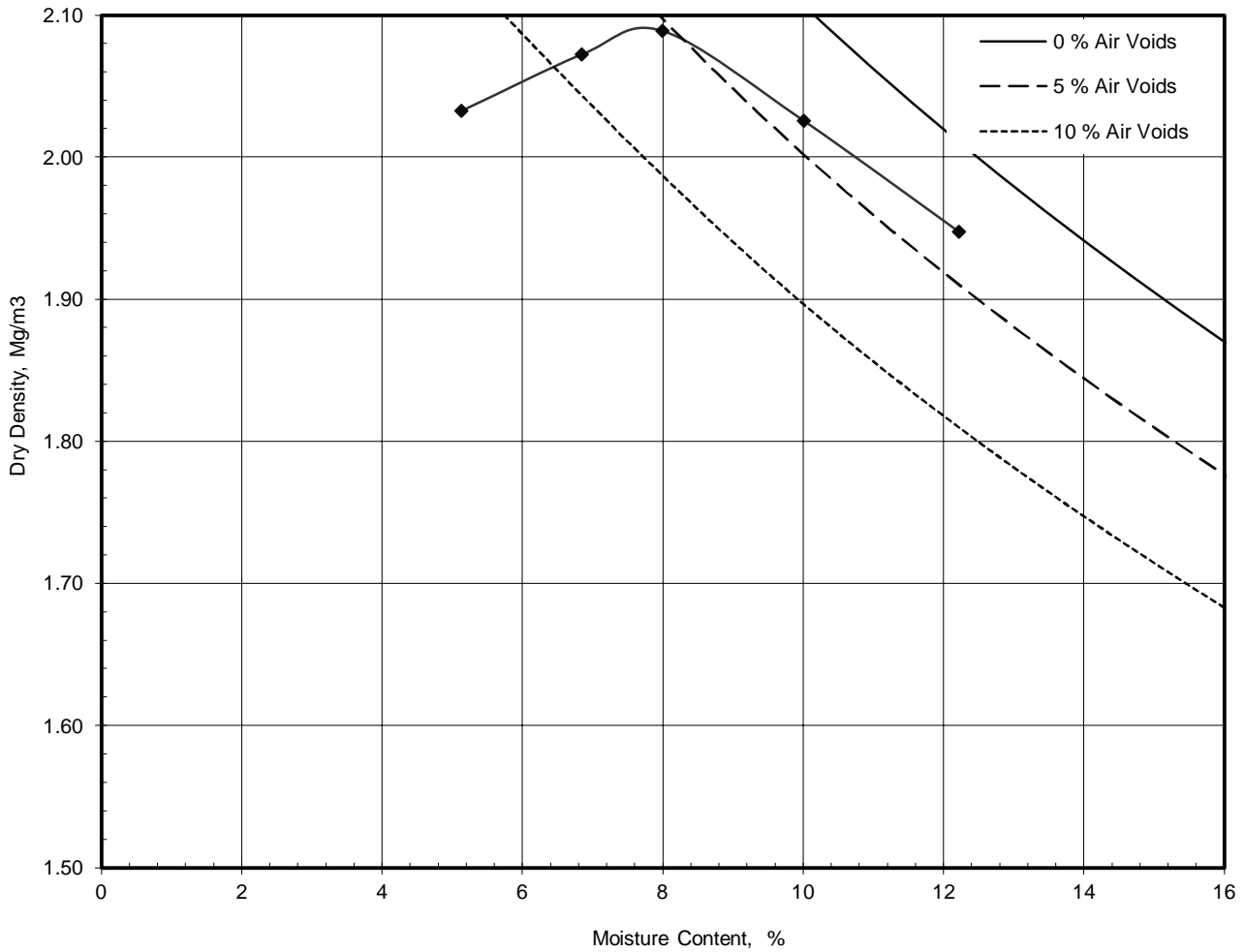
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP11
Sample No	5
Depth	1.00 m
Sample Type	LB
Keylab ID	K1086073
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown sandy silty GRAVEL	
Specimen Ref.	3	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	3
Material Retained on 20.0 mm Sieve	%	20
Particle Density - Assumed	Mg/m ³	2.67
Maximum Dry Density	Mg/m ³	2.09
Optimum Moisture Content	%	7.8

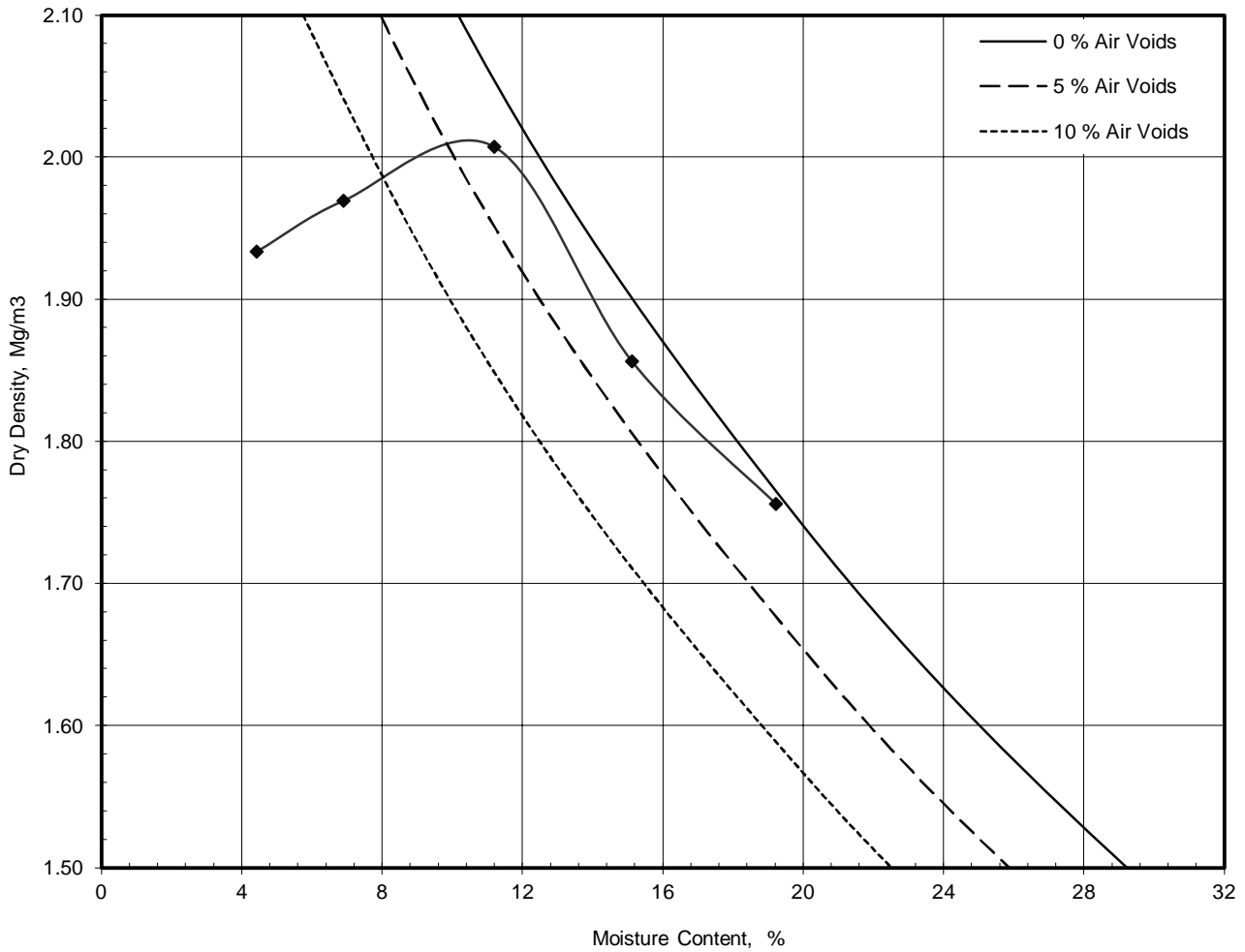
Remarks



Dry Density / Moisture Content Relationship Heavy Compaction

Job Ref	RGN.330G
Borehole / Pit No	TP14
Sample No	9
Depth	1.00 m
Sample Type	LB
Keylab ID	K1093427
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown clayey gravelly SAND	
Specimen Ref.	2	Specimen Depth
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	9
Material Retained on 20.0 mm Sieve	%	18
Particle Density - Assumed	Mg/m³	2.67
Maximum Dry Density	Mg/m³	2.01
Optimum Moisture Content	%	11

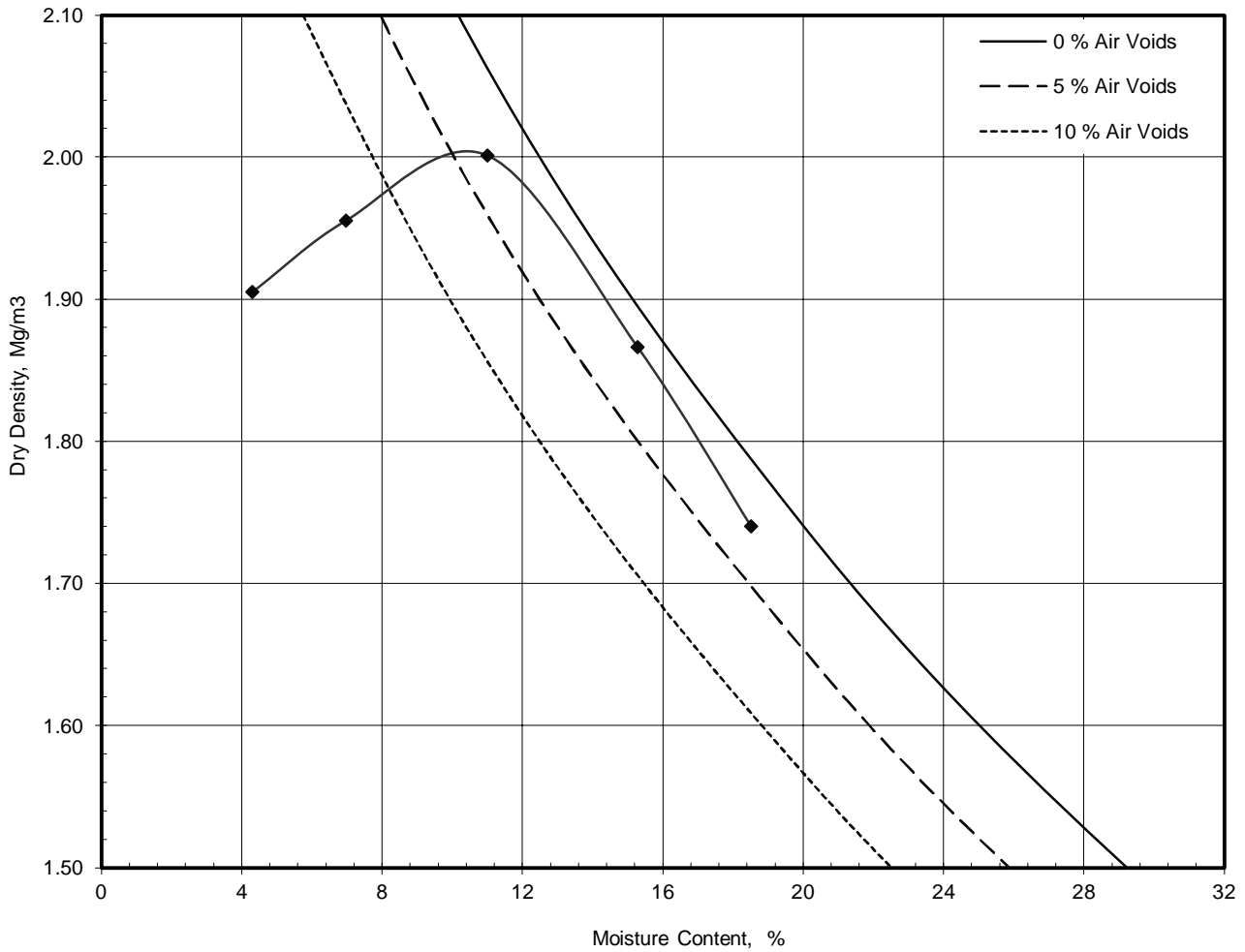
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP16
Sample No	5
Depth	1.00 m
Sample Type	LB
Keylab ID	K1102305
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown silty SAND & GRAVEL	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	3
Material Retained on 20.0 mm Sieve	%	6
Particle Density - Assumed	Mg/m³	2.67
Maximum Dry Density	Mg/m³	2.01
Optimum Moisture Content	%	11

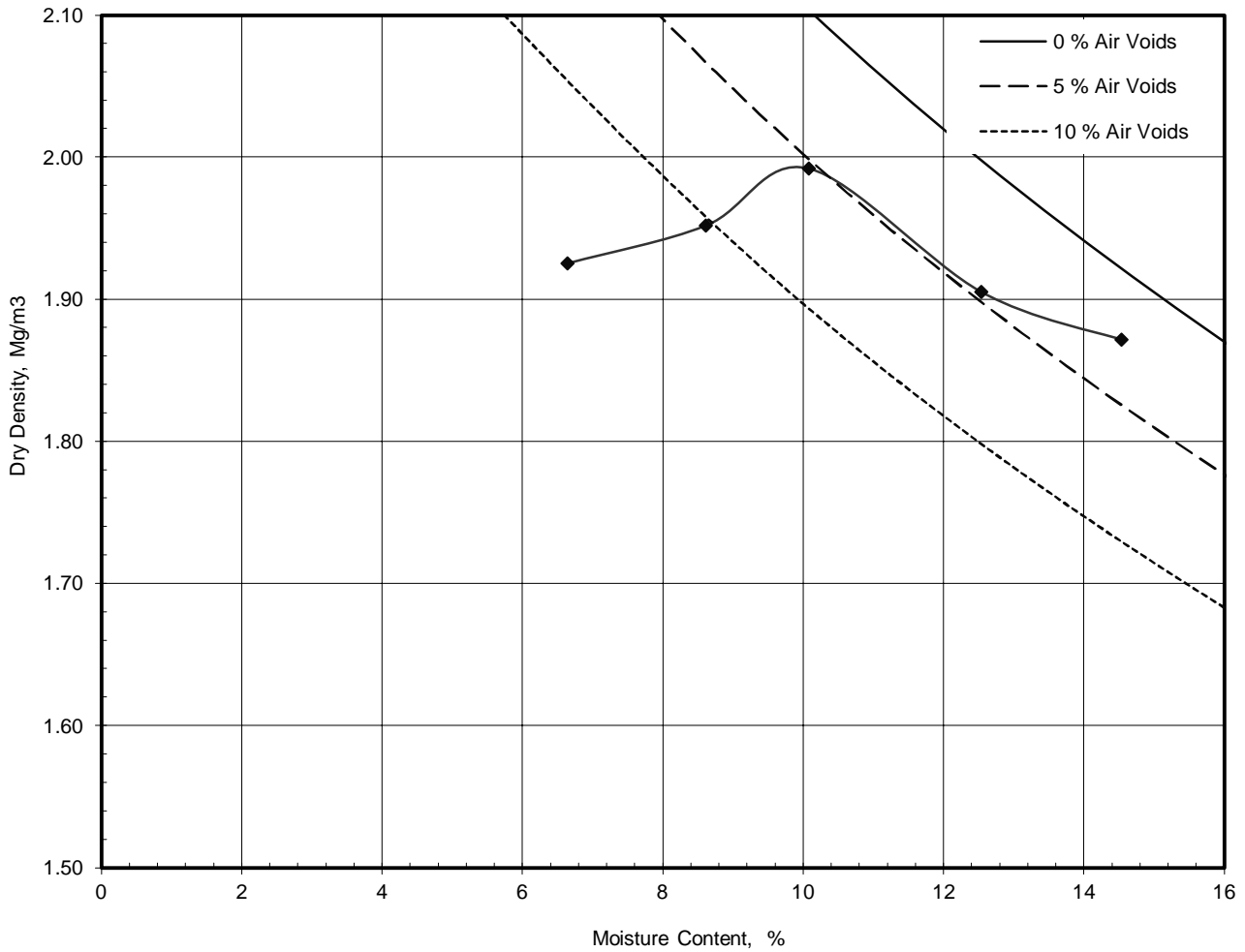
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP17
Sample No	9
Depth	1.00 m
Sample Type	LB
Keylab ID	K1102318
Compaaction Test Reference/No.	

Site Name	New Deer 2		
Soil Description	Brown sandy silty GRAVEL with cobble		
Specimen Ref.	3	Specimen Depth	m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer		



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	2
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m ³	2.67
Maximum Dry Density	Mg/m ³	2.00
Optimum Moisture Content	%	9.9

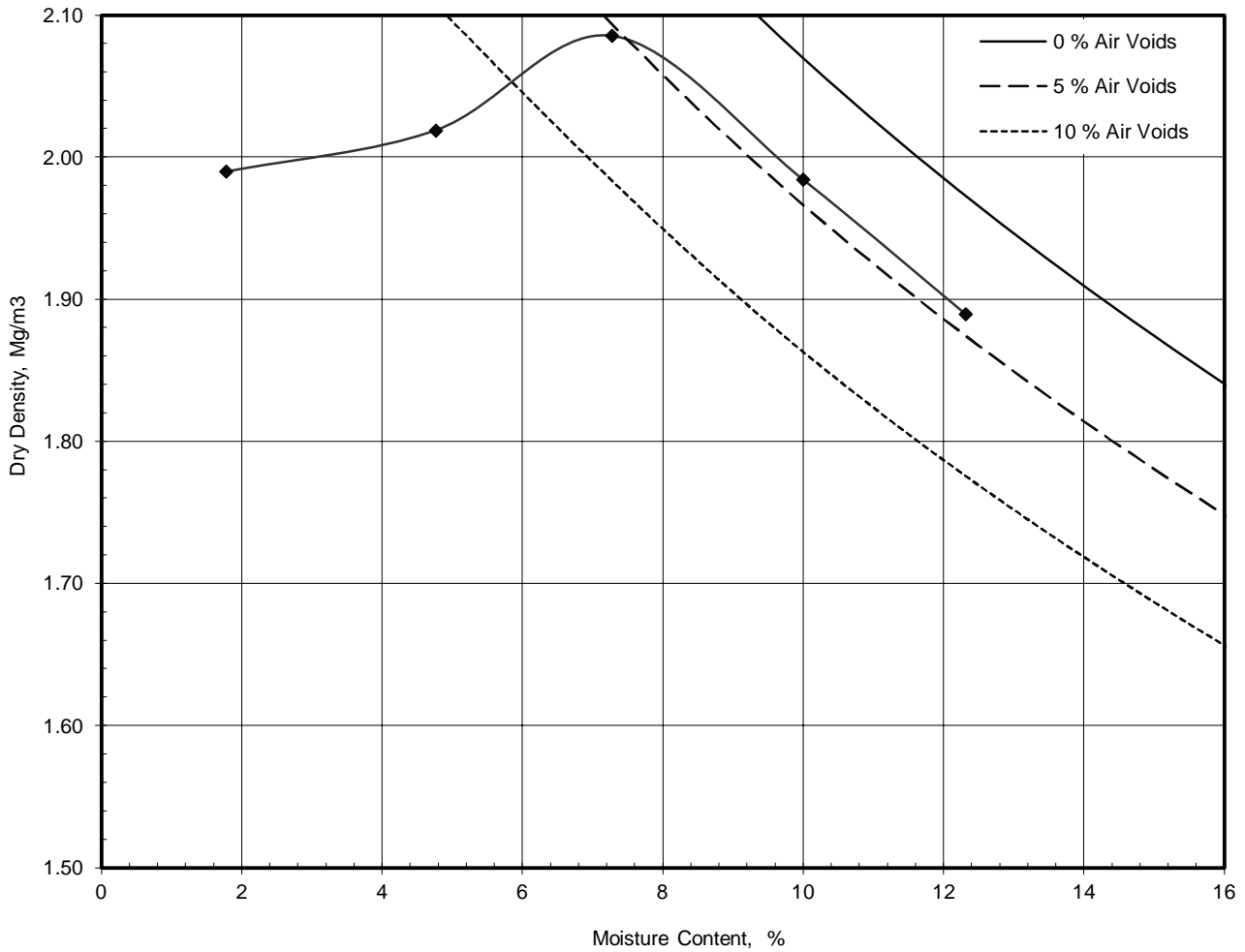
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH08
Sample No	4
Depth	1.00 m
Sample Type	B
Keylab ID	K1101664
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown silty gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m ³	2.61
Maximum Dry Density	Mg/m ³	2.09
Optimum Moisture Content	%	7.3

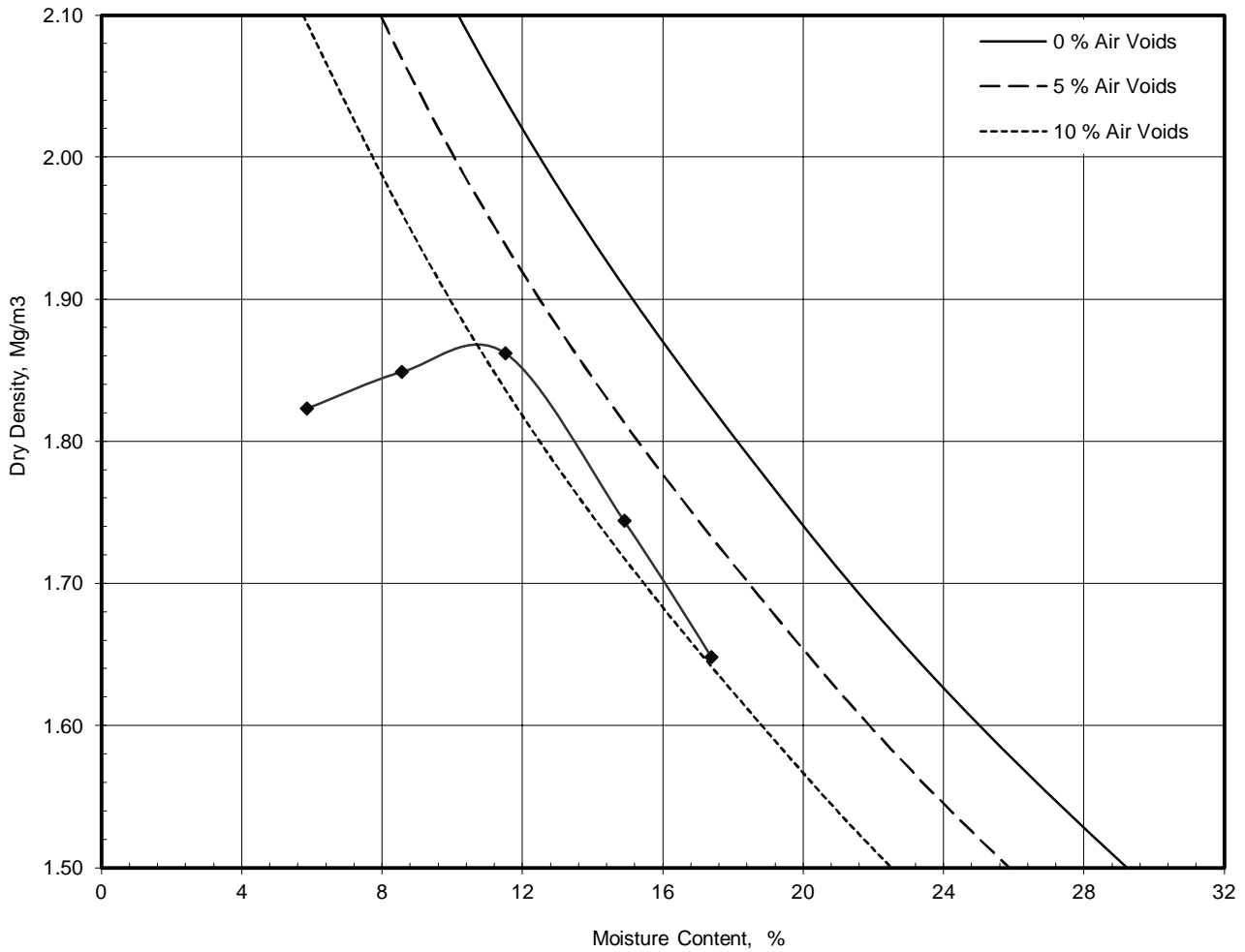
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH09
Sample No	2
Depth	0.50 m
Sample Type	B
Keylab ID	K1101656
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown gravelly clayey SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m ³	2.67
Maximum Dry Density	Mg/m ³	1.87
Optimum Moisture Content	%	11

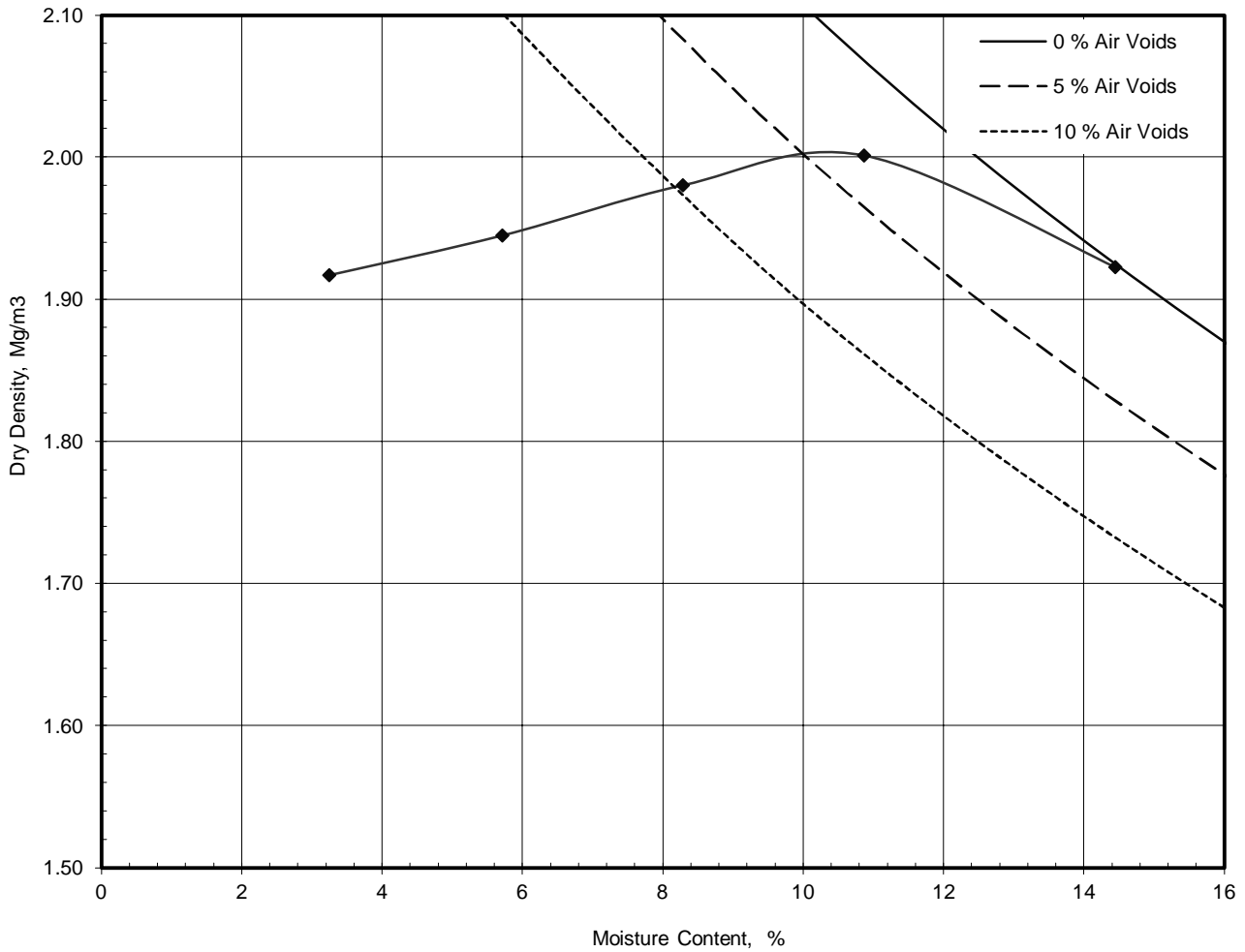
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH15
Sample No	3
Depth	0.70 m
Sample Type	L
Keylab ID	K1099944
Compaction Test Reference/No.	

Site Name	New Deer 2		
Soil Description	Brown gravelly clayey SAND		
Specimen Ref.	2	Specimen Depth	m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer		



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	20
Material Retained on 20.0 mm Sieve	%	37
Particle Density - Assumed	Mg/m ³	2.67

Maximum Dry Density	Mg/m ³	2.01
Optimum Moisture Content	%	10

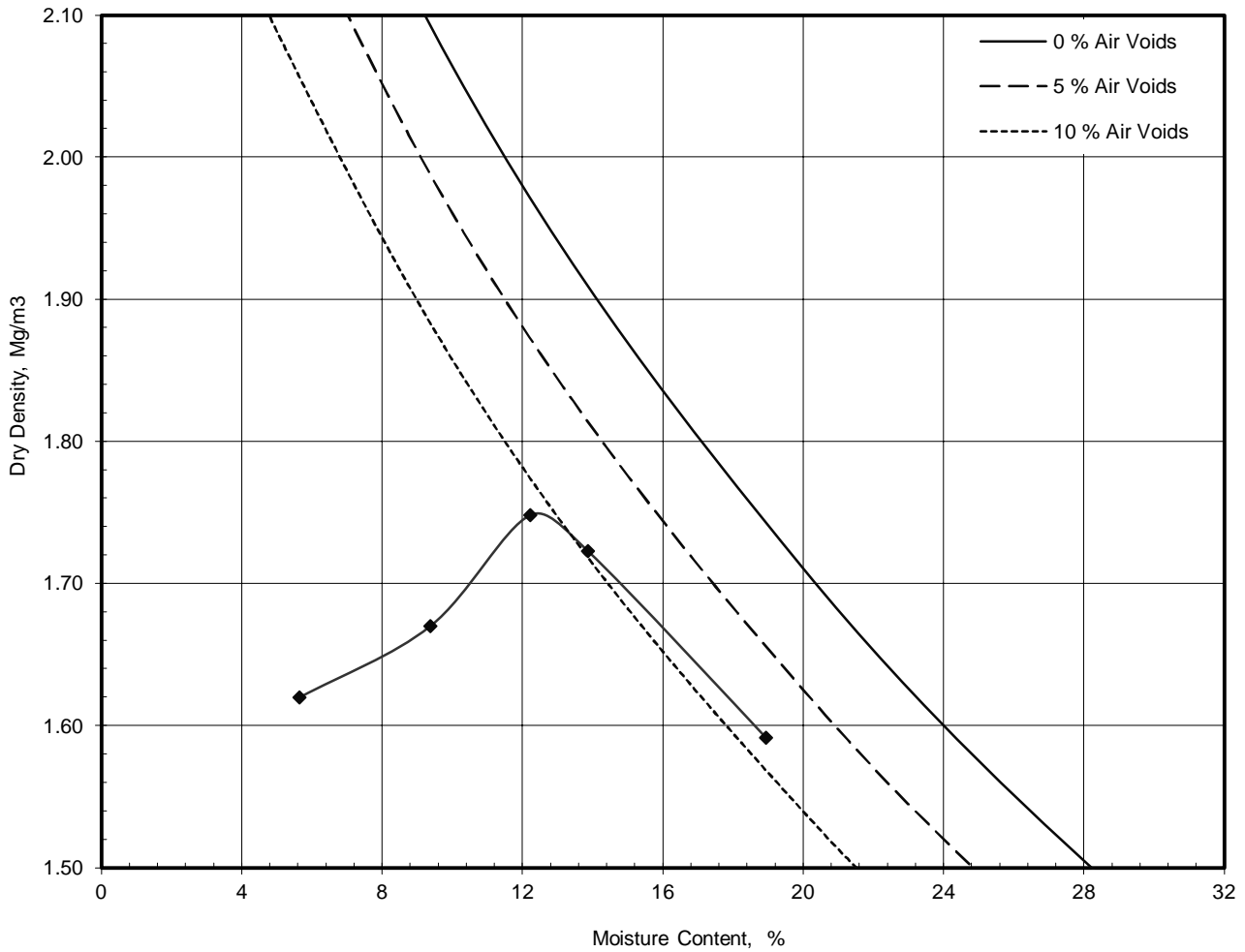
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH18
Sample No	1
Depth	0.50 m
Sample Type	B
Keylab ID	K1102566
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown gravelly sandy silty CLAY	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m ³	2.60
Maximum Dry Density	Mg/m ³	1.75
Optimum Moisture Content	%	12

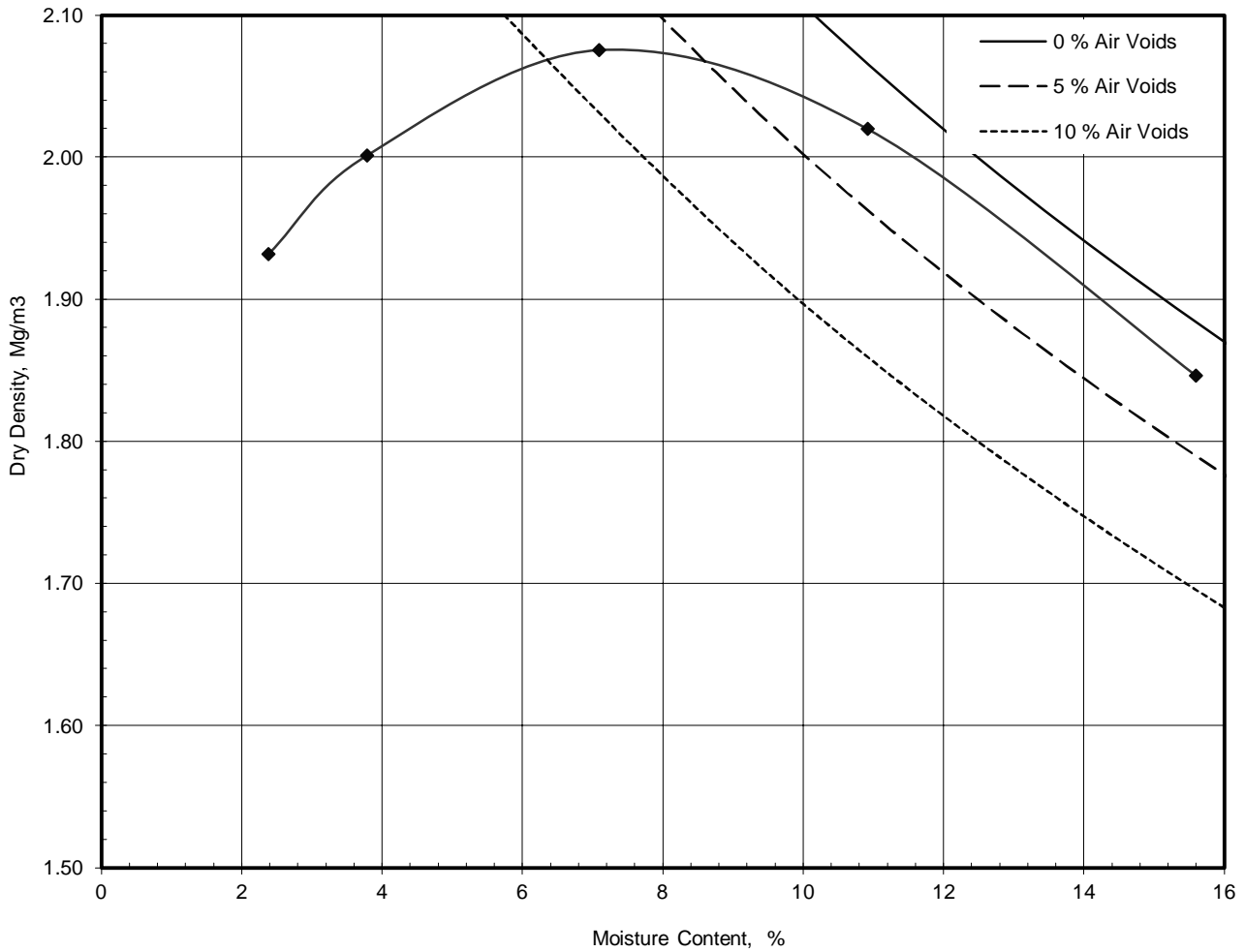
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH22
Sample No	3
Depth	1.00 m
Sample Type	B
Keylab ID	K109984
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown clayey gravelly SAND + cobble	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	27
Material Retained on 20.0 mm Sieve	%	34
Particle Density - Assumed	Mg/m ³	2.67
Maximum Dry Density	Mg/m ³	2.08
Optimum Moisture Content	%	7.3

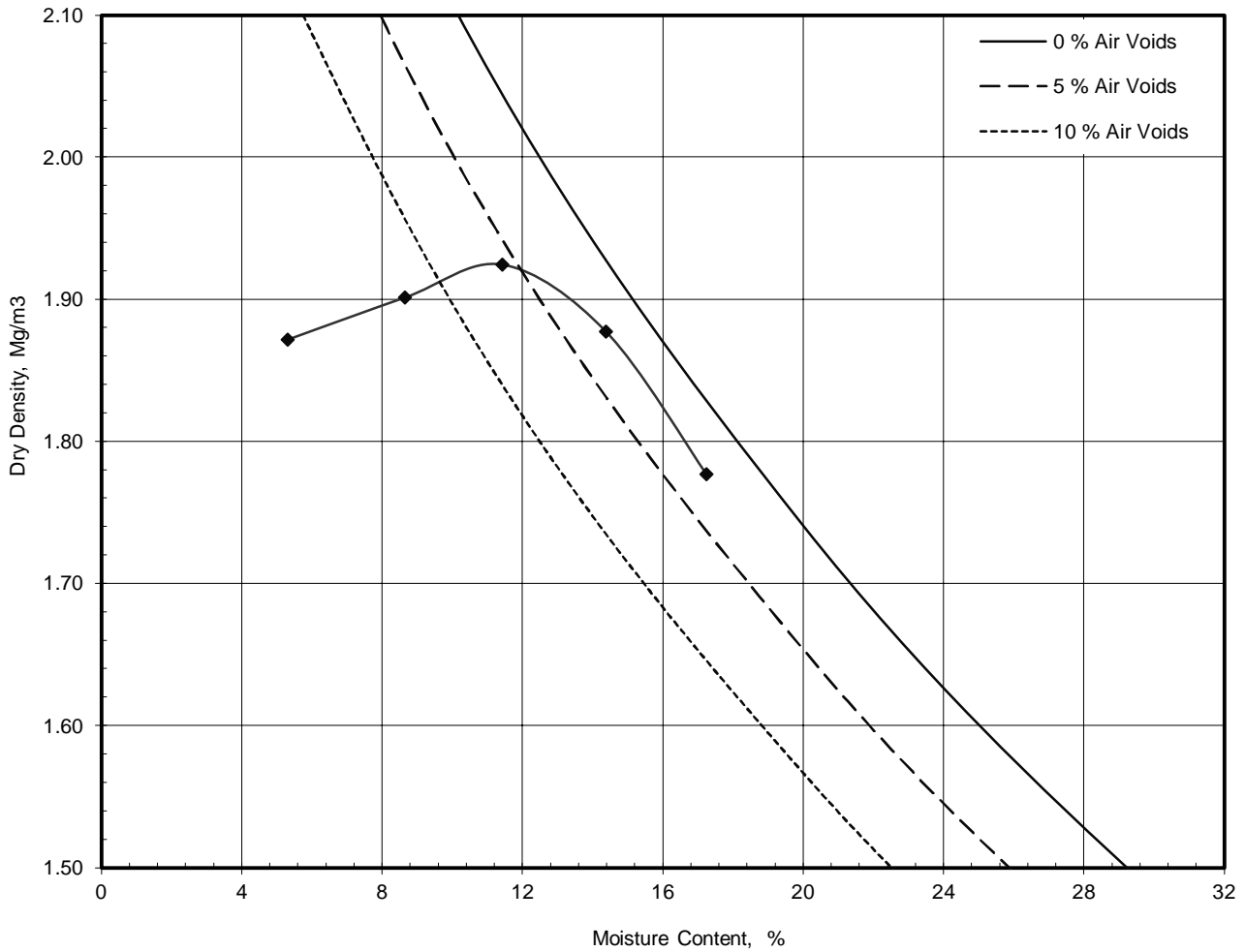
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH23
Sample No	3
Depth	0.90 m
Sample Type	L
Keylab ID	K1099878
Compaction Test Reference/No.	

Site Name	New Deer 2		
Soil Description	Brown gravelly clayey silty SAND		
Specimen Ref.	2	Specimen Depth	m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer		



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	3
Material Retained on 20.0 mm Sieve	%	8
Particle Density - Assumed	Mg/m³	2.67
Maximum Dry Density	Mg/m³	1.93
Optimum Moisture Content	%	11

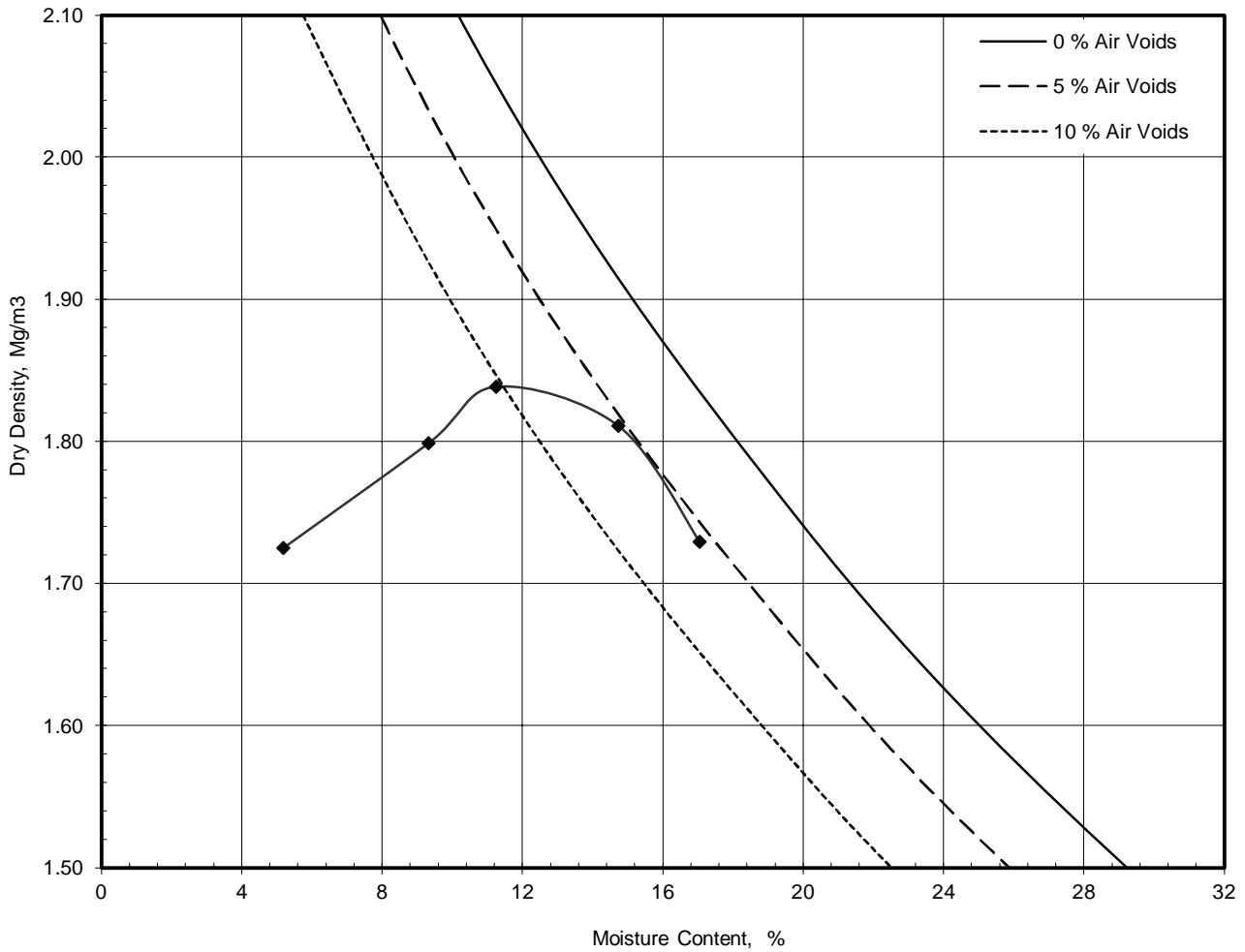
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH24
Sample No	3
Depth	2.00 m
Sample Type	L
Keylab ID	K1099915
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown sandy SILT	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.67

Maximum Dry Density	Mg/m³	1.84
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Optimum Moisture Content	%	11
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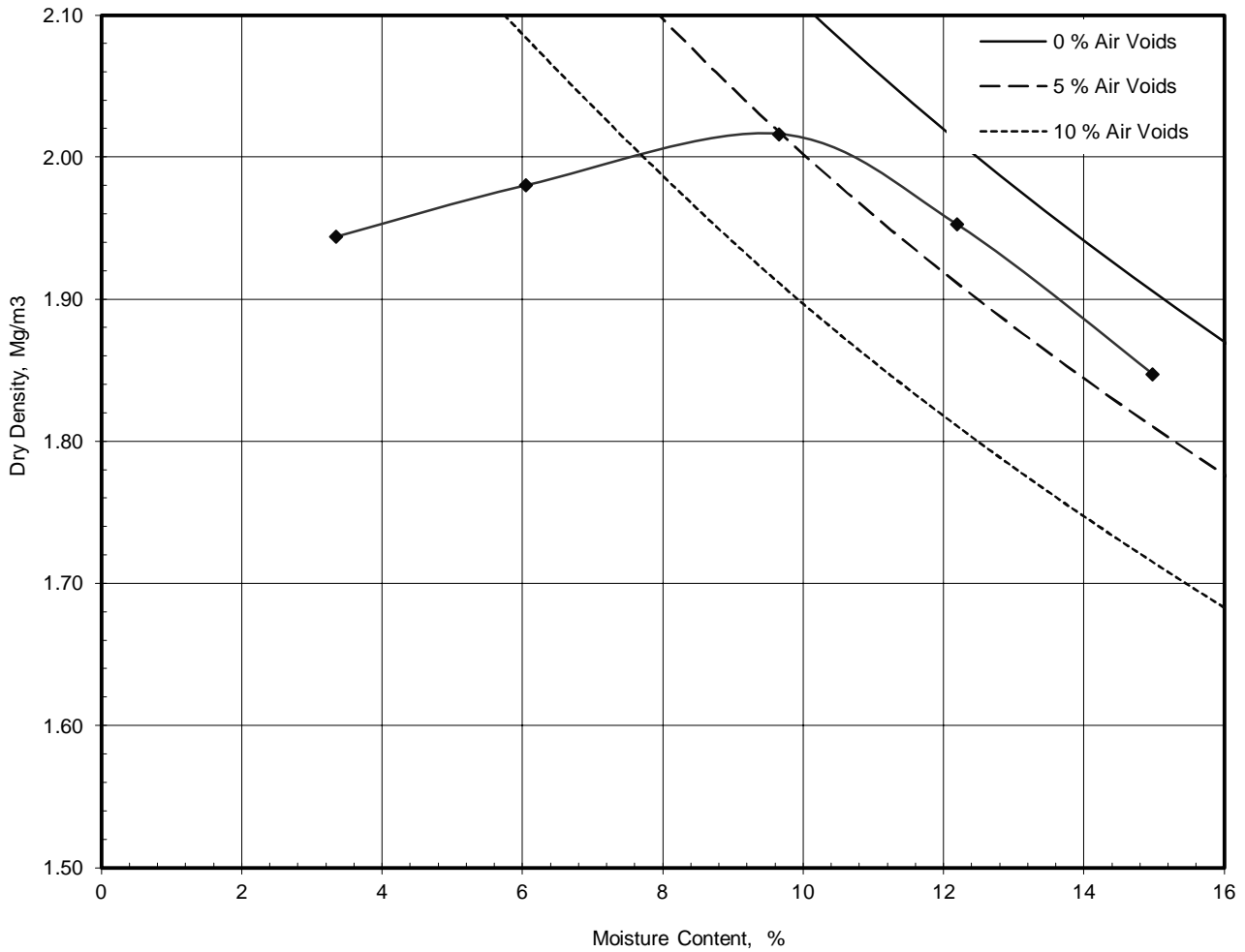
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH25
Sample No	8
Depth	5.50 m
Sample Type	L
Keylab ID	K1093883
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown clayey gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m ³	2.67

Maximum Dry Density	Mg/m ³	2.02
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Optimum Moisture Content	%	9.7
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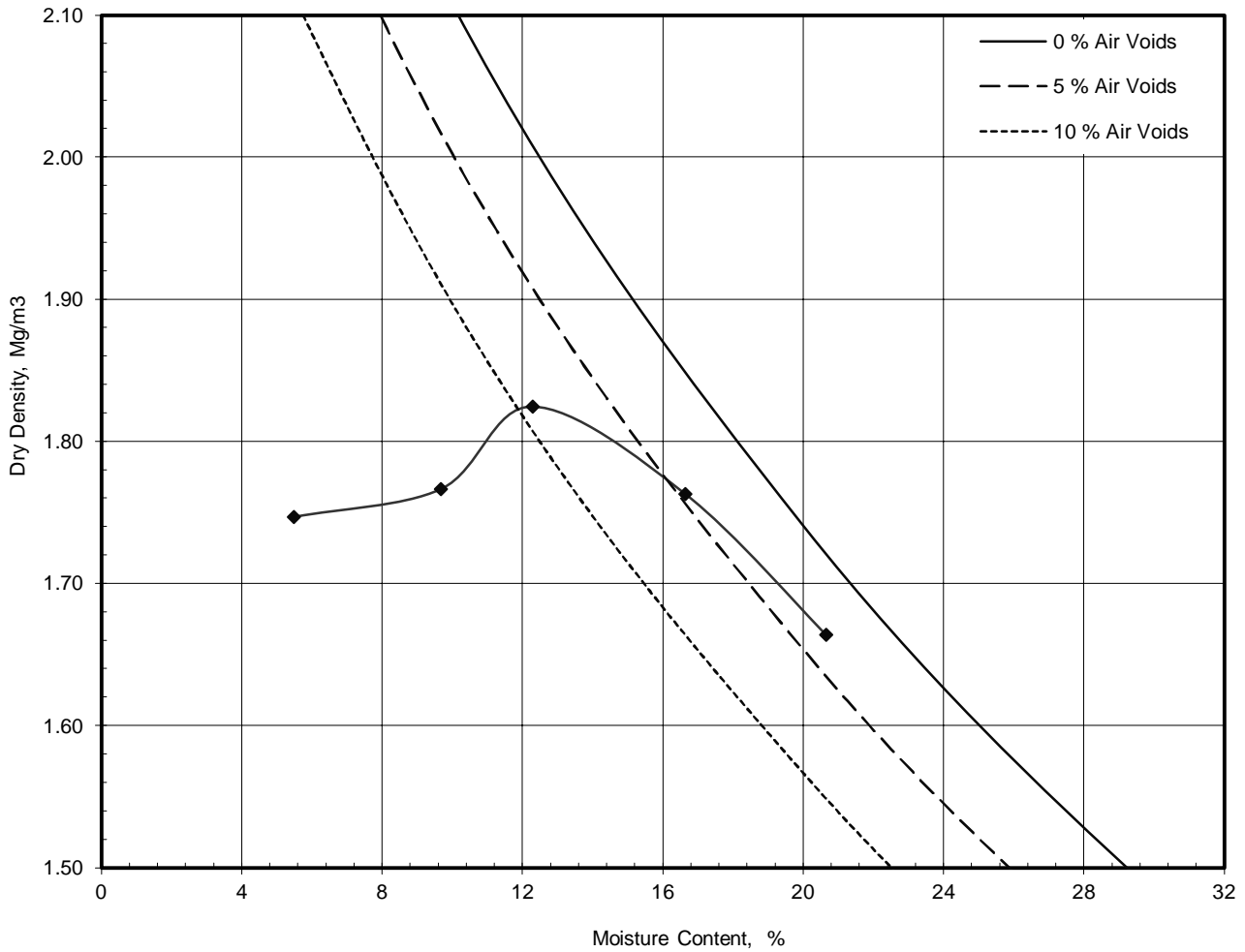
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	BH26
Sample No	3
Depth	0.90 m
Sample Type	L
Keylab ID	K1100737
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown gravelly clayey SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	3
Material Retained on 20.0 mm Sieve	%	14
Particle Density - Assumed	Mg/m³	2.67
Maximum Dry Density	Mg/m³	1.83
Optimum Moisture Content	%	12

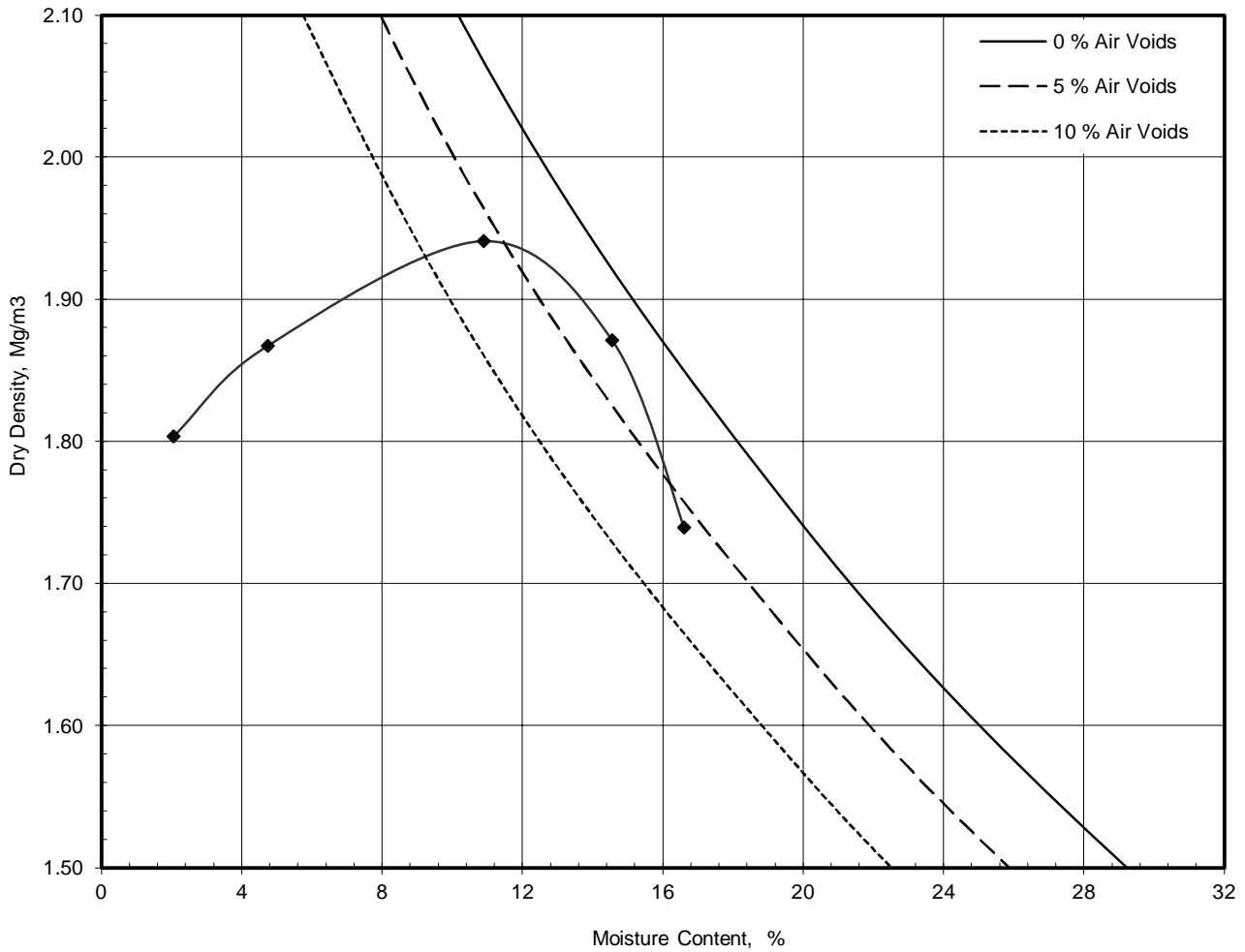
Remarks



Dry Density / Moisture Content Relationship Heavy Compaction

Job Ref	RGN.330G
Borehole / Pit No	TP30
Sample No	4
Depth	1.00 m
Sample Type	B
Keylab ID	K1102829
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	14
Material Retained on 20.0 mm Sieve	%	28
Particle Density - Assumed	Mg/m³	2.67
Maximum Dry Density	Mg/m³	1.94
Optimum Moisture Content	%	11

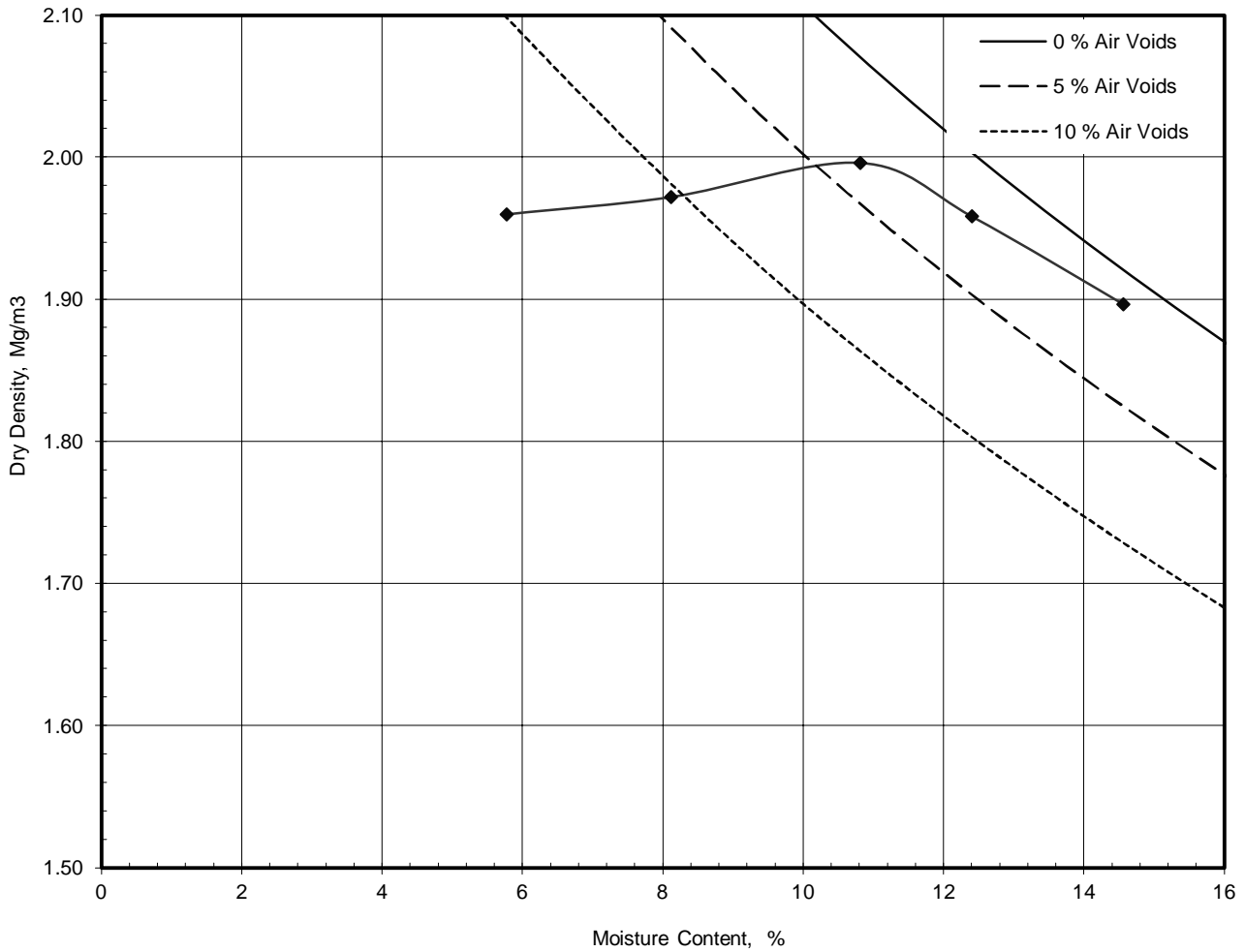
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP30
Sample No	8
Depth	3.00 m
Sample Type	B
Keylab ID	K1102833
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	8
Material Retained on 20.0 mm Sieve	%	23
Particle Density - Assumed	Mg/m³	2.67

Maximum Dry Density	Mg/m³	2.00
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Optimum Moisture Content	%	11
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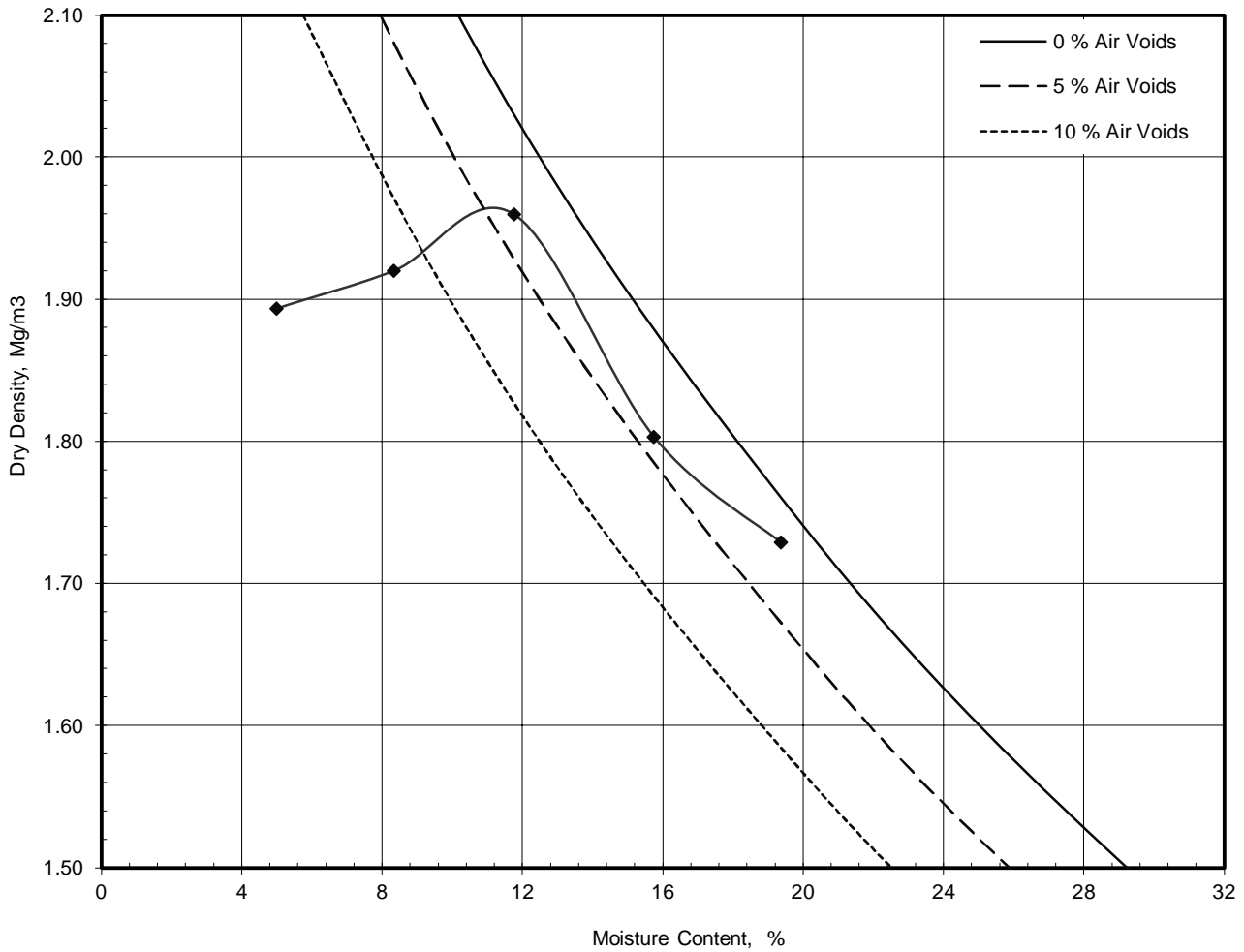
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP32
Sample No	4
Depth	1.00 m
Sample Type	B
Keylab ID	K1102837
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown gravelly silty SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	20
Material Retained on 20.0 mm Sieve	%	36
Particle Density - Assumed	Mg/m³	2.67

Maximum Dry Density	Mg/m³	1.97
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Optimum Moisture Content	%	11
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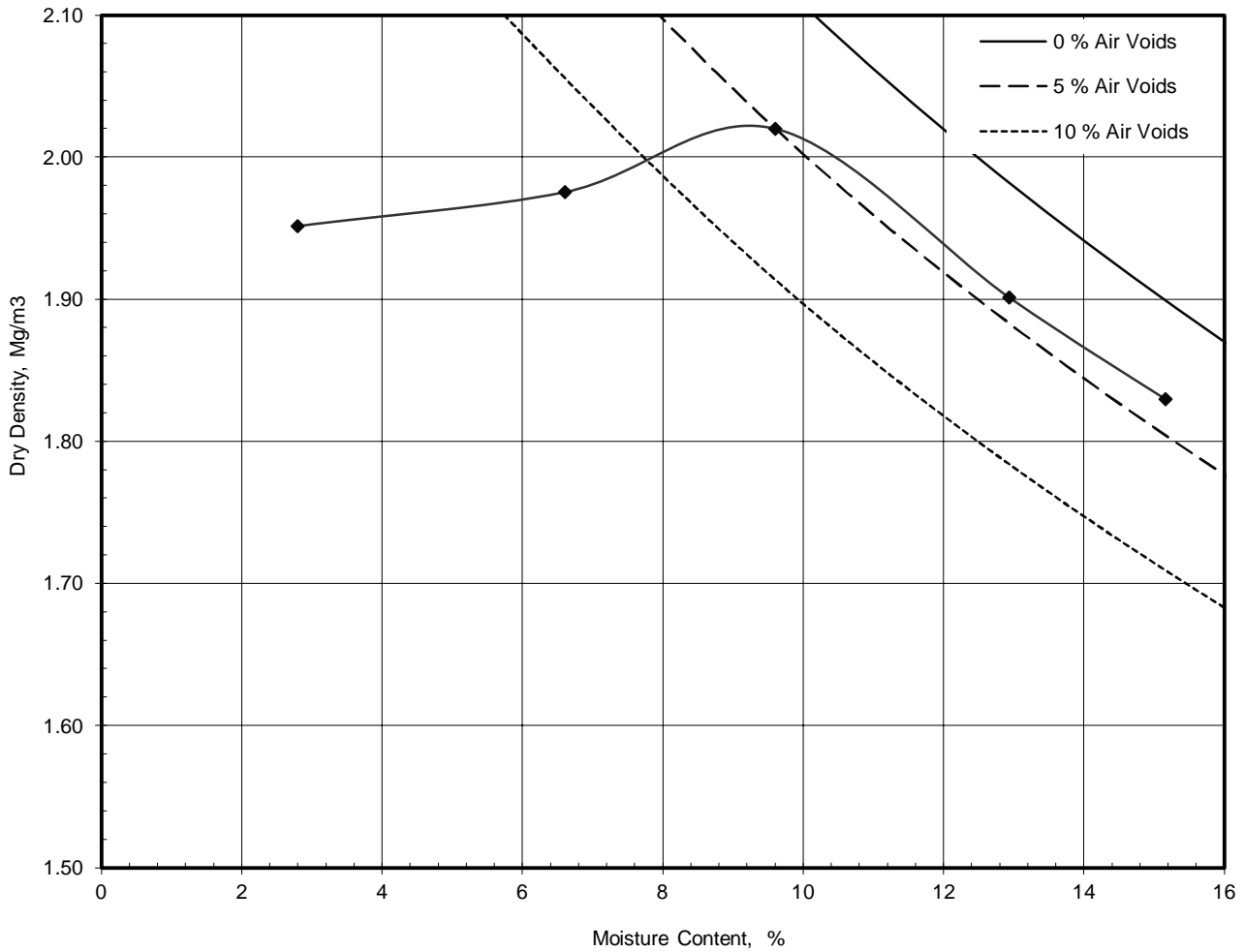
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP32
Sample No	8
Depth	3.00 m
Sample Type	B
Keylab ID	K1102841
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown gravelly SAND + cobble	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	45
Material Retained on 20.0 mm Sieve	%	65
Particle Density - Assumed	Mg/m ³	2.67

Maximum Dry Density	Mg/m ³	2.02
Optimum Moisture Content	%	9.3

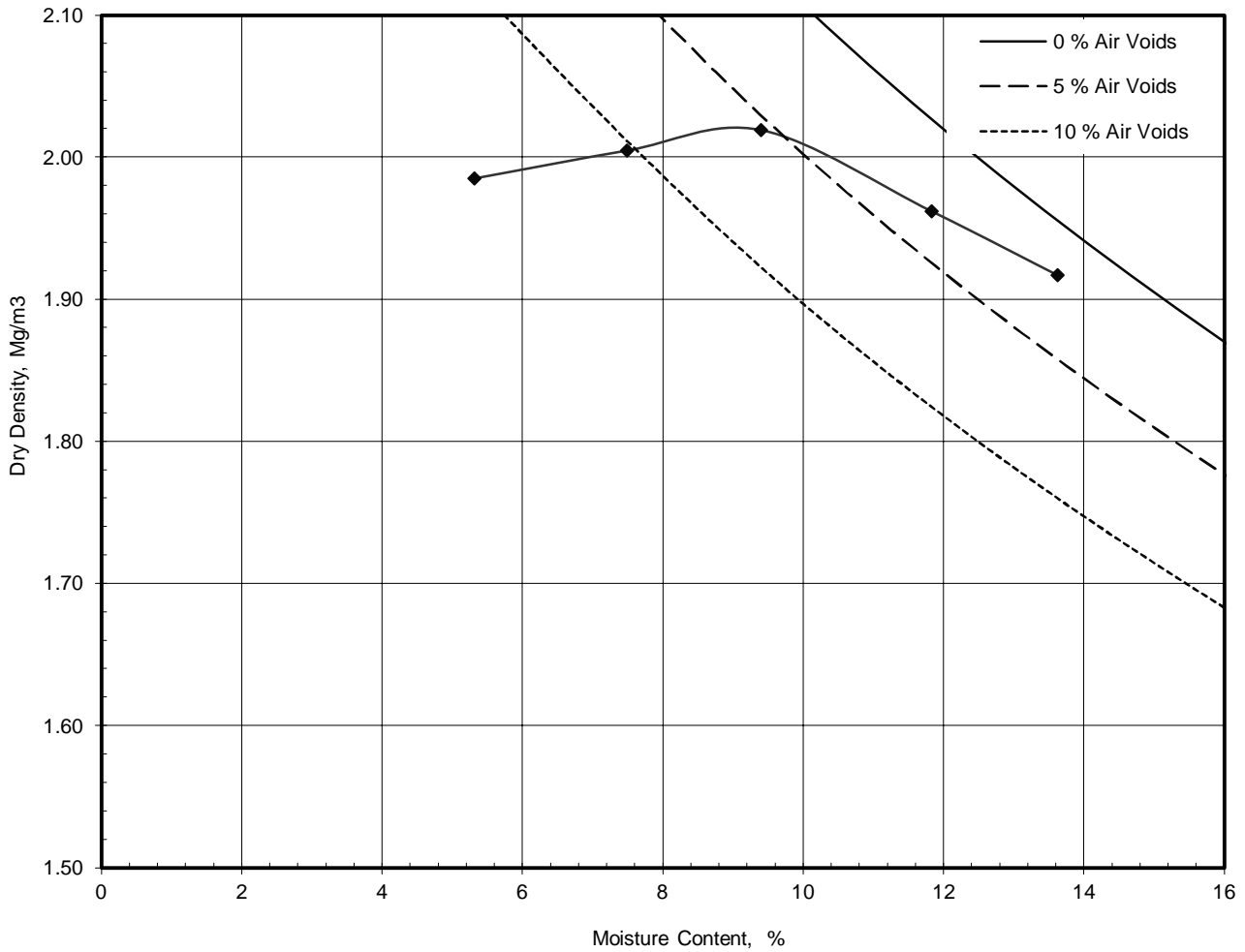
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP38
Sample No	8
Depth	3.00 m
Sample Type	B
Keylab ID	K1086085
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Grey gravelly sandy SILT	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was natural	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	10
Material Retained on 20.0 mm Sieve	%	17
Particle Density - Assumed	Mg/m ³	2.67
Maximum Dry Density	Mg/m ³	2.02
Optimum Moisture Content	%	9.1

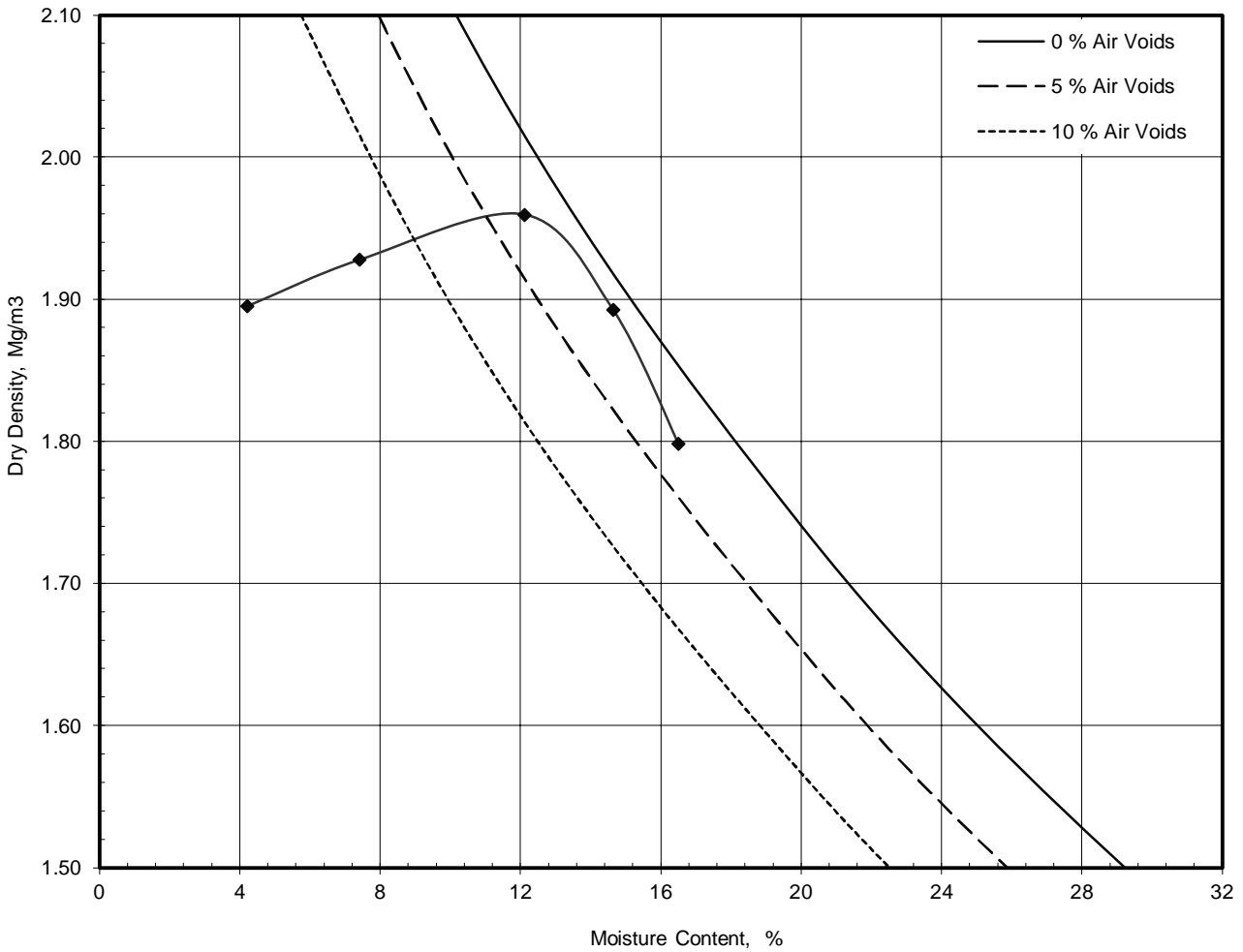
Remarks



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP42
Sample No	6
Depth	2.00 m
Sample Type	B
Keylab ID	K1093482
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown sandy GRAVEL	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	51
Material Retained on 20.0 mm Sieve	%	71
Particle Density - Assumed	Mg/m³	2.67
Maximum Dry Density	Mg/m³	1.96
Optimum Moisture Content	%	12

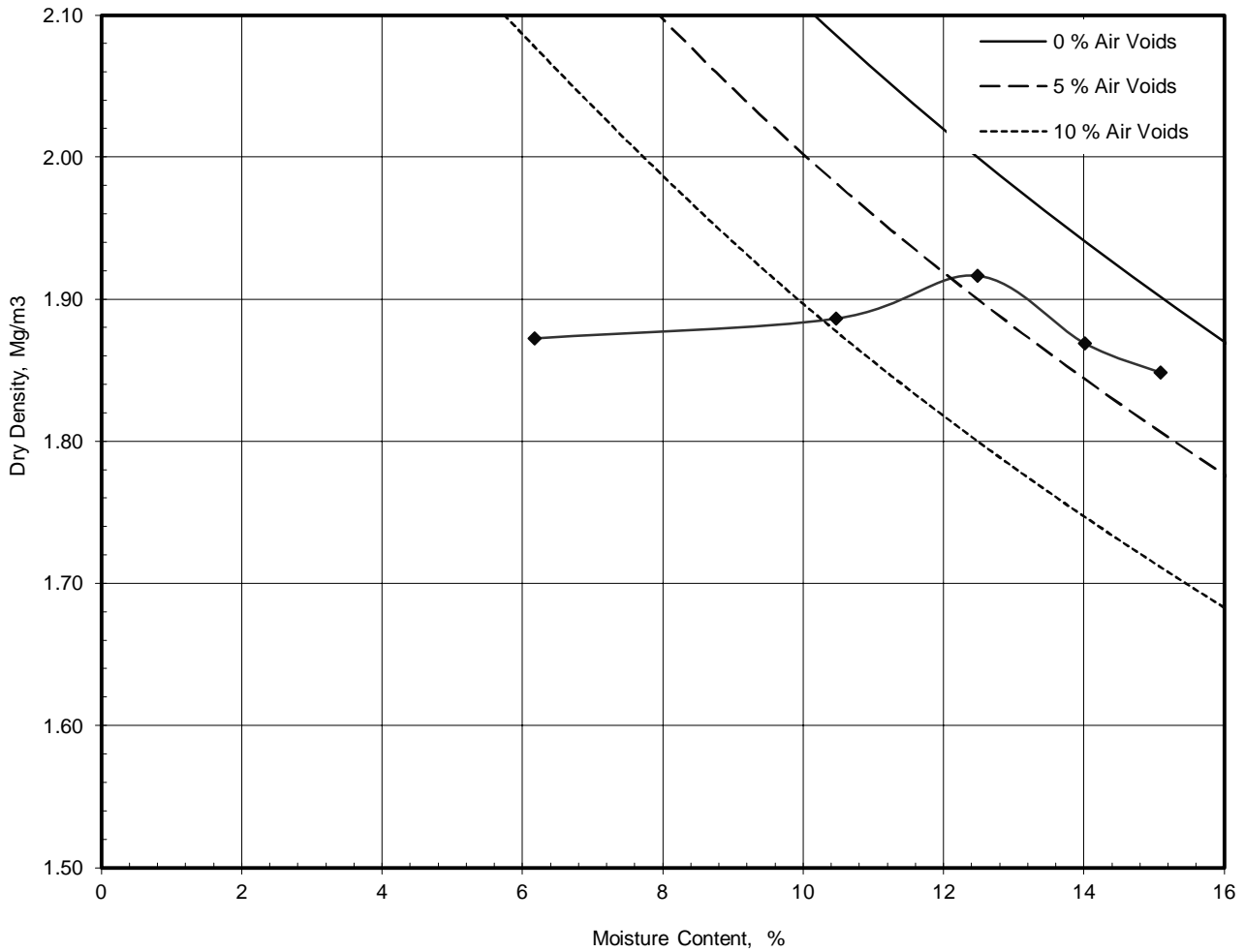
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP43
Sample No	6
Depth	2.00 m
Sample Type	B
Keylab ID	K1093290
Compaction Test Reference/No.	

Site Name	New Deer 2		
Soil Description	Grey sandy gravelly SILT		
Specimen Ref.	2	Specimen Depth	m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer		



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	14
Material Retained on 20.0 mm Sieve	%	31
Particle Density - Assumed	Mg/m ³	2.67
Maximum Dry Density	Mg/m ³	1.92
Optimum Moisture Content	%	12

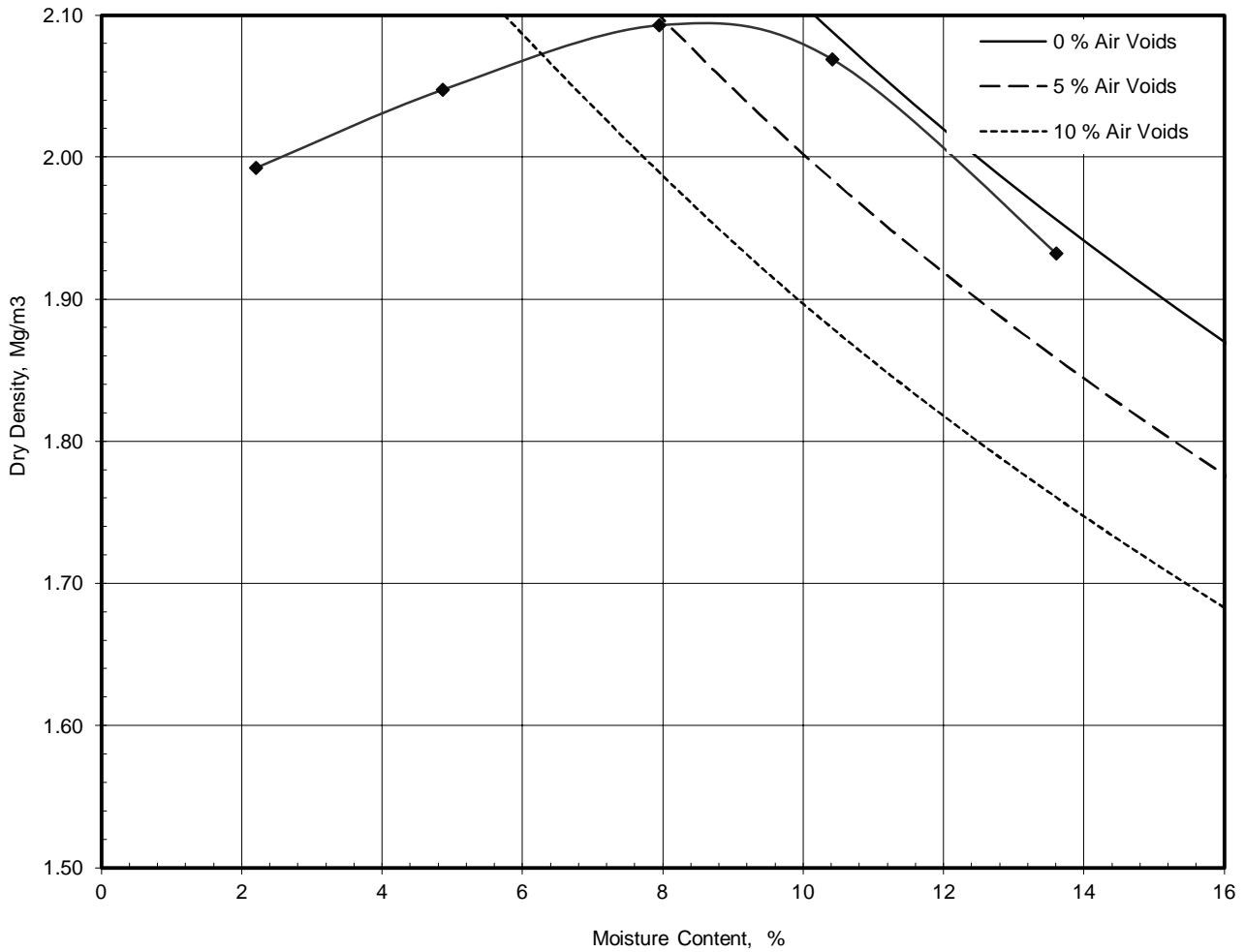
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP02
Sample No	12
Depth	1.50 m
Sample Type	LB
Keylab ID	K1086106
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown clayey sandy GRAVEL	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	15
Material Retained on 20.0 mm Sieve	%	23
Particle Density - Assumed	Mg/m ³	2.67

Maximum Dry Density	Mg/m ³	2.10
Optimum Moisture Content	%	8.5

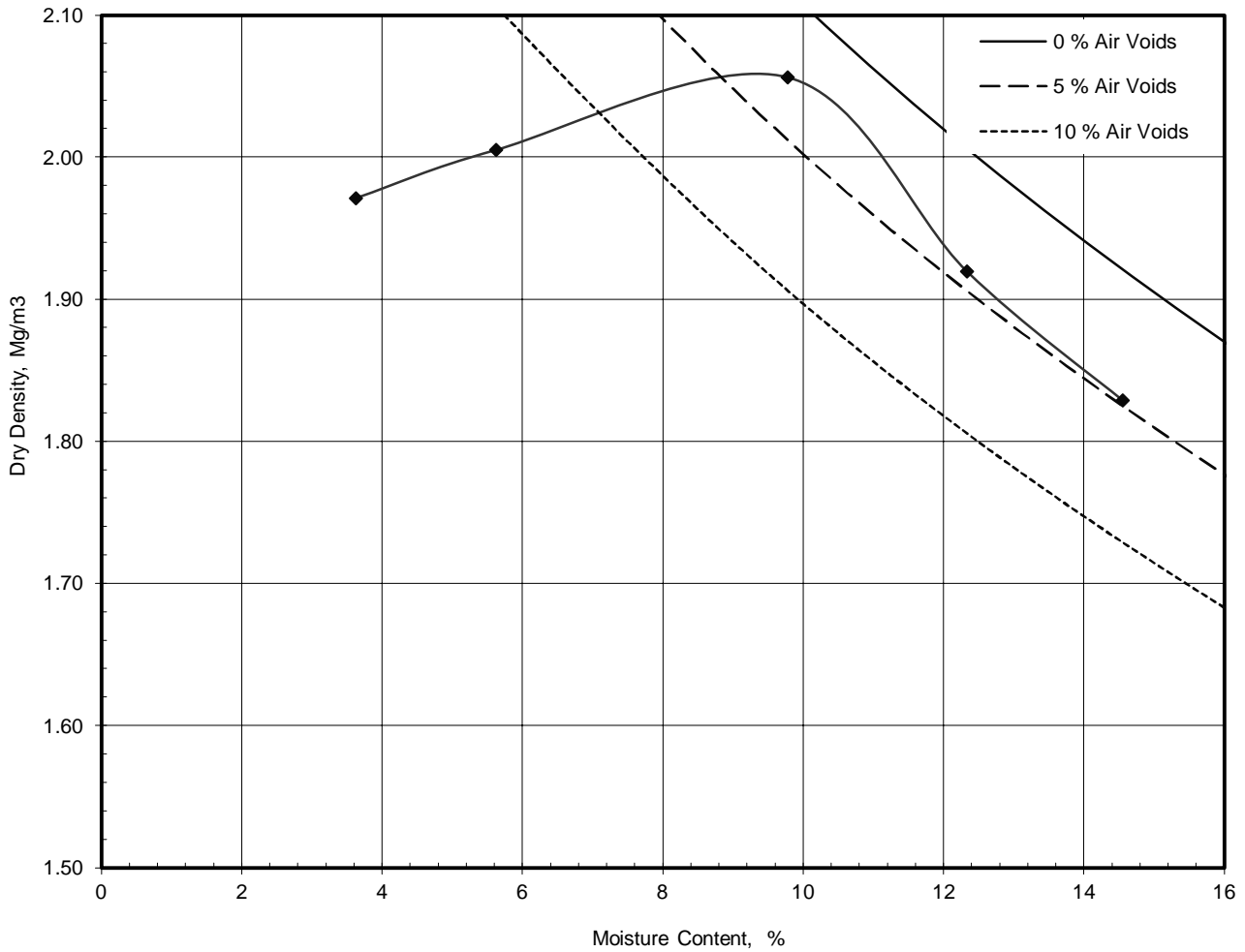
Remarks
Done as a non standard test as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP06
Sample No	11
Depth	2.00 m
Sample Type	B
Keylab ID	K1103015
Compaaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown clayey gravelly SAND	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	19
Material Retained on 20.0 mm Sieve	%	34
Particle Density - Assumed	Mg/m ³	2.67
Maximum Dry Density	Mg/m³	2.06
Optimum Moisture Content	%	9.4

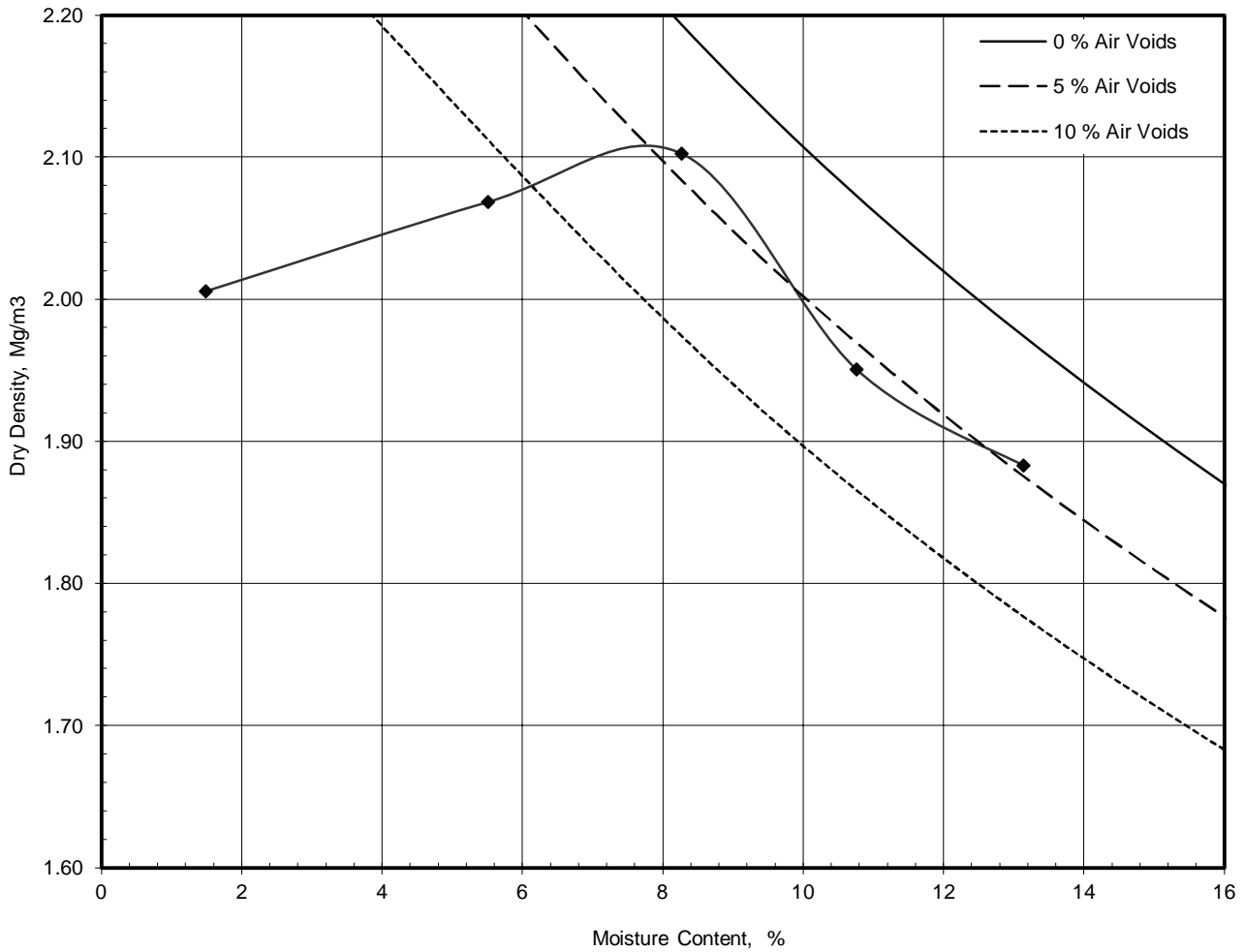
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP07
Sample No	8
Depth	1.50 m
Sample Type	LB
Keylab ID	K1103025
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown clayey gravelly SAND + COBBLE	
Specimen Ref.	3	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	15
Material Retained on 20.0 mm Sieve	%	27
Particle Density - Assumed	Mg/m ³	2.67
Maximum Dry Density	Mg/m ³	2.11
Optimum Moisture Content	%	7.8

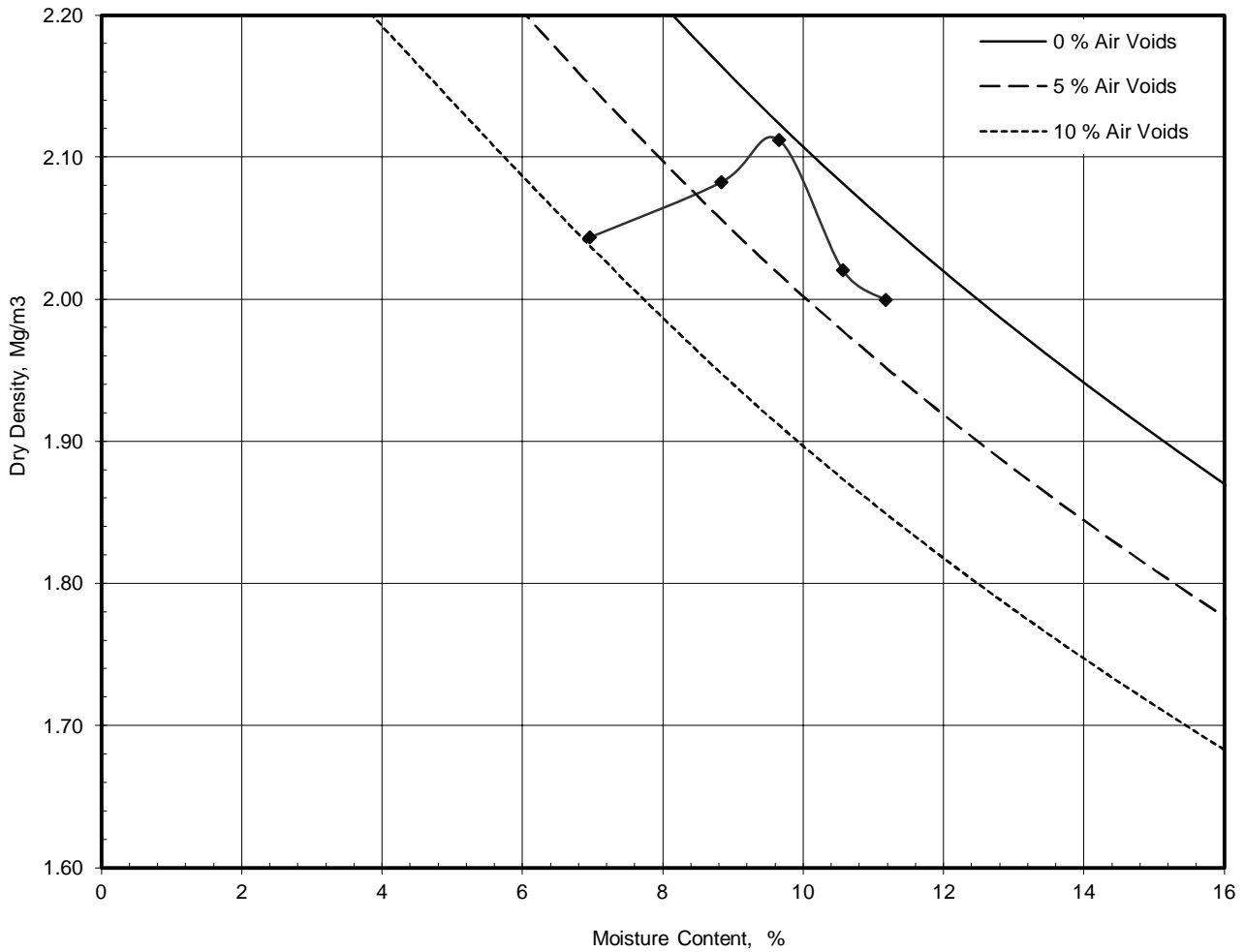
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP12
Sample No	4
Depth	1.00 m
Sample Type	B
Keylab ID	K1102322
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown sandy silty GRAVEL with cobble	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	37
Material Retained on 20.0 mm Sieve	%	52
Particle Density - Assumed	Mg/m ³	2.67

Maximum Dry Density	Mg/m ³	2.12
Optimum Moisture Content	%	9.5

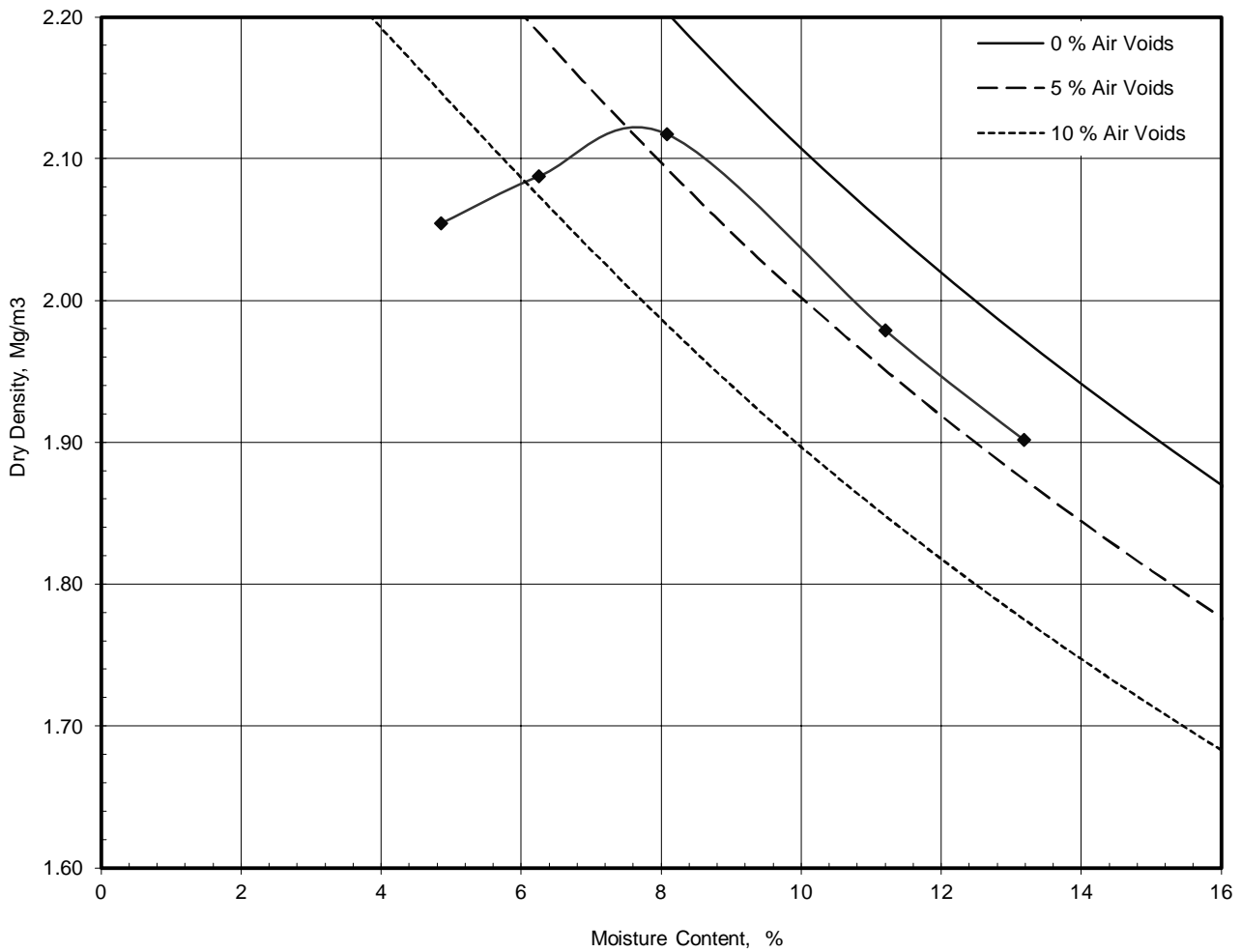
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP13
Sample No	5
Depth	1.00 m
Sample Type	LB
Keylab ID	K1086063
Compaction Test Reference/No.	

Site Name	New Deer 2		
Soil Description	Brown clayey gravelly SAND		
Specimen Ref.	2	Specimen Depth	m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer		



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	29
Material Retained on 20.0 mm Sieve	%	39
Particle Density - Assumed	Mg/m ³	2.67
Maximum Dry Density	Mg/m ³	2.13
Optimum Moisture Content	%	7.6

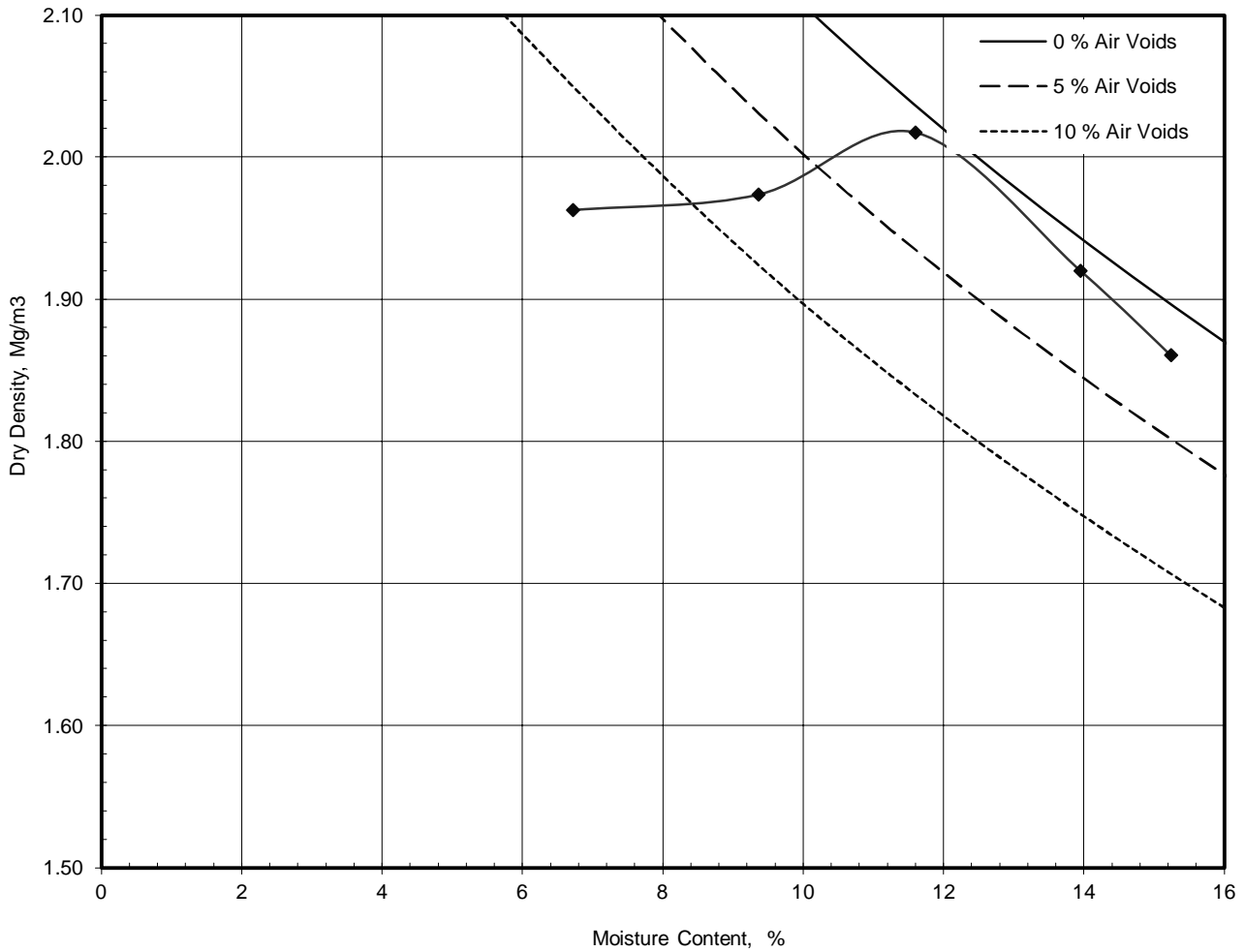
Remarks
Test done as non standard as requested by client



**Dry Density / Moisture Content Relationship
Heavy Compaction**

Job Ref	RGN.330G
Borehole / Pit No	TP15
Sample No	5
Depth	1.00 m
Sample Type	LB
Keylab ID	K1102255
Compaction Test Reference/No.	

Site Name	New Deer 2	
Soil Description	Brown sandy GRAVEL + COBBEL	
Specimen Ref.	2	Specimen Depth m
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried	
Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	29
Material Retained on 20.0 mm Sieve	%	43
Particle Density - Assumed	Mg/m ³	2.67

Maximum Dry Density	Mg/m ³	2.02
Optimum Moisture Content	%	12

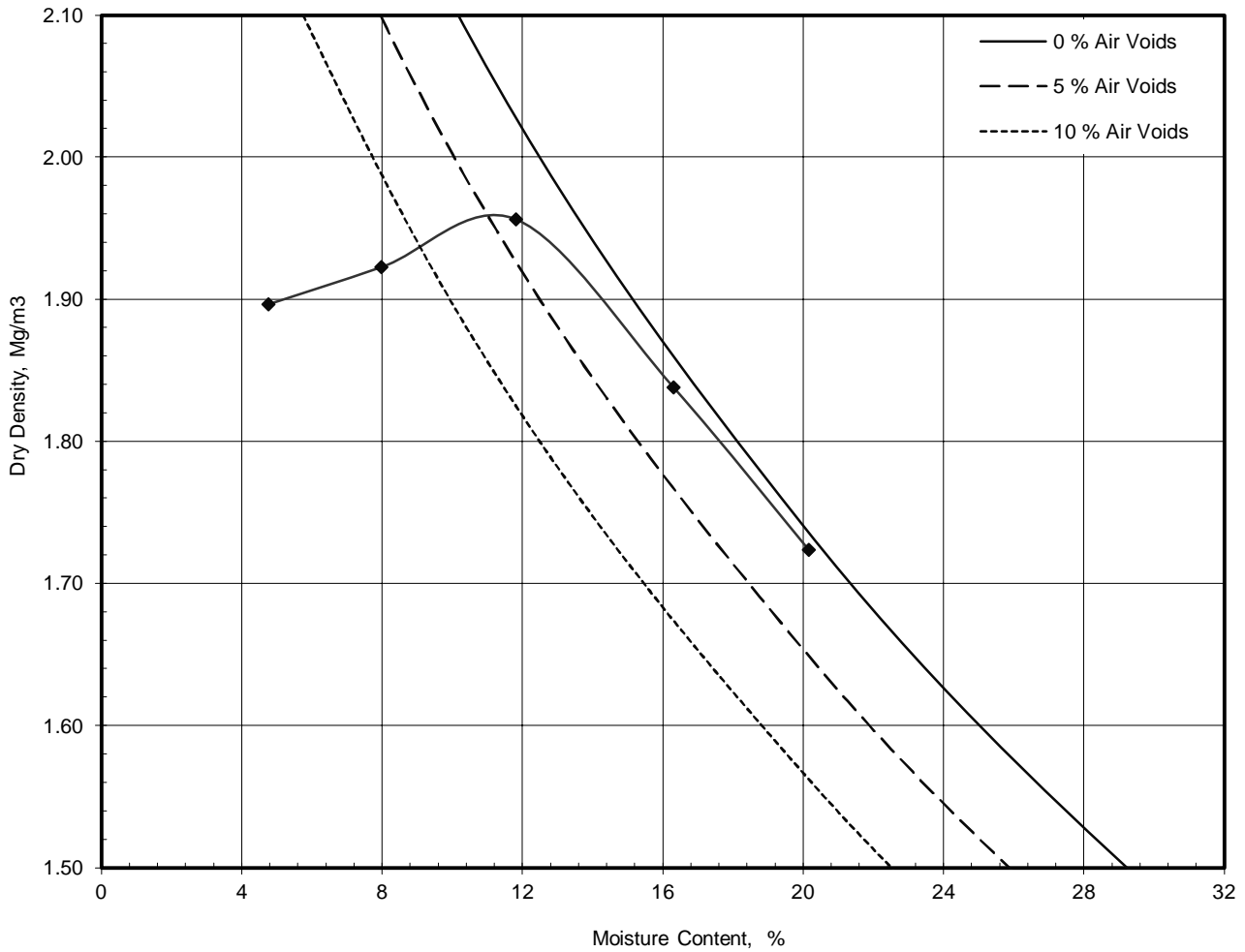
Remarks
Test done as non standard as requested by client



Dry Density / Moisture Content Relationship Heavy Compaction

Job Ref	RGN.330G
Borehole / Pit No	TP18
Sample No	5
Depth	1.00 m
Sample Type	LB
Keylab ID	K1093279
Compaction Test Reference/No.	

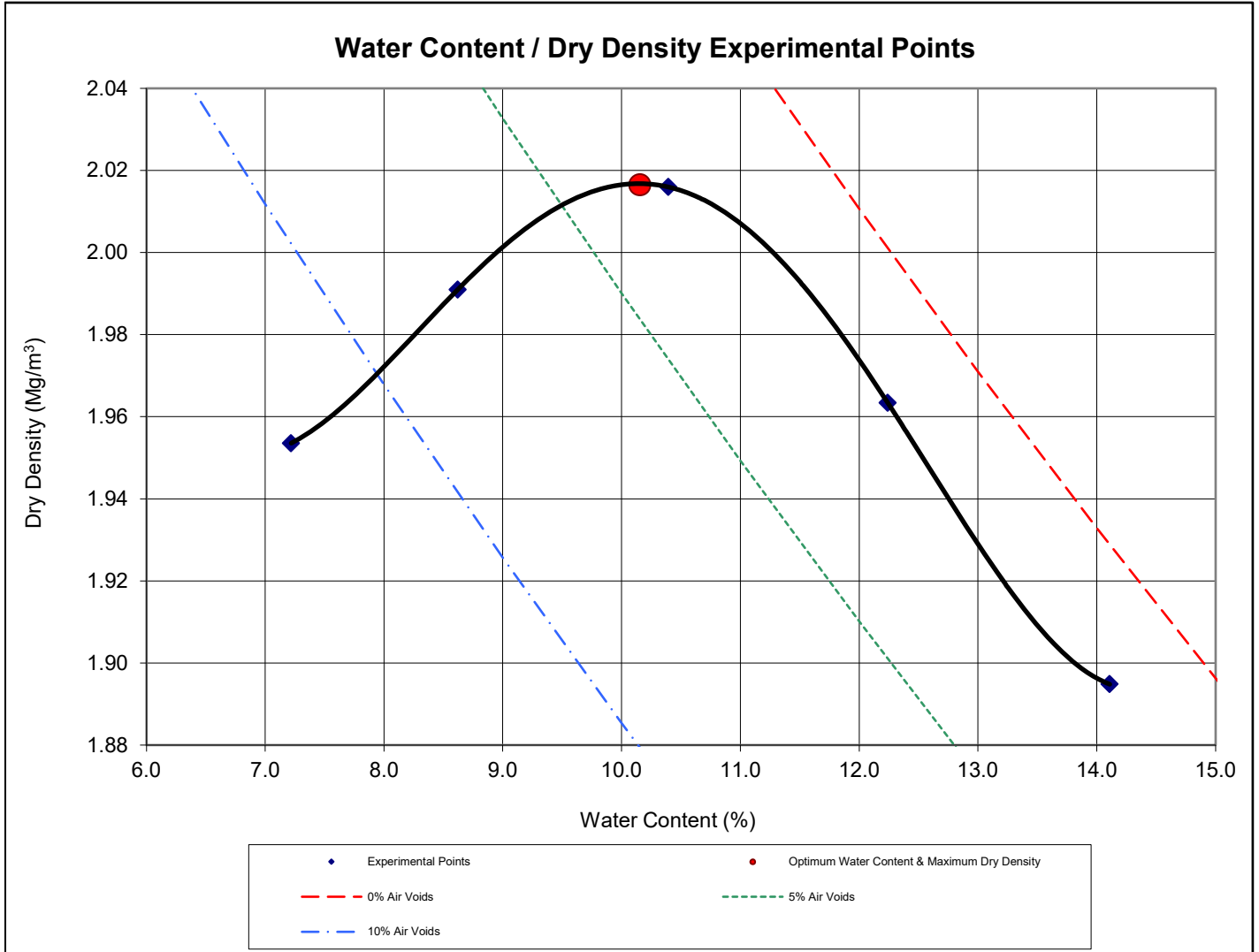
Site Name	New Deer 2	
Soil Description	Brown gravelly SAND	
Specimen Ref.	2	Specimen Depth
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer	



Preparation	Material used was air dried
Mould Type	1 LITRE
Samples Used	Single sample tested
Material Retained on 37.5 mm Sieve	%
Material Retained on 20.0 mm Sieve	%
Particle Density - Assumed	Mg/m³

Maximum Dry Density	Mg/m³	1.96
Optimum Moisture Content	%	11

Remarks
Test done as non standard as requested by client



Test Method : Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method : Separate samples
% Passing 37.5mm : 97
% Passing 20mm : 96
Grading Zone : 4
Particle Density : 2.65 Mg/m³ (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m ³)
7.2	1.95
8.6	1.99
10.4	2.02
12.2	1.96
14.1	1.89

Optimum Water Content (%)	Maximum Dry Density (Mg/m ³)
10.2	2.02
Remarks	

Borehole :	BH25
Sample :	K1093884
Depth (m) :	7.00-7.45

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP



Moisture Condition Value / Moisture Content Relationship

Job Ref RGN.330G

Borehole/Pit No. TP02

Site Name New Deer 2

Sample No. 13

Soil Description Brown clayey sandy GRAVEL

Depth 1.5

Specimen Reference 2 Specimen Depth m

Sample Type LB

Specimen Description KeyLAB ID K1086107

Test Method

Sample preparation

Amount of material larger than 20mm sieve removed 29 %

Natural Moisture Content of sample %

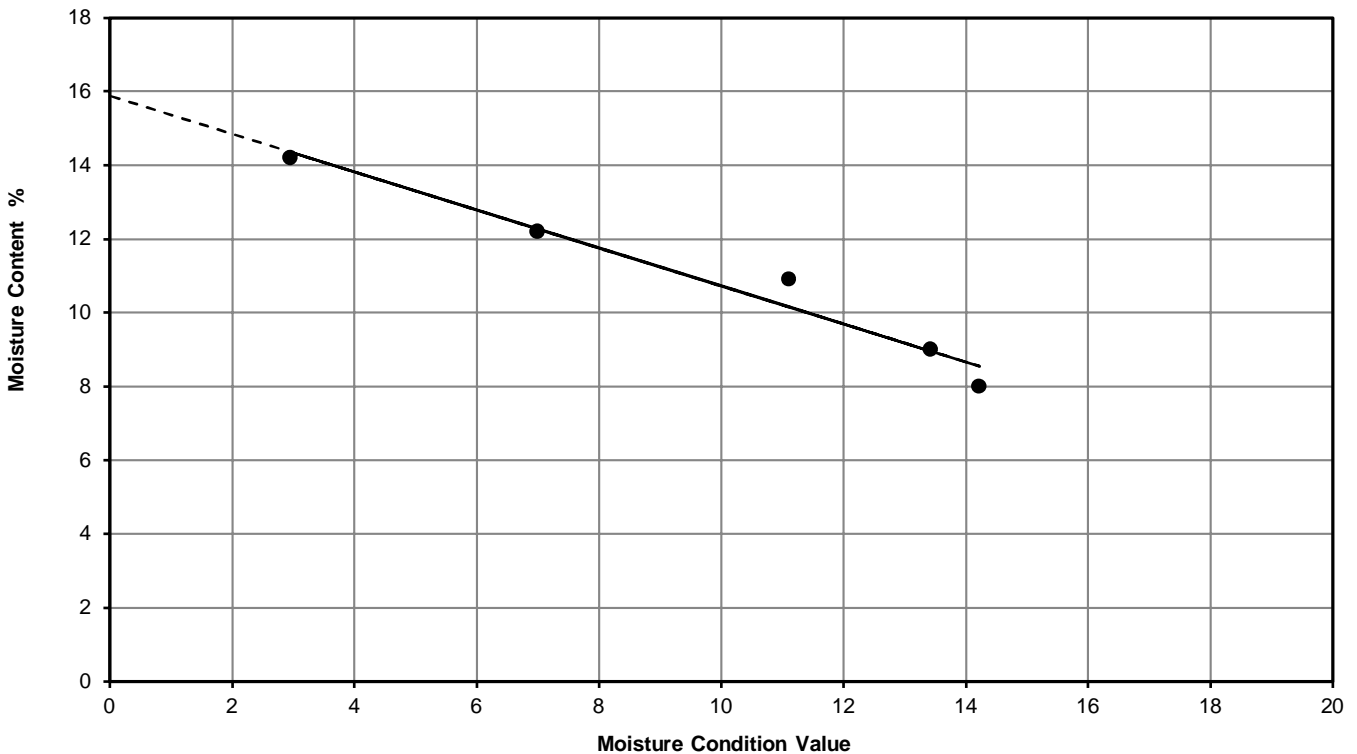
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	9.0	10.9	14.2	12.2	8.0
Moisture Condition Value	13.4	11.1	3.0	7.0	14.2
MCV report	13.4	11.1	3	7	14.2
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					

● valid points × invalid points - - - - extended regression — linear regression



Intercept	15.88
Slope	-0.52
Sensitivity	-1.94



Moisture Condition Value / Moisture Content Relationship

Job Ref	RGN.330G
Borehole/Pit No.	TP04
Sample No.	3
Depth	1
Sample Type	D
KeyLAB ID	K1102366

Site Name	New Deer 2		
Soil Description	Brown clayey gravelly SAND		
Specimen Reference	2	Specimen Depth	m
Specimen Description			
Test Method			

Sample preparation

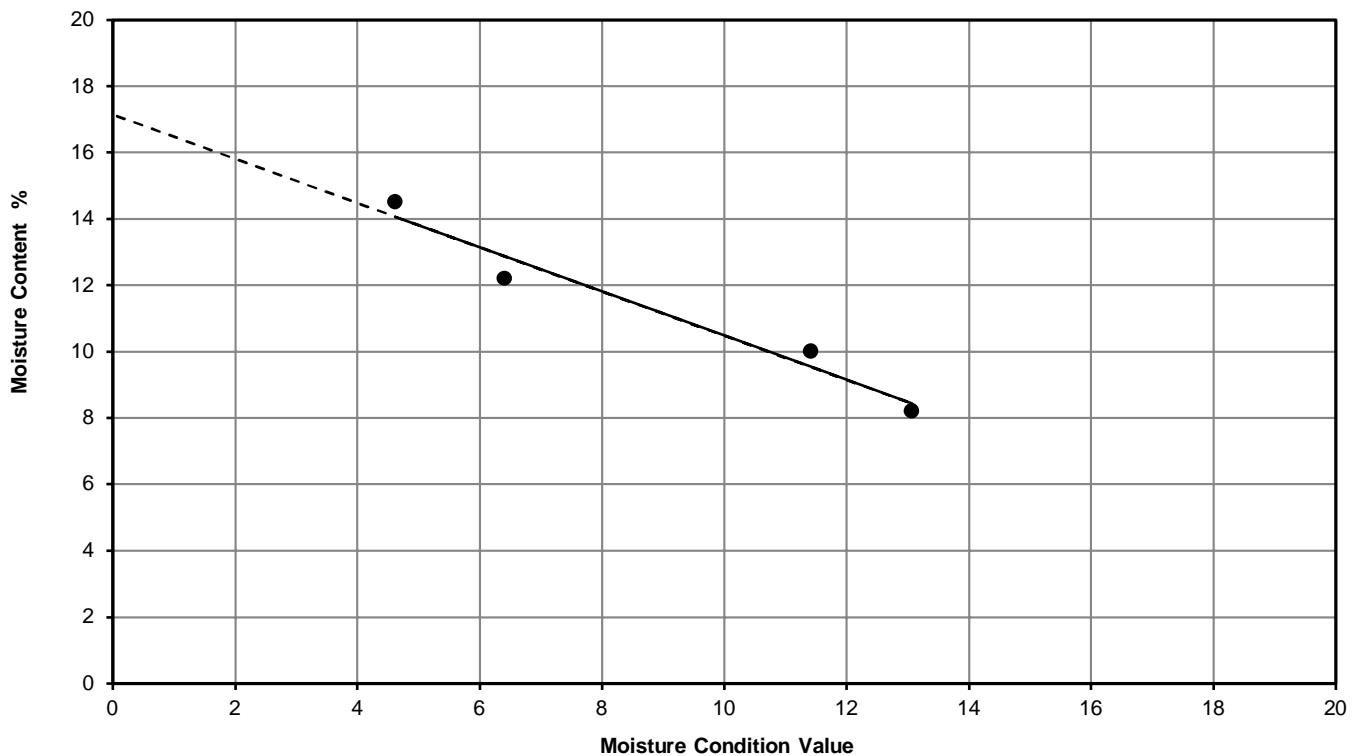
Amount of material larger than 20mm sieve removed	24	%
Natural Moisture Content of sample		%
Initial Moisture Content of test sample below 20mm		%

General remarks

Table of results

MCV Test Number	1	2	3	4	
Moisture Content, %	14.5	12.2	10.0	8.2	
Moisture Condition Value	4.6	6.4	11.4	13.1	
MCV report	4.6	6.4	11.4	13.1	
Effective / Valid data point	YES	YES	YES	YES	
Specimen remarks					

● valid points
× invalid points
- - - - extended regression
— linear regression



Intercept	17.14
Slope	-0.67
Sensitivity	-1.5

BOREHOLE	SAMPLE	DEPTH (m)	% MATERIAL GREATER THAN 20mm	WATER CONTENT (%)	MOISTURE CONDITION VALUE (MCV)
BH25	K1093880	3.80	0	19.2	6.0
BH25	K1093881	5.00	4	15.5	4.2

Method of interpretation for all test results - steepest line
Tested in accordance with BS 1377 - 2 : 2022 : Clause 13.4

**SUMMARY OF MOISTURE CONDITION VALUE (MCV) TEST RESULTS
TESTED AT NATURAL WATER CONTENT**

LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-11
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH20, K1100712, 1.20-2.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH20, K1100712, 1.20-2.00m
Designation (d/D) : Not Supplied
Description : Brown slightly silty slightly clayey fine to coarse CRUSHED ROCK.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

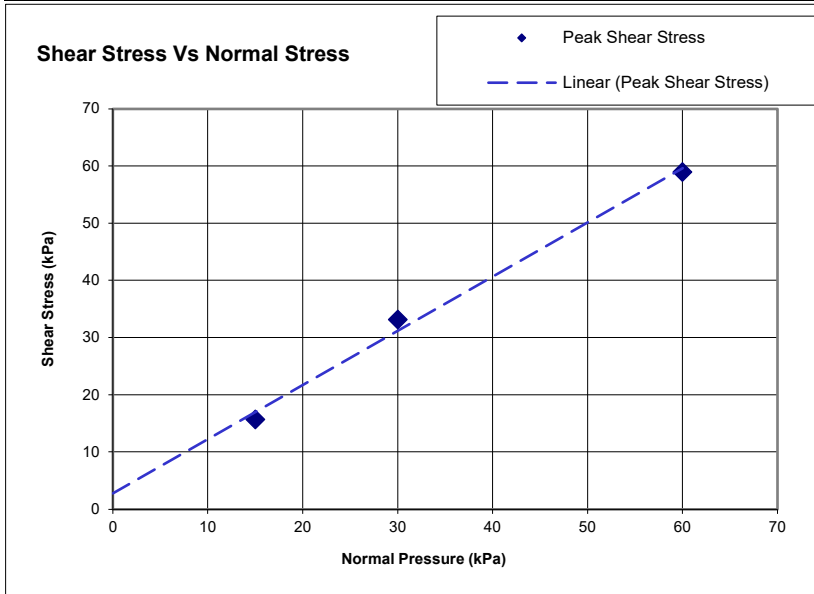
Date 21/12/2023

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.1	23.0	23.0		
	Water Content	%		11.0	10.9	11.0		
	Bulk Density	Mg/m ³		2.04	2.03	2.03		
	Dry Density	Mg/m ³		1.84	1.83	1.83		
	Voids Ratio			0.443	0.448	0.446		
	Degree of Saturation	%		66	64	65		
Consol	Consolidation / Normal Stress	kPa		15	30	60		
	Change in height	mm		0.16	0.60	0.81		
	Voids ratio			0.434	0.410	0.395		
Final	Voids ratio			0.450	0.424	0.410		
	Water Content	%		10.9	10.6	9.8		
	Saturation	%		64	66	63		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage

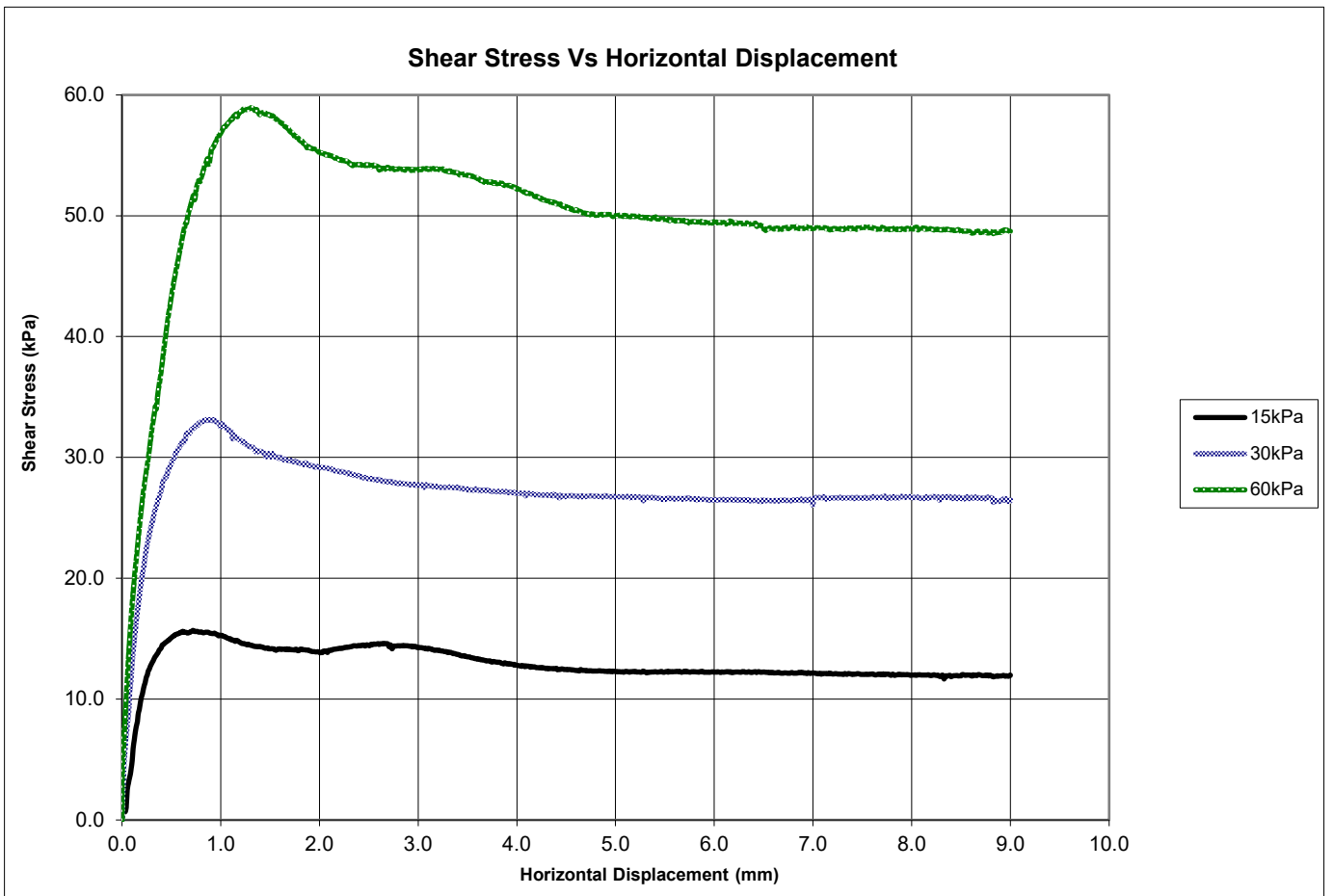
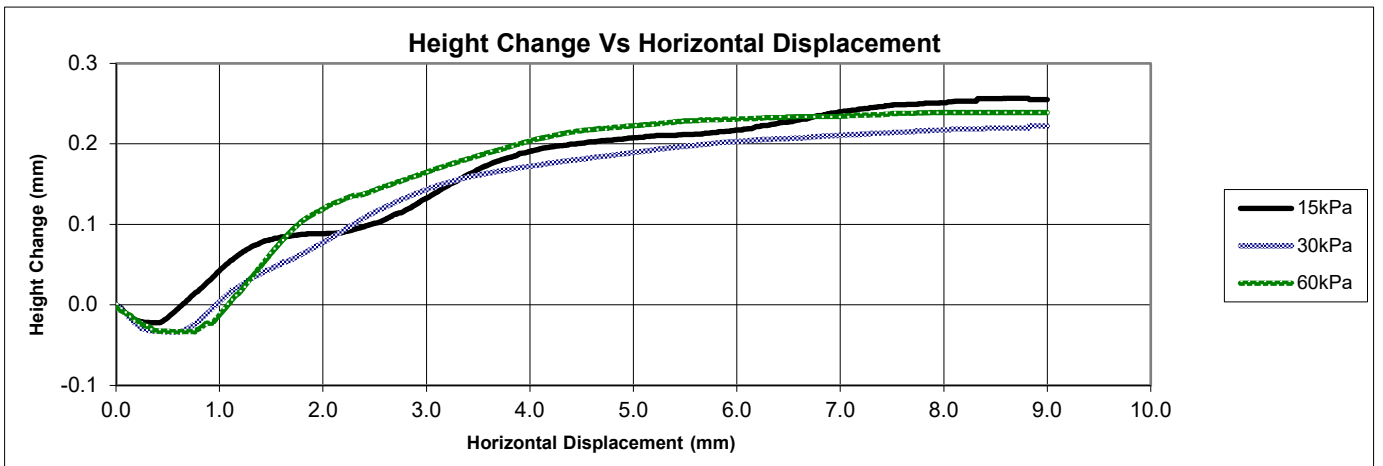
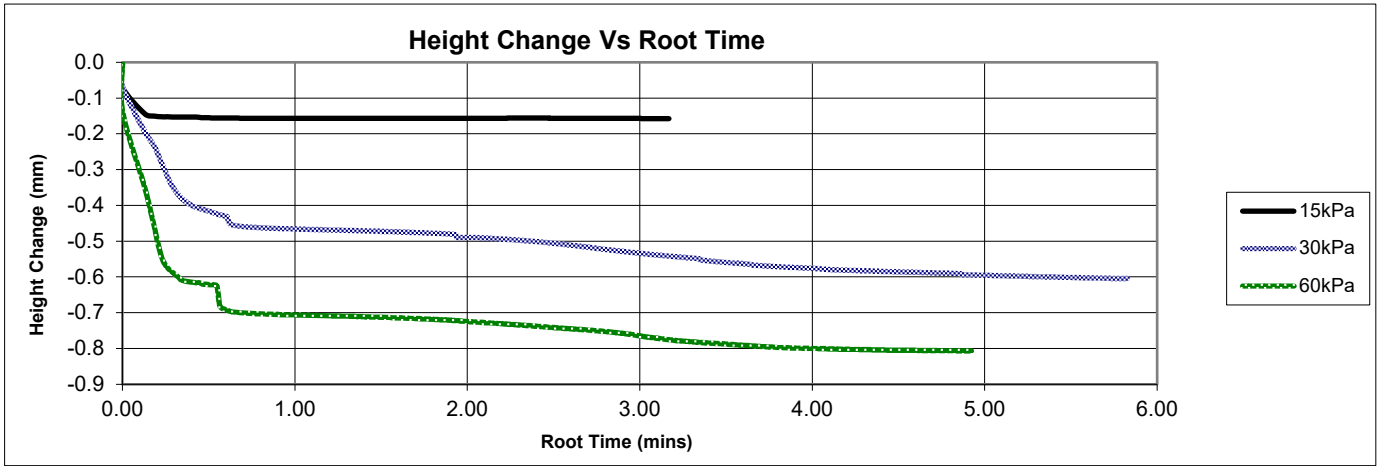
			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		0.72	0.86	1.31		
	Shear stress	kPa		15.687	33.147	58.959		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	3.0	-
φ'	degrees	43.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-12
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH22, K1099886, 1.20-2.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH22, K1099886, 1.20-2.00m
Designation (d/D) : Not Supplied
Description : Brown slightly silty clayey fine to coarse CRUSHED ROCK.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

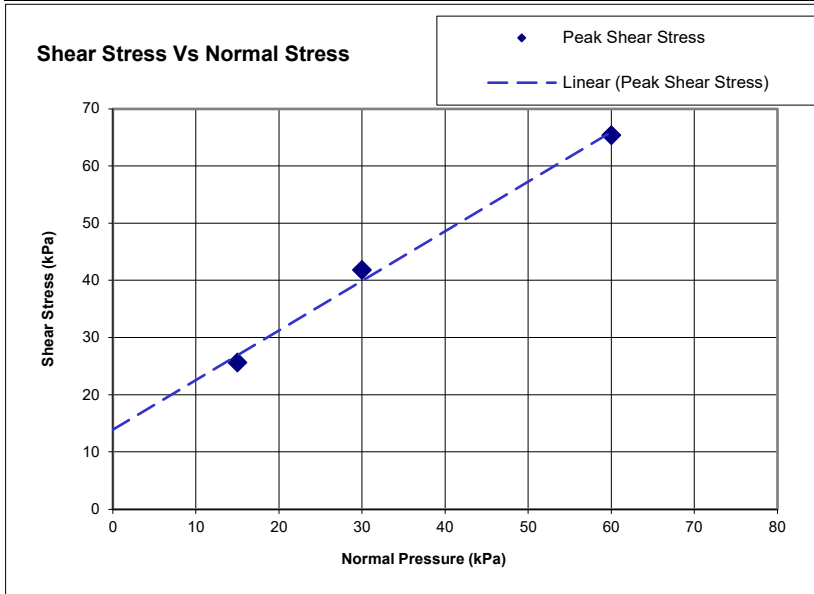
Date 21/12/2023

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	11.8	11.9	11.8		
	Bulk Density	Mg/m ³	2.03	2.04	2.04		
	Dry Density	Mg/m ³	1.82	1.83	1.83		
	Voids Ratio		0.456	0.452	0.451		
	Degree of Saturation	%	68	70	69		
Consol	Consolidation / Normal Stress	kPa	15	30	60		
	Change in height	mm	0.25	0.41	0.55		
	Voids ratio		0.440	0.426	0.417		
Final	Voids ratio		0.519	0.518	0.472		
	Water Content	%	11.2	11.1	11.1		
	Saturation	%	57	57	62		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

Shearing stage

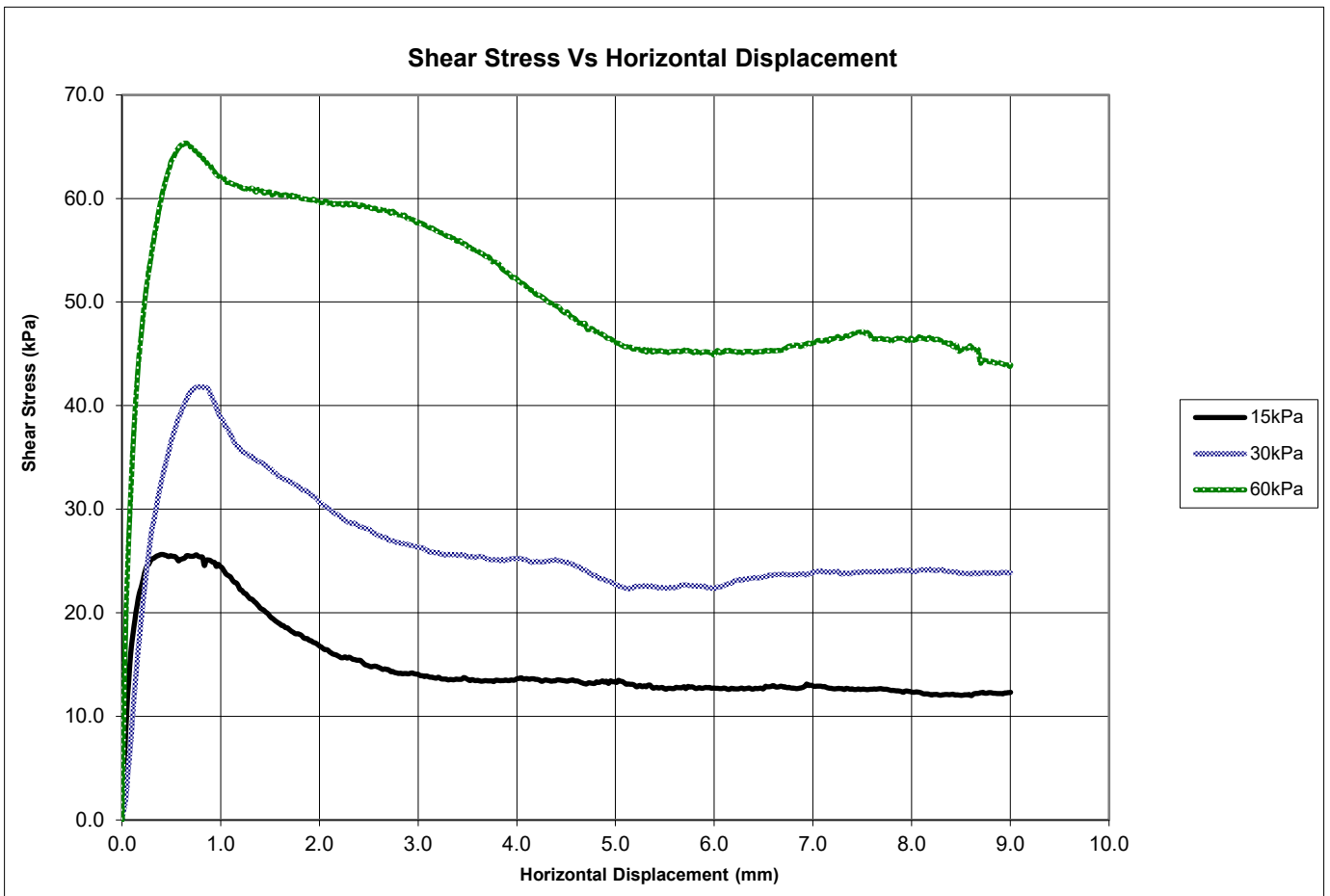
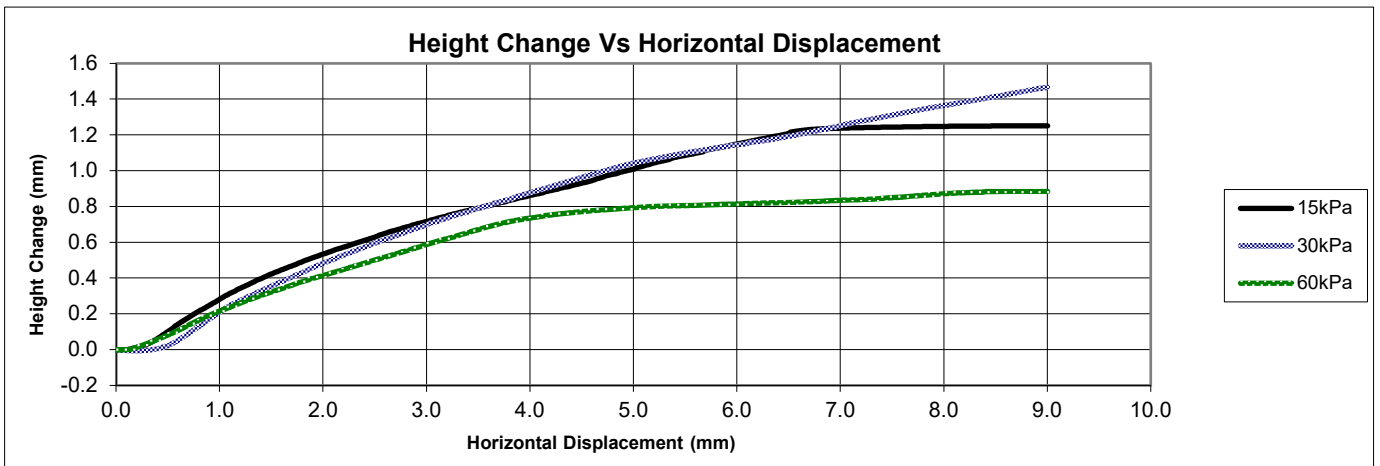
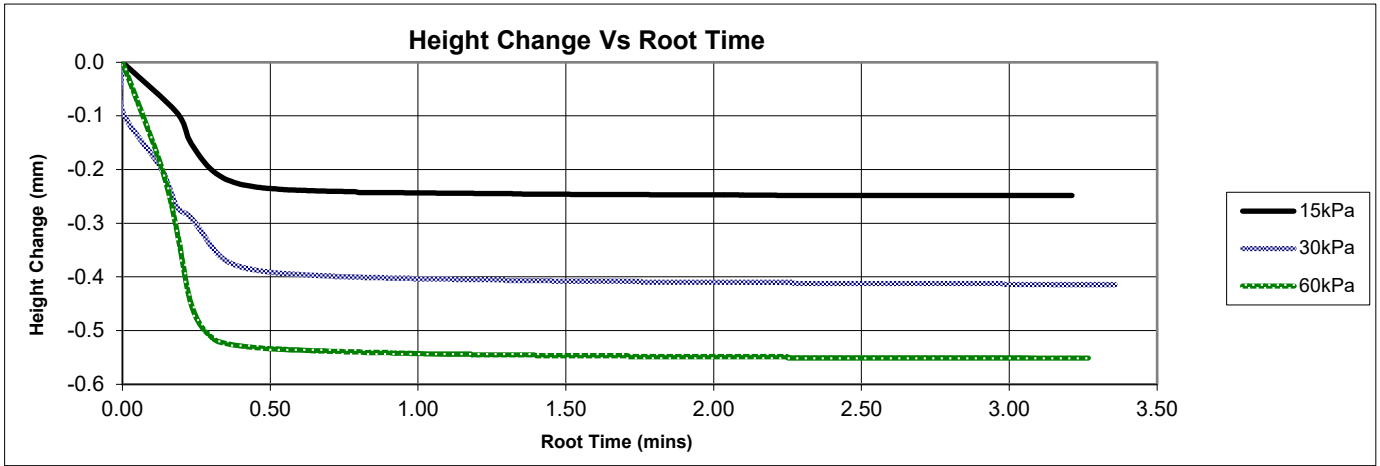
		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	0.41	0.77	0.64		
	Shear stress	kPa	25.639	41.833	65.346		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	14.0	-
φ'	degrees	41.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-2
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH25, K1093880, 3.40-3.80m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH25, K1093880, 3.40-3.80m
Designation (d/D) : Not Supplied
Description : Brown gravelly sandy CLAY with sandstone fragments. Gravel is fine to medium.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

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Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 14/12/2023



Certificate No :

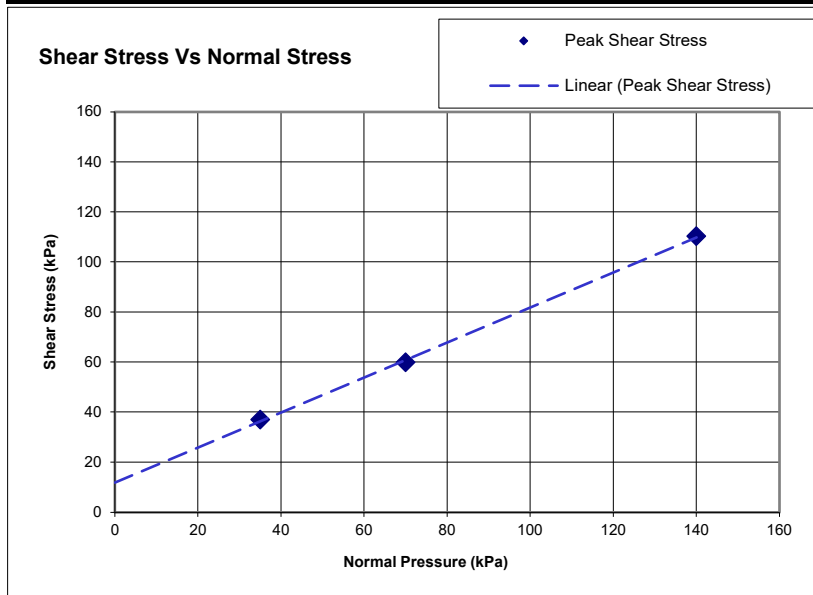
23/1202 - 03-2

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		18.0	18.0	18.1		
	Bulk Density	Mg/m ³		2.02	1.99	2.01		
	Dry Density	Mg/m ³		1.71	1.69	1.70		
	Voids Ratio			0.545	0.569	0.559		
	Degree of Saturation	%		87	84	86		
Consol	Consolidation / Normal Stress	kPa		35	70	140		
	Change in height	mm		0.84	1.33	1.51		
	Voids ratio			0.489	0.478	0.457		
Final	Voids ratio			0.504	0.479	0.448		
	Water Content	%		21.2	20.3	19.2		
	Saturation	%		100	100	100		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

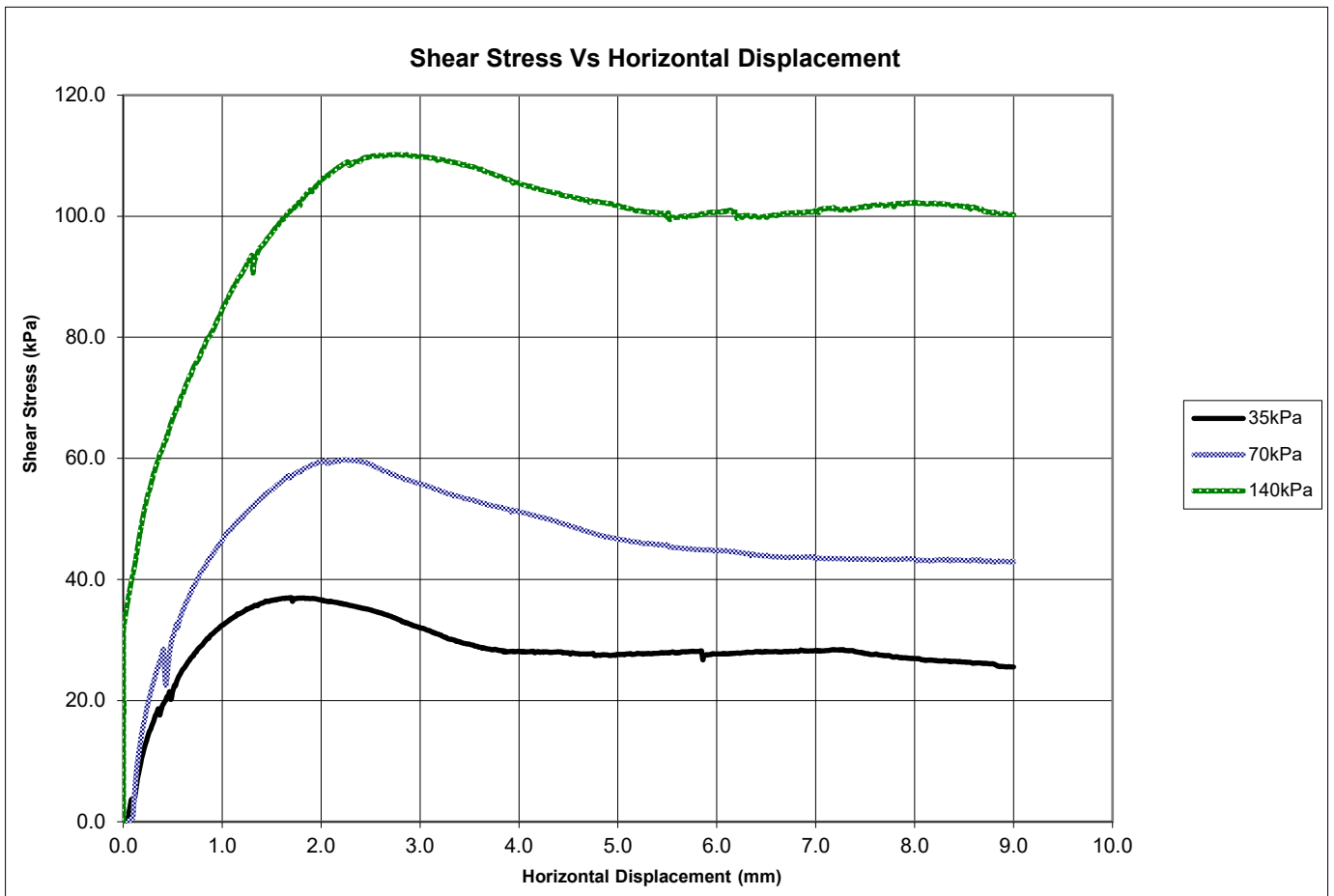
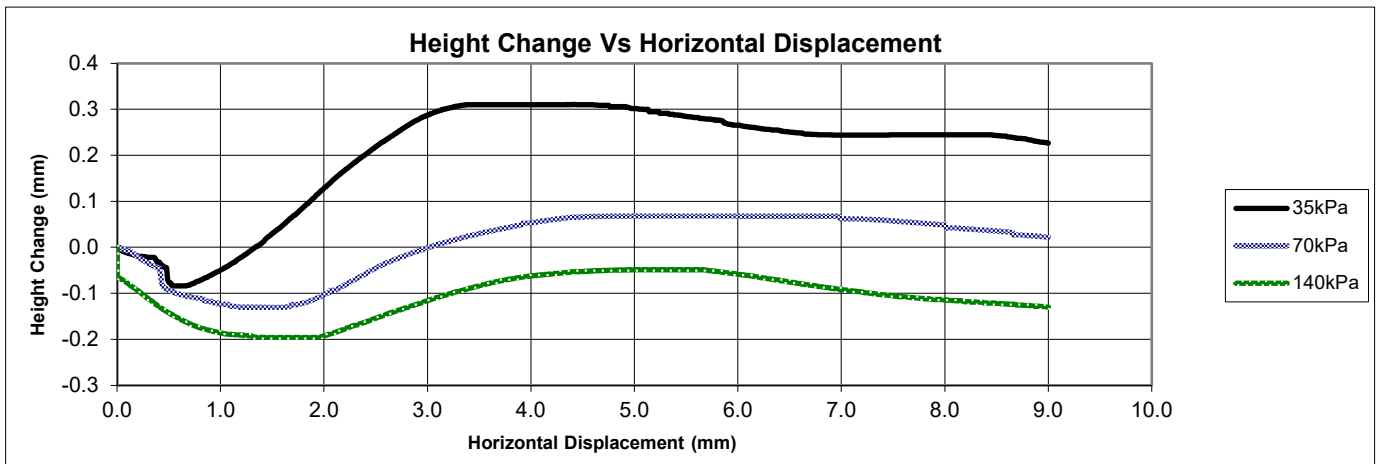
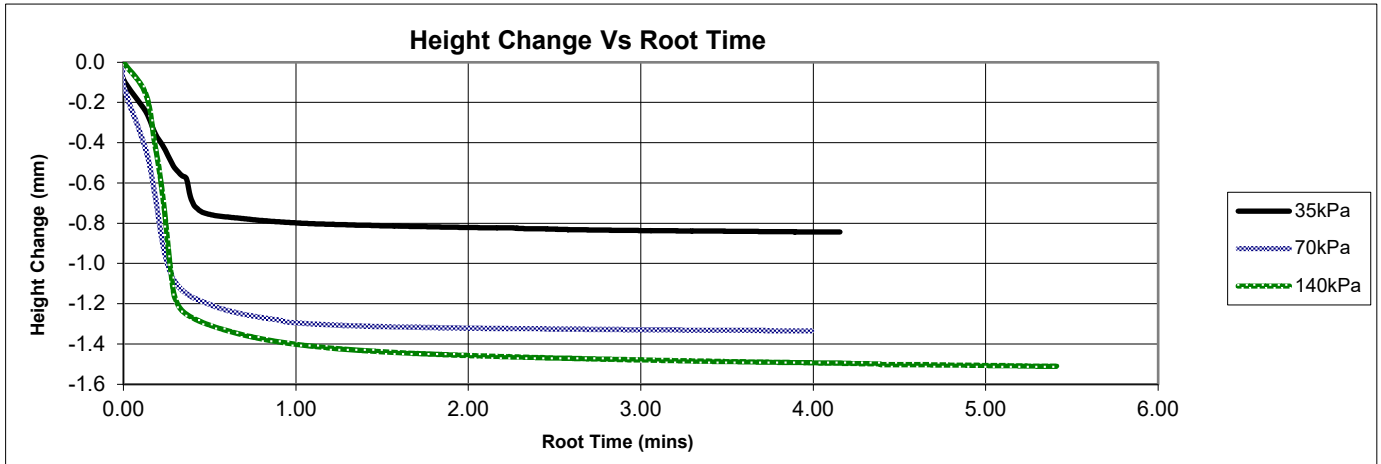
Shearing stage

			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		1.70	2.23	2.76		
	Shear stress	kPa		37.010	59.818	110.214		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	12.0	-
ϕ'	degrees	35.0	-

Residual Strength		Regression	Manual
c'_R	kPa	-	-
ϕ'_R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-13
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH25, K1093881, 4.40-5.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH25, K1093881, 4.40-5.00m
Designation (d/D) : Not Supplied
Description : Brown clayey fine to coarse SAND and GRAVEL with pockets of silty clay.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

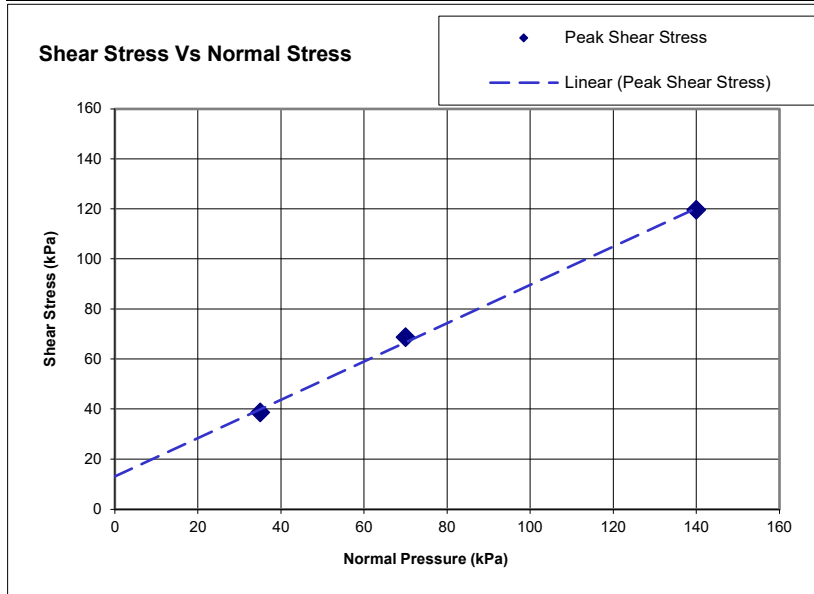
Date 21/12/2023

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		14.1	14.0	13.9		
	Bulk Density	Mg/m ³		2.14	2.15	2.14		
	Dry Density	Mg/m ³		1.87	1.88	1.88		
	Voids Ratio			0.414	0.408	0.410		
	Degree of Saturation	%		90	91	90		
Consol	Consolidation / Normal Stress	kPa		35	70	140		
	Change in height	mm		0.70	0.82	1.01		
	Voids ratio			0.371	0.358	0.348		
Final	Voids ratio			0.416	0.397	0.366		
	Water Content	%		13.9	12.8	12.4		
	Saturation	%		89	85	90		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage

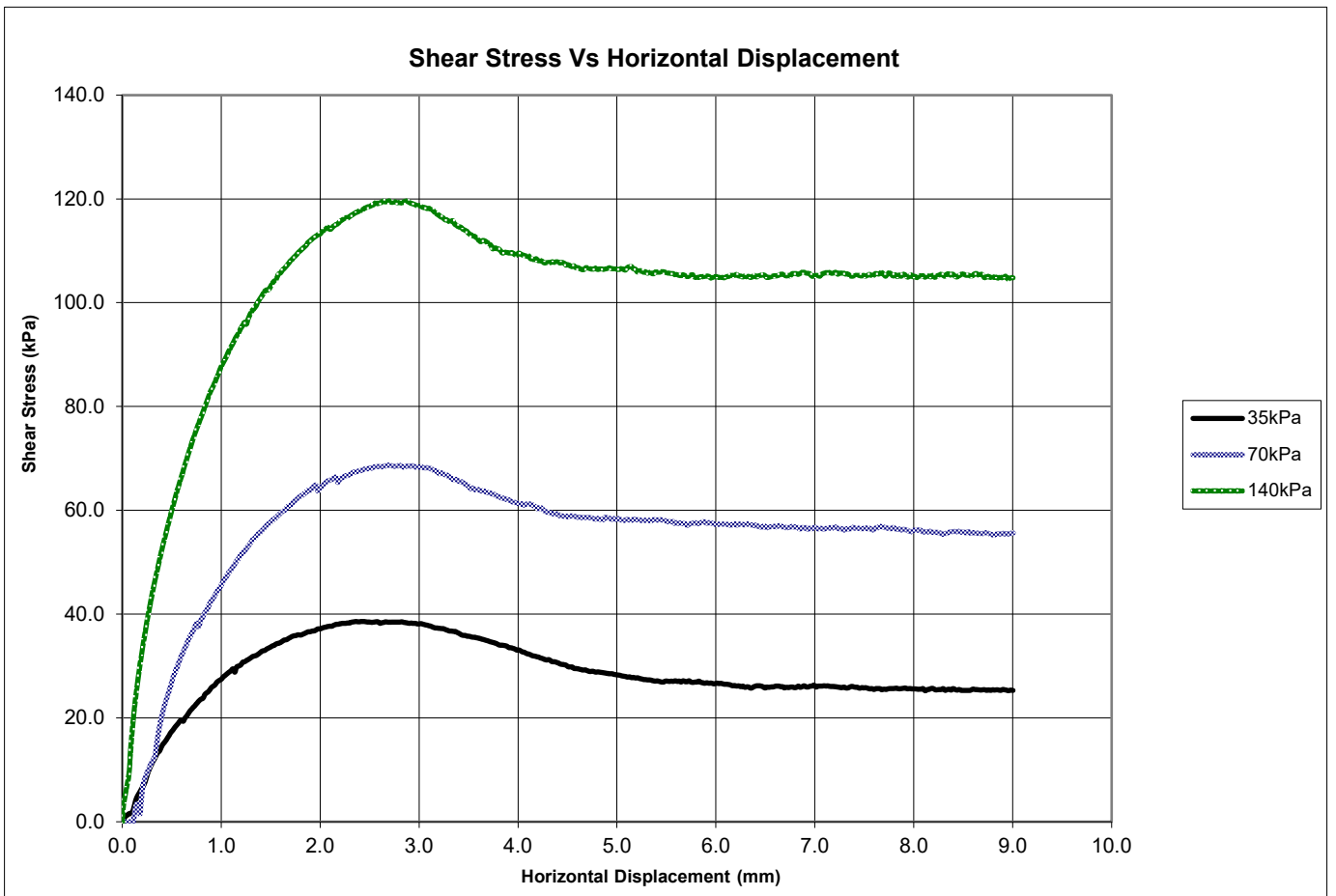
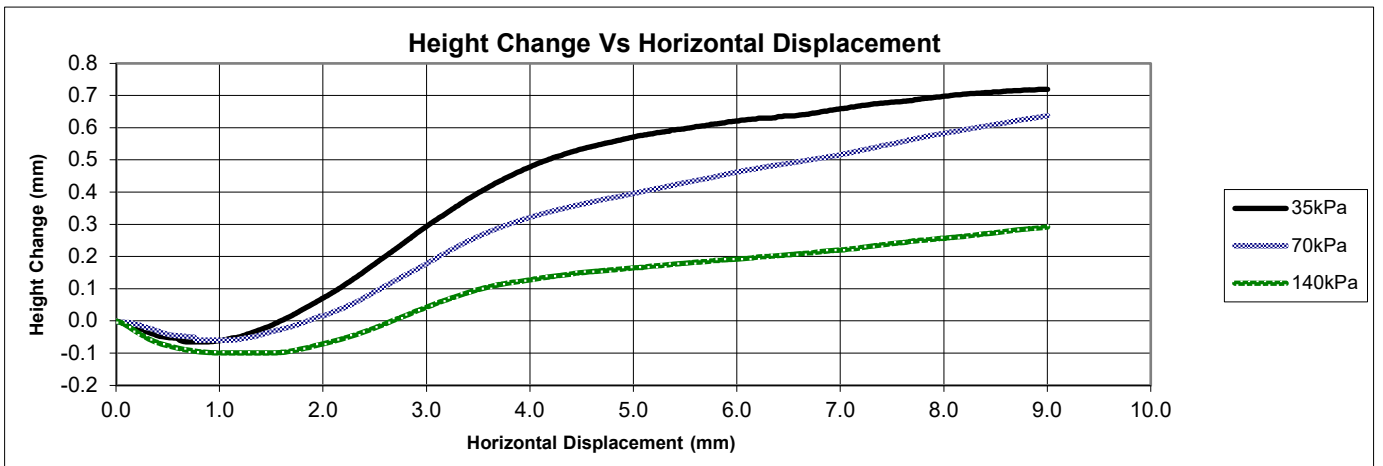
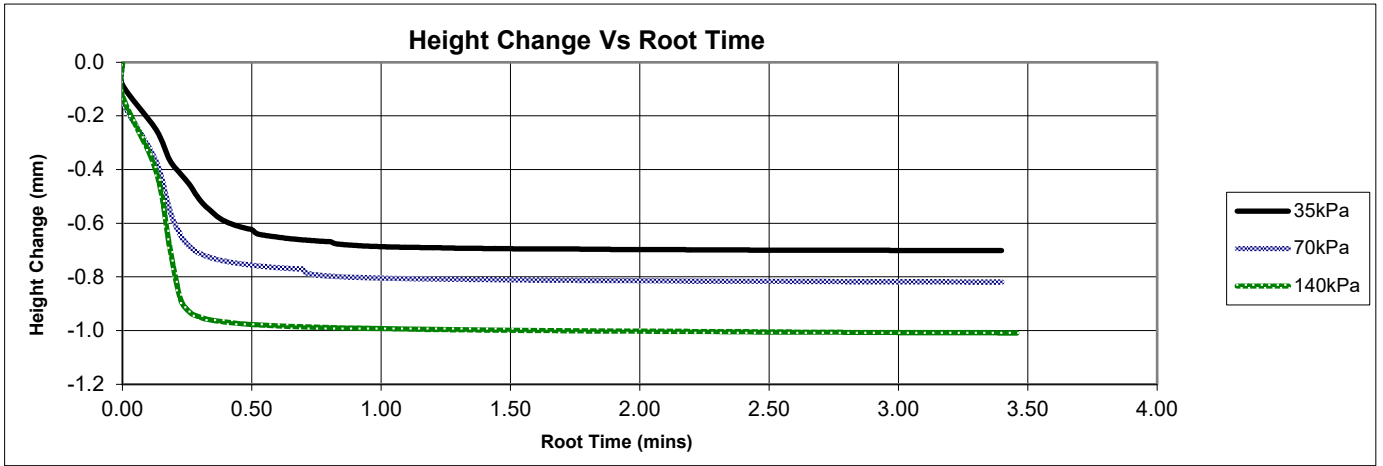
			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		2.42	2.68	2.70		
	Shear stress	kPa		38.607	68.694	119.613		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	13.0	-
φ'	degrees	37.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-14
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH25, K1093884, 7.00-7.45m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH25, K1093884, 7.00-7.45m
Designation (d/D) : Not Supplied
Description : Yellowish brown gravelly very silty clayey fine to coarse SAND with sandstone fragments. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

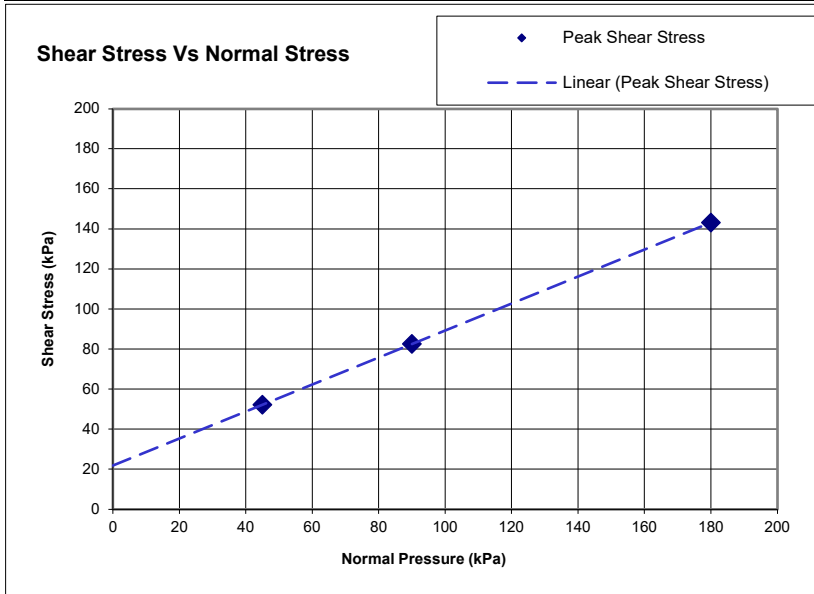
Date 21/12/2023

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	14.0	14.0	13.9		
	Bulk Density	Mg/m ³	2.12	2.11	2.11		
	Dry Density	Mg/m ³	1.86	1.85	1.86		
	Voids Ratio		0.427	0.432	0.428		
	Degree of Saturation	%	87	86	86		
Consol	Consolidation / Normal Stress	kPa	45	90	180		
	Change in height	mm	0.82	1.25	1.76		
	Voids ratio		0.376	0.355	0.318		
Final	Voids ratio		0.387	0.349	0.307		
	Water Content	%	11.0	10.4	9.8		
	Saturation	%	75	79	85		
SHW	Optimum Water Content	%	10.2				
	Maximum Dry Density	Mg/m ³	2.02				

Shearing stage

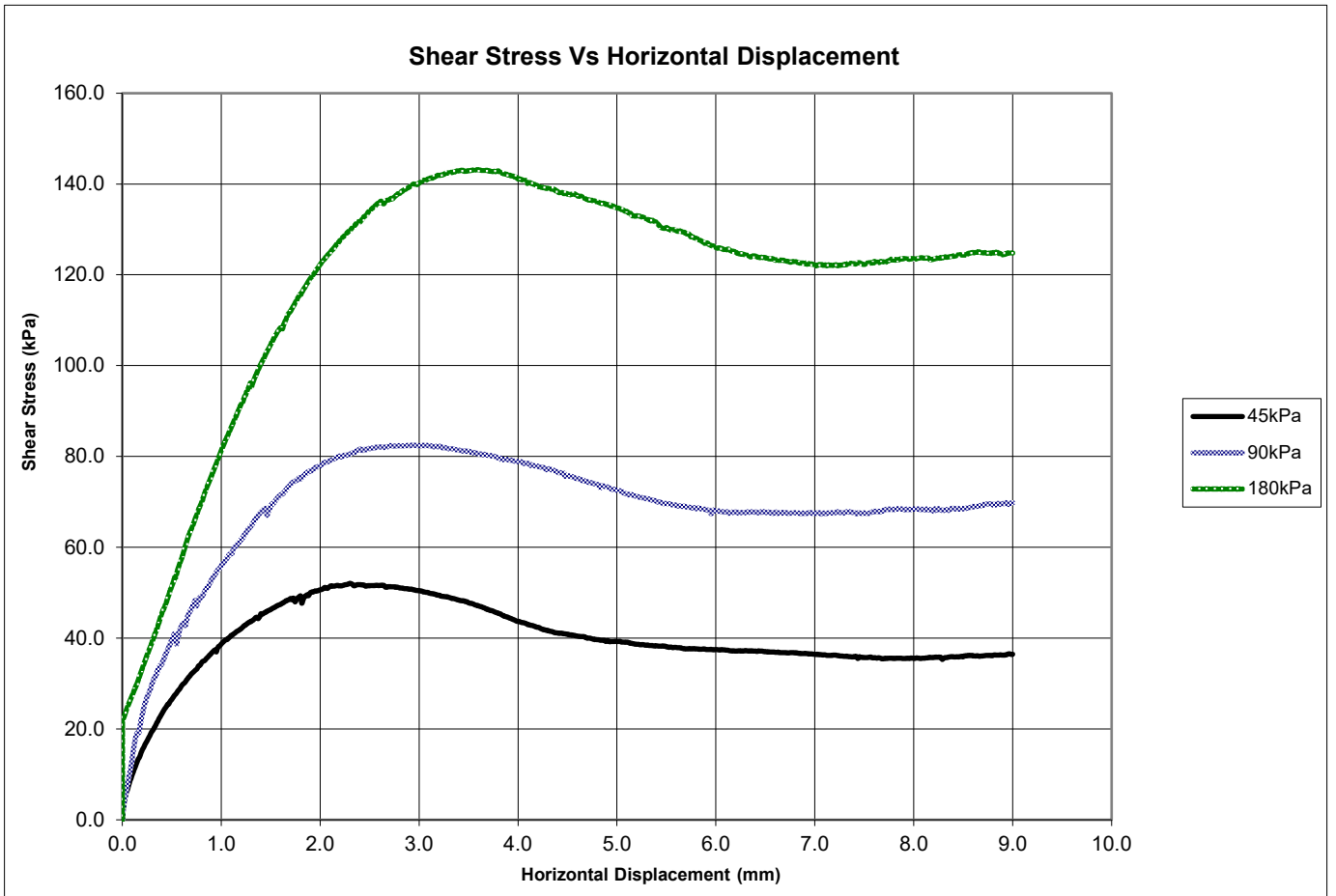
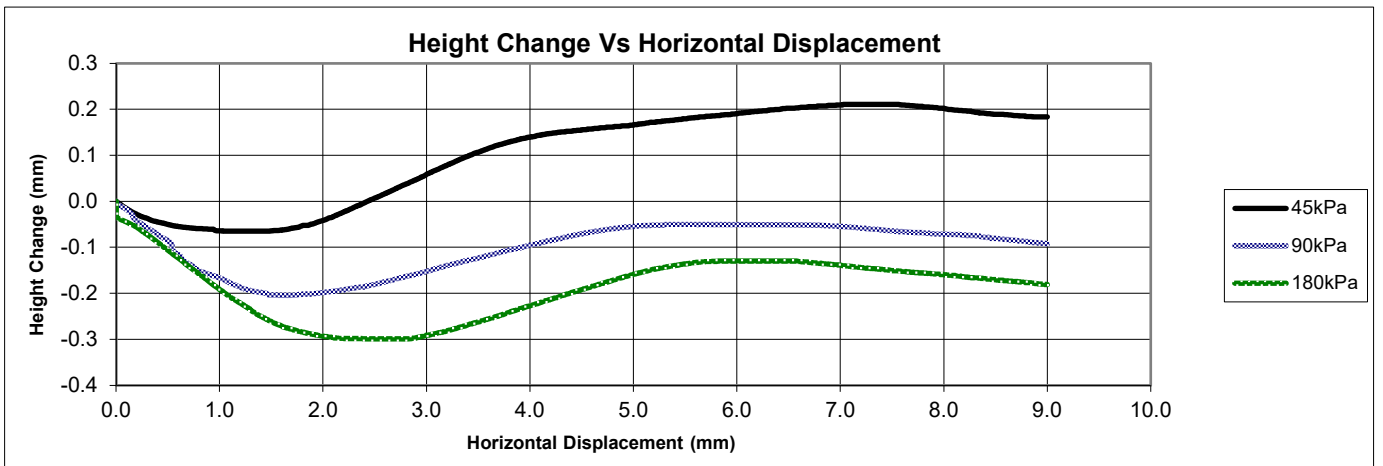
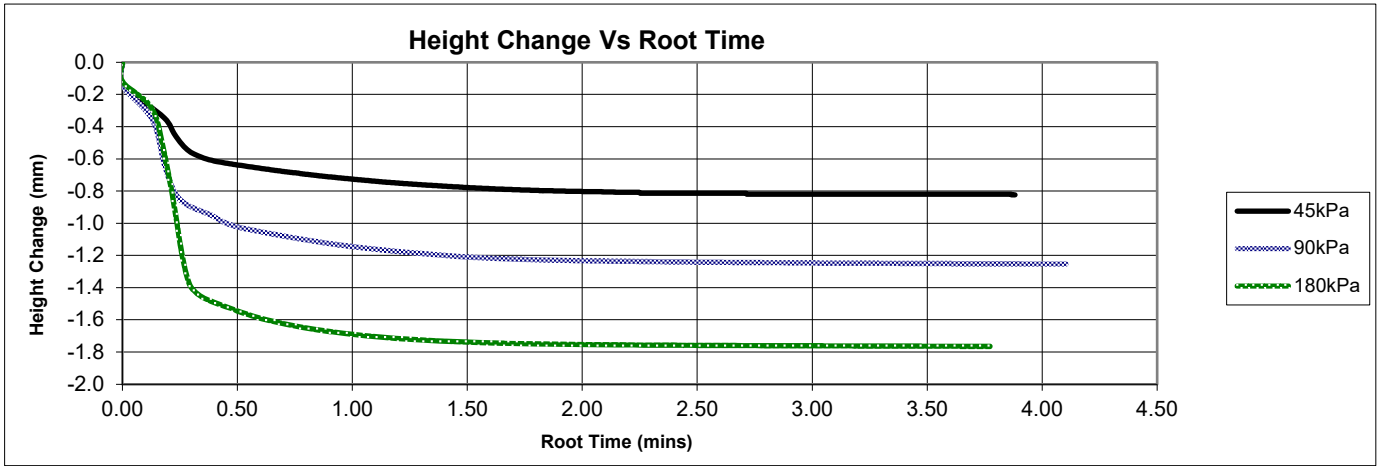
		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	2.30	2.92	3.59		
	Shear stress	kPa	52.097	82.522	143.198		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	22.0	-
φ'	degrees	34.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-15
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH28, K1100697, 1.20-2.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH28, K1100697, 1.20-2.00m
Designation (d/D) : Not Supplied
Description : Yellowish brown slightly silty clayey fine to coarse CRUSHED ROCK.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

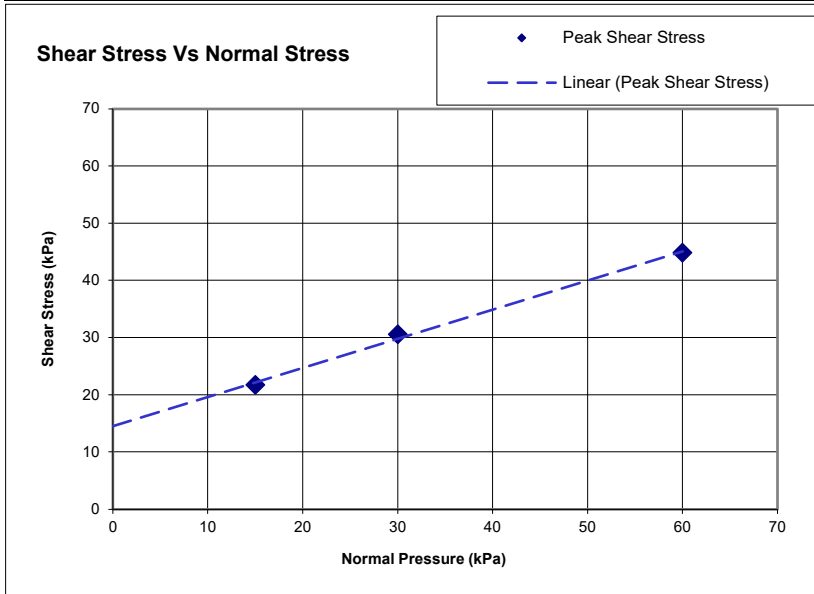
Date 21/12/2023

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		14.5	14.4	14.5		
	Bulk Density	Mg/m ³		1.93	1.94	1.94		
	Dry Density	Mg/m ³		1.69	1.69	1.69		
	Voids Ratio			0.569	0.564	0.567		
	Degree of Saturation	%		67	68	68		
Consol	Consolidation / Normal Stress	kPa		15	30	60		
	Change in height	mm		0.22	0.54	0.71		
	Voids ratio			0.554	0.527	0.519		
Final	Voids ratio			0.582	0.533	0.525		
	Water Content	%		13.8	12.0	11.2		
	Saturation	%		63	60	57		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage

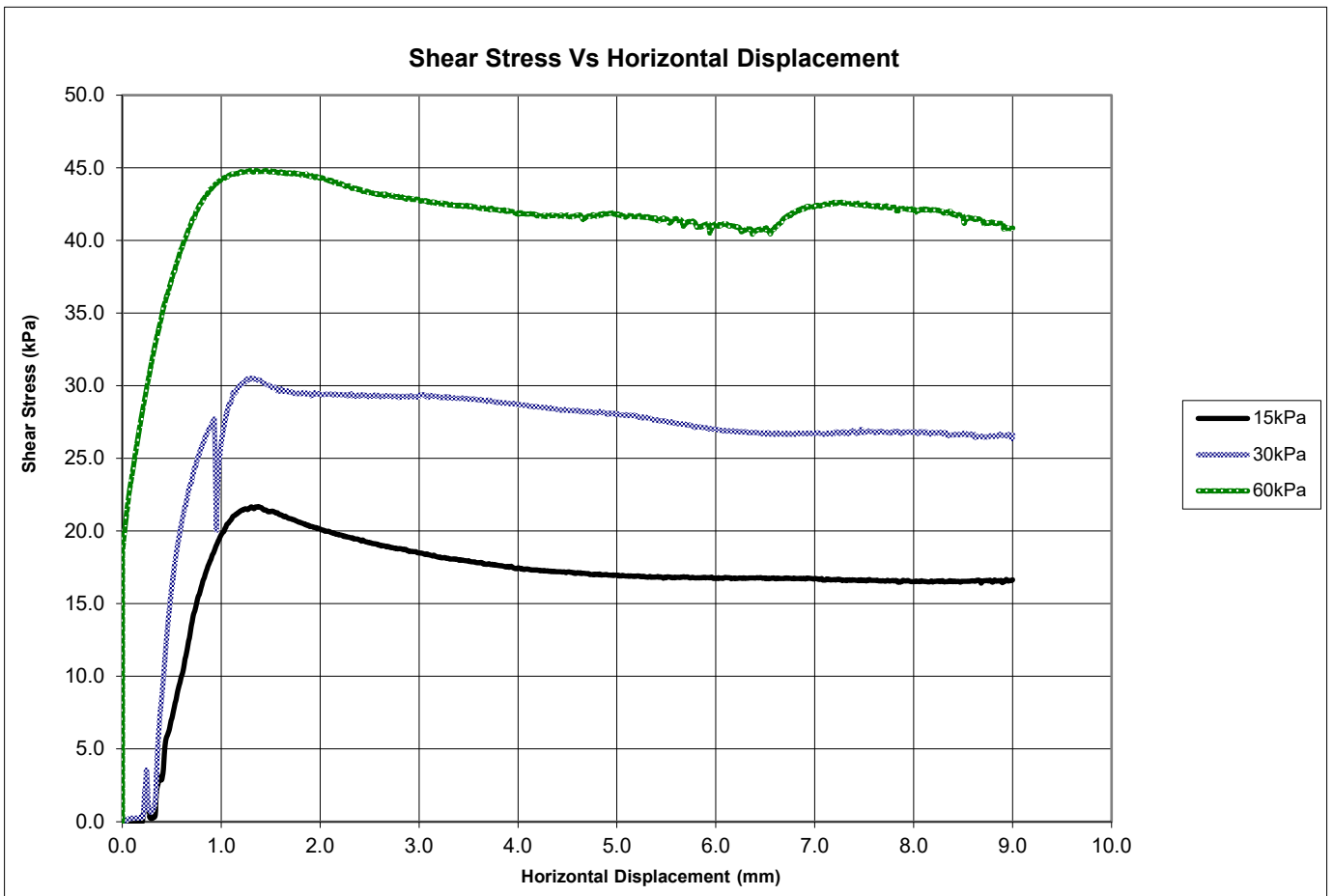
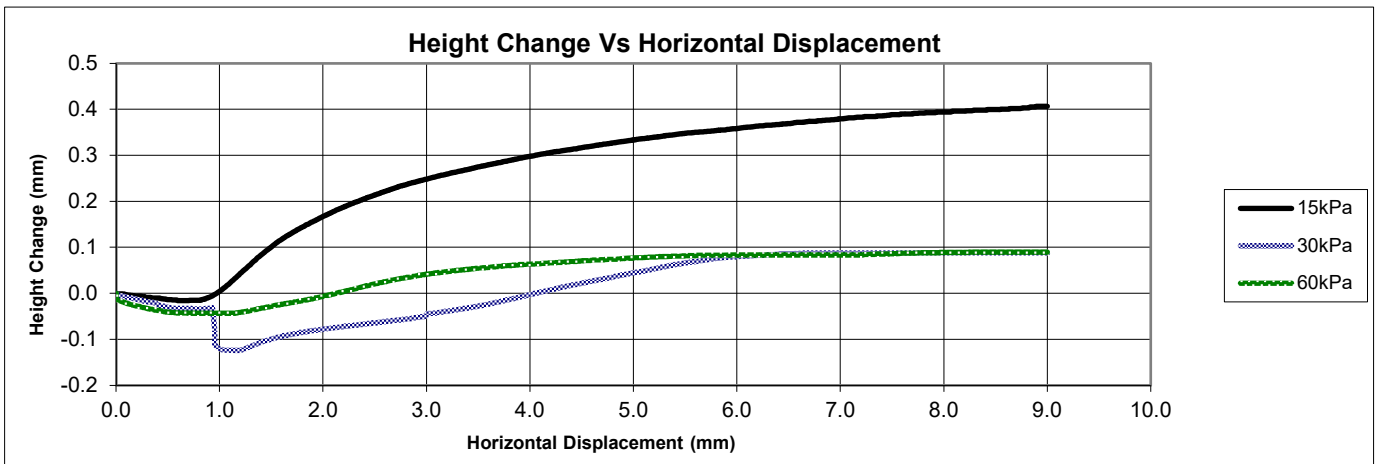
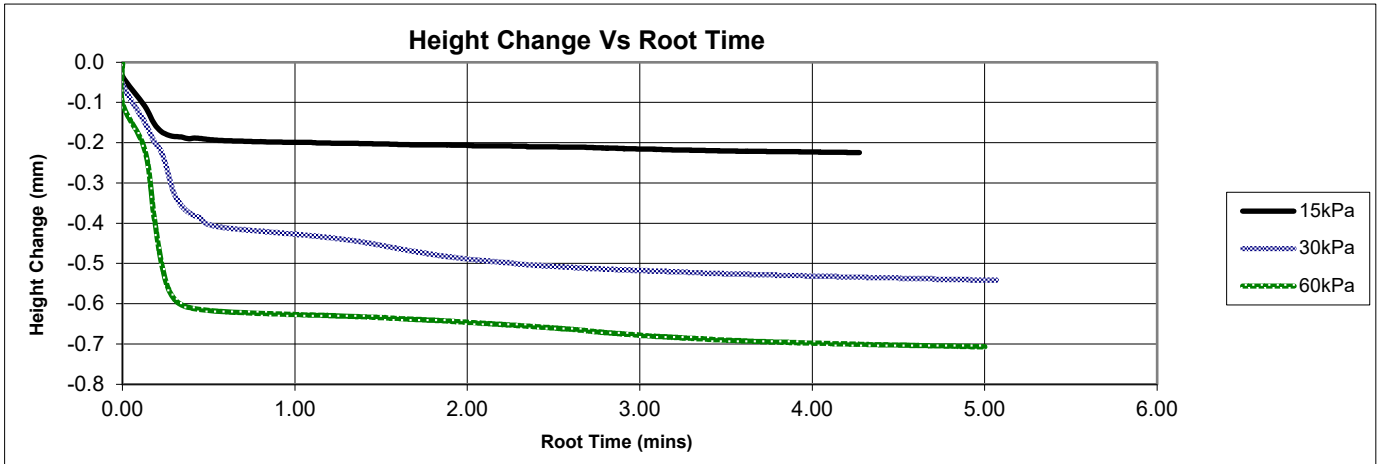
			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		1.38	1.30	1.36		
	Shear stress	kPa		21.692	30.535	44.816		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	14.5	-
φ'	degrees	27.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-16
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH29, K1100704, 1.00-1.10m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH29, K1100704, 1.00-1.10m
Designation (d/D) : Not Supplied
Description : Brown gravelly slightly silty very sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

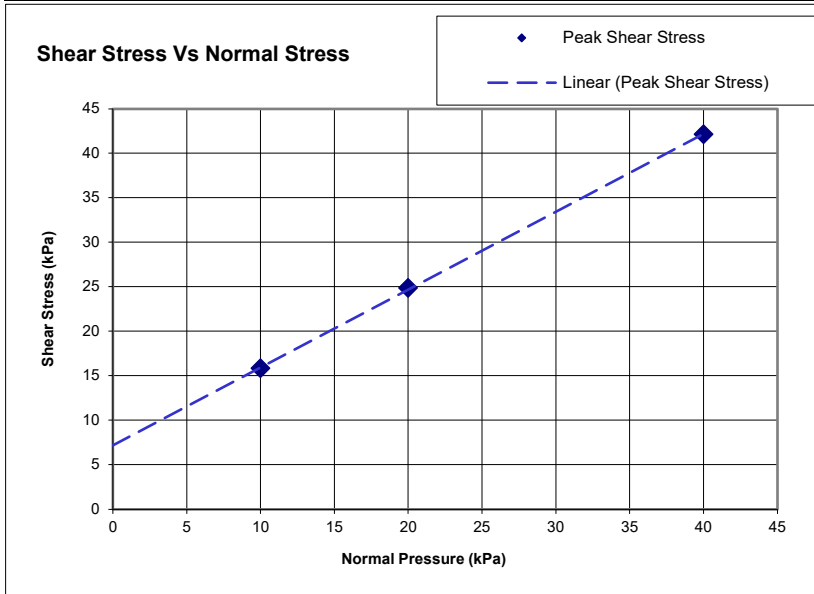
Date 21/12/2023

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	15.8	15.7	15.8		
	Bulk Density	Mg/m ³	2.03	2.04	2.05		
	Dry Density	Mg/m ³	1.76	1.76	1.77		
	Voids Ratio		0.509	0.503	0.501		
	Degree of Saturation	%	82	83	84		
Consol	Consolidation / Normal Stress	kPa	10	20	40		
	Change in height	mm	0.21	0.29	0.58		
	Voids ratio		0.495	0.484	0.463		
Final	Voids ratio		0.503	0.496	0.467		
	Water Content	%	19.3	19.2	18.7		
	Saturation	%	100	100	100		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

Shearing stage

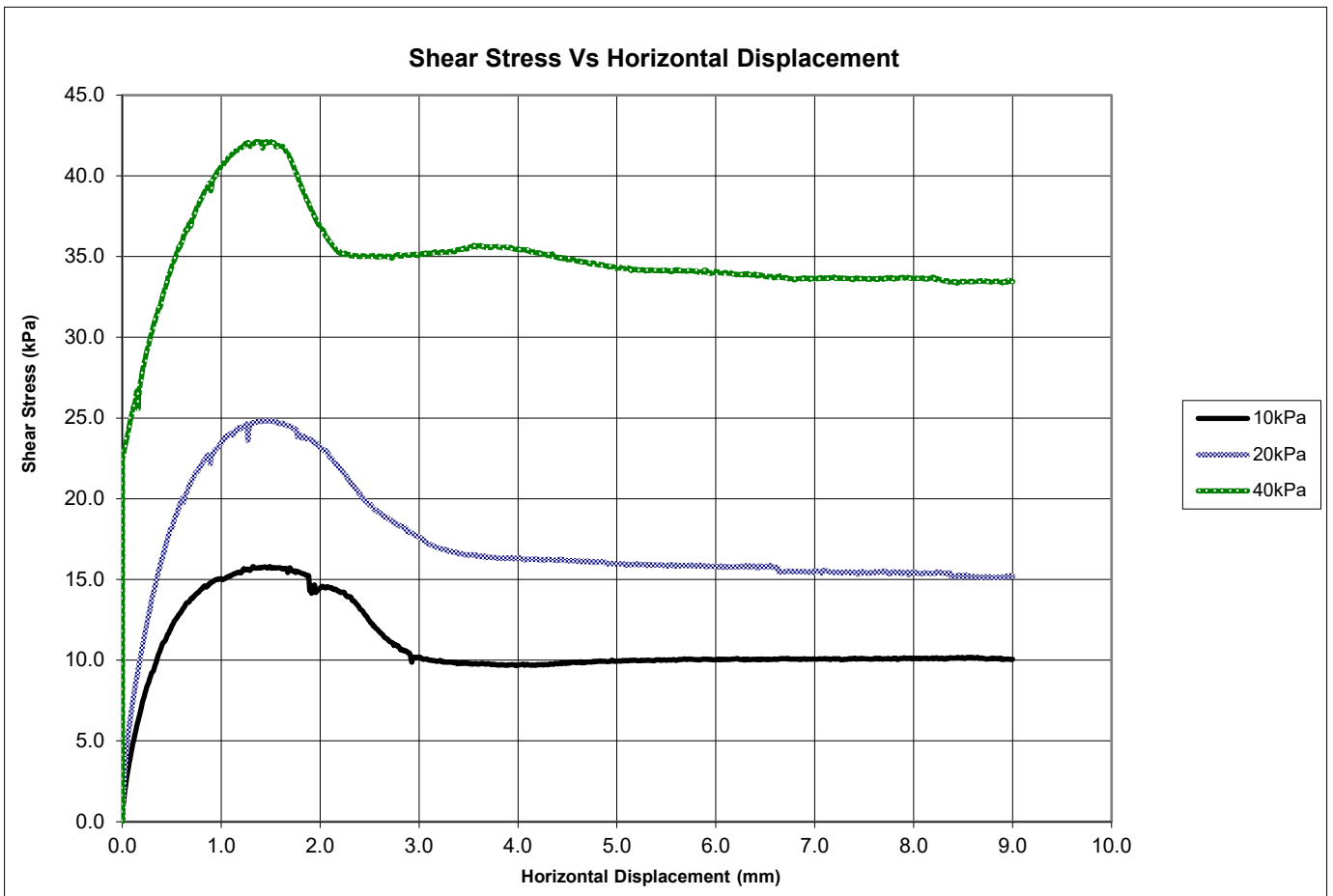
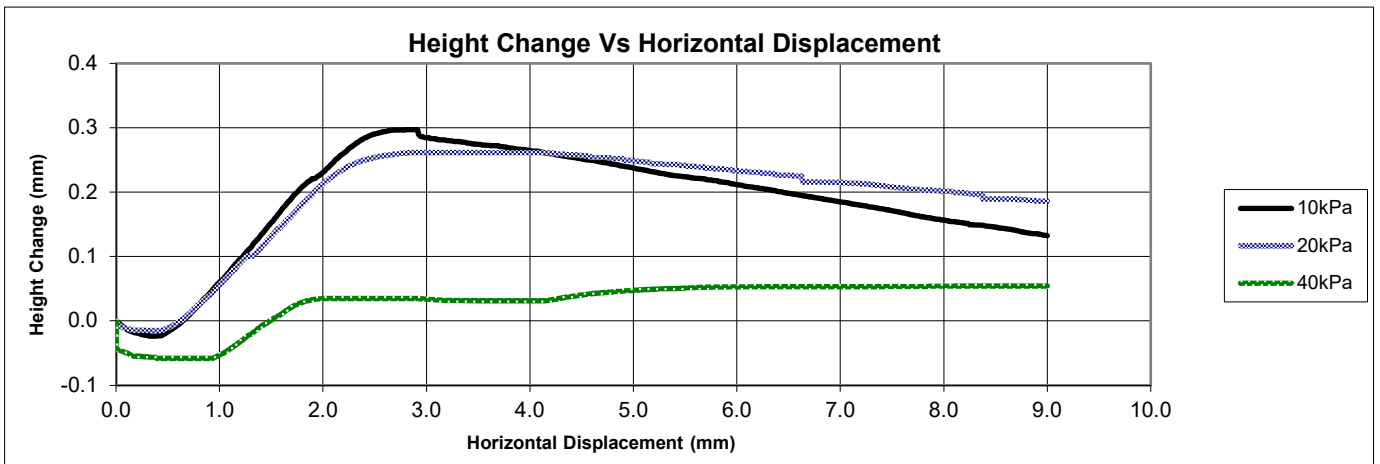
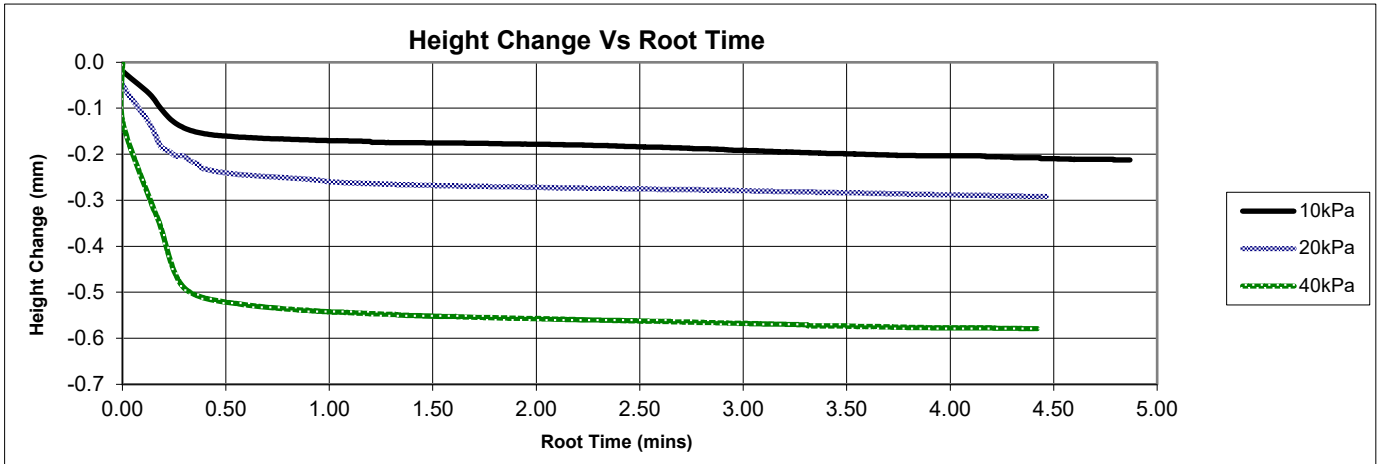
		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	1.32	1.48	1.37		
	Shear stress	kPa	15.822	24.852	42.130		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	7.0	-
φ'	degrees	41.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-3
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH31, K1100724, 1.00-1.10m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH31, K1100724, 1.00-1.10m
Designation (d/D) : Not Supplied
Description : Brown clayey fine to coarse SAND and GRAVEL.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

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All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 14/12/2023



Certificate No :

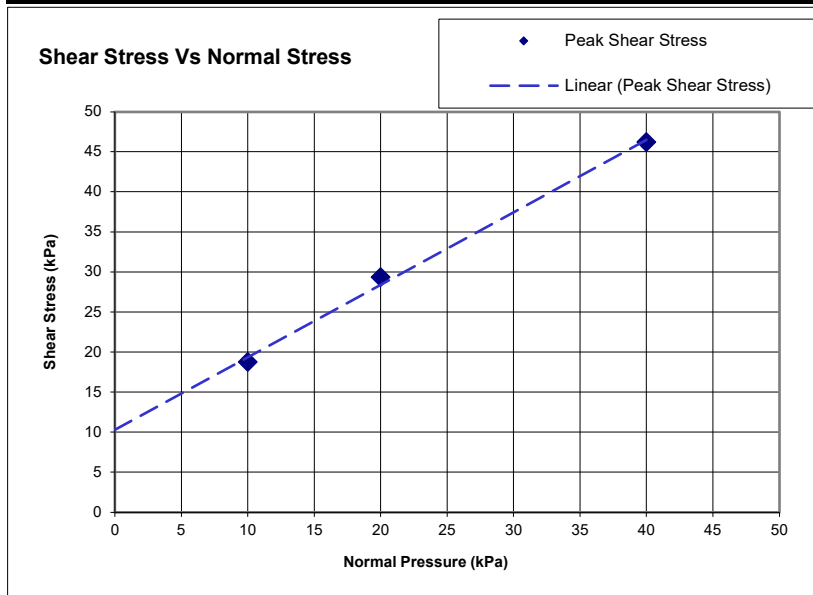
23/1202 - 03-3

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		11.8	11.9	11.9		
	Bulk Density	Mg/m ³		2.04	2.04	2.04		
	Dry Density	Mg/m ³		1.82	1.82	1.82		
	Voids Ratio			0.453	0.452	0.452		
	Degree of Saturation	%		69	70	70		
Consol	Consolidation / Normal Stress	kPa		10	20	40		
	Change in height	mm		0.08	0.27	0.68		
	Voids ratio			0.448	0.436	0.410		
Final	Voids ratio			0.555	0.517	0.489		
	Water Content	%		10.5	10.4	9.8		
	Saturation	%		50	53	53		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

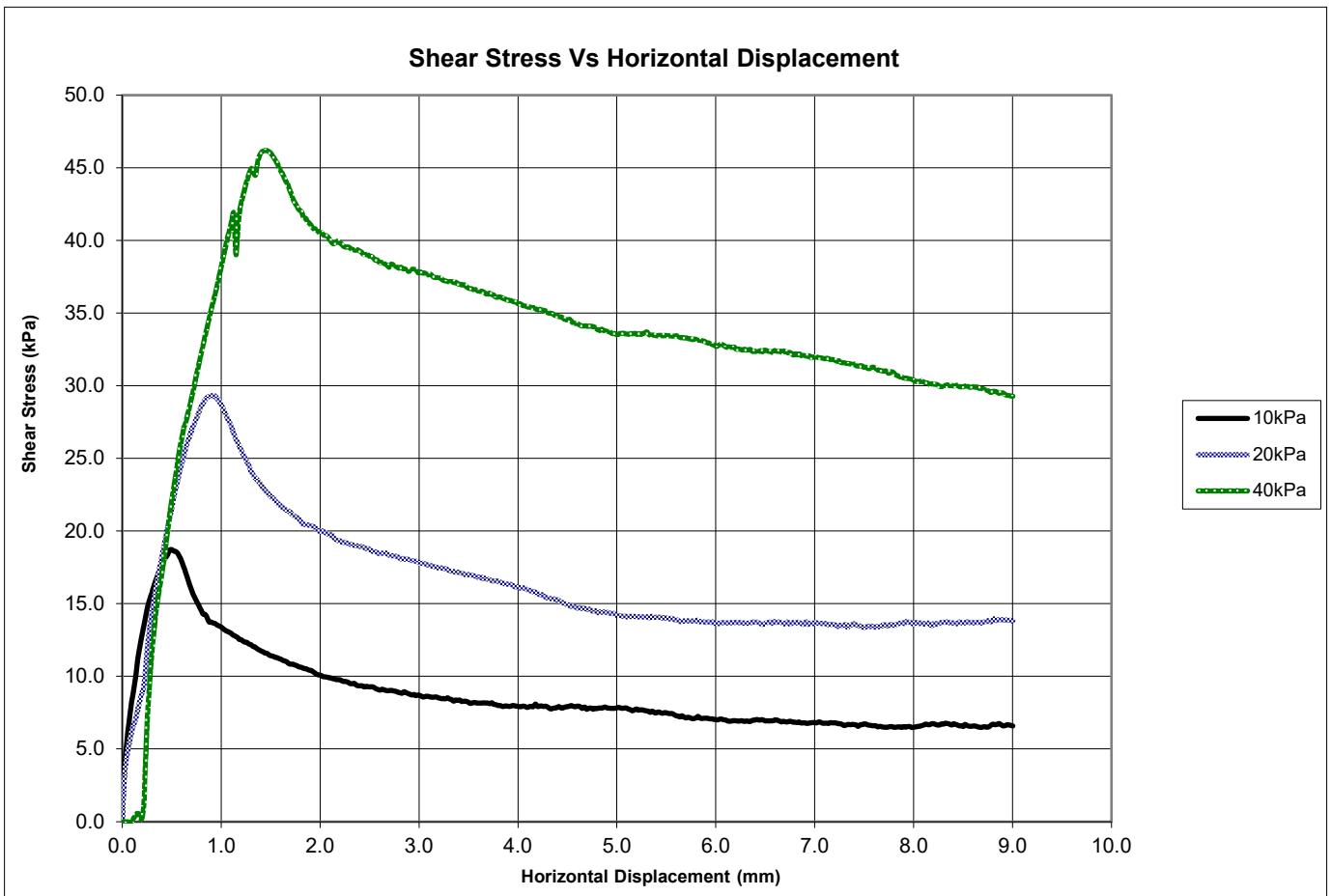
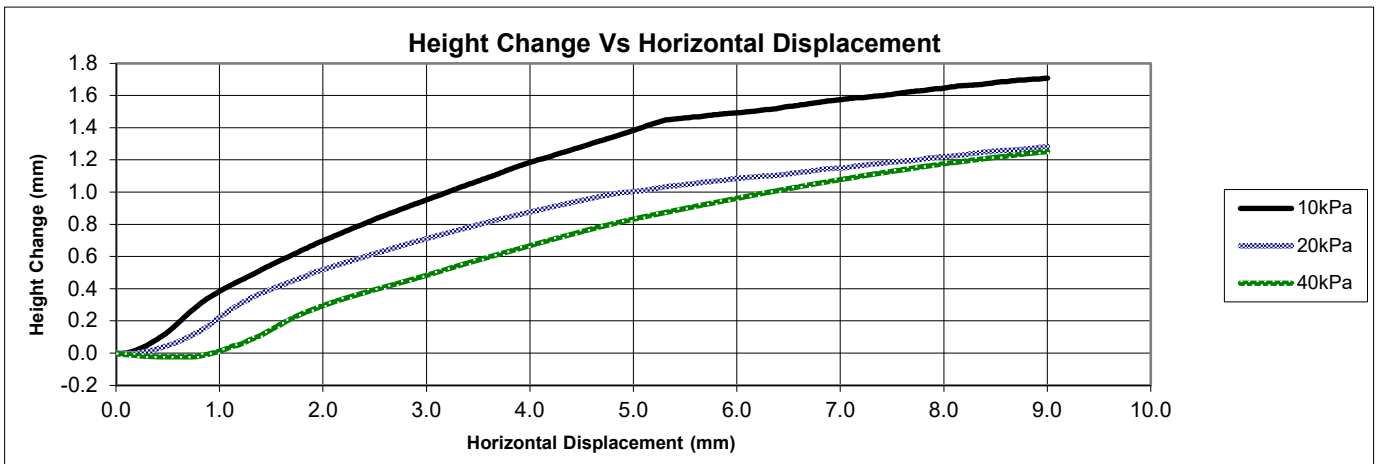
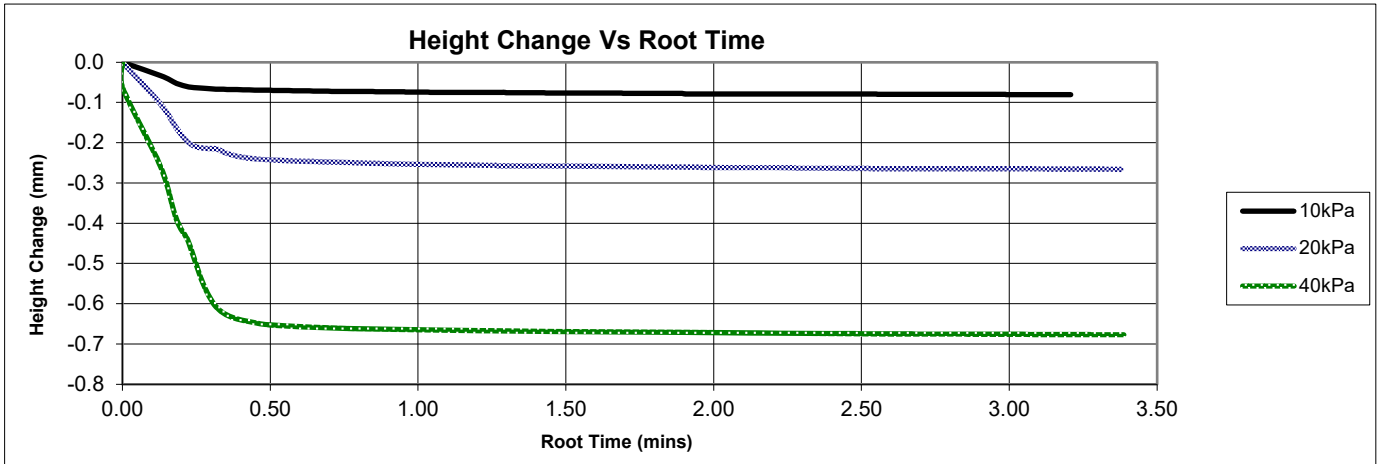
Shearing stage

			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		0.50	0.90	1.45		
	Shear stress	kPa		18.733	29.330	46.201		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	10.5	-
φ'	degrees	42.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-17
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH31, K1100728, 2.60-3.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH31, K1100728, 2.60-3.00m
Designation (d/D) : Not Supplied
Description : Brown very gravelly fine to coarse SAND with silty clay pockets. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

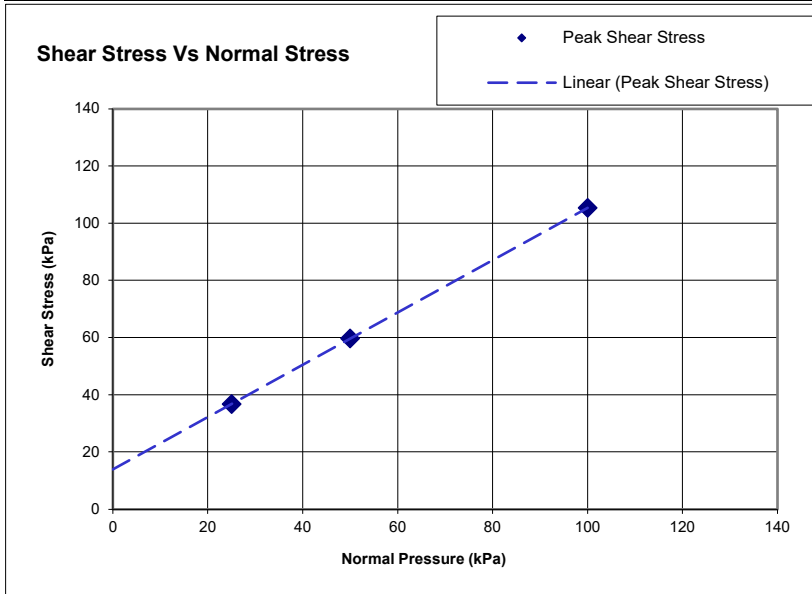
Date 21/12/2023

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	8.0	8.0	8.1		
	Bulk Density	Mg/m ³	2.05	2.05	2.05		
	Dry Density	Mg/m ³	1.90	1.90	1.90		
	Voids Ratio		0.394	0.396	0.396		
	Degree of Saturation	%	54	54	55		
Consol	Consolidation / Normal Stress	kPa	25	50	100		
	Change in height	mm	0.32	0.44	0.48		
	Voids ratio		0.374	0.369	0.367		
Final	Voids ratio		0.451	0.443	0.421		
	Water Content	%	8.4	8.2	8.1		
	Saturation	%	50	49	51		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

Shearing stage

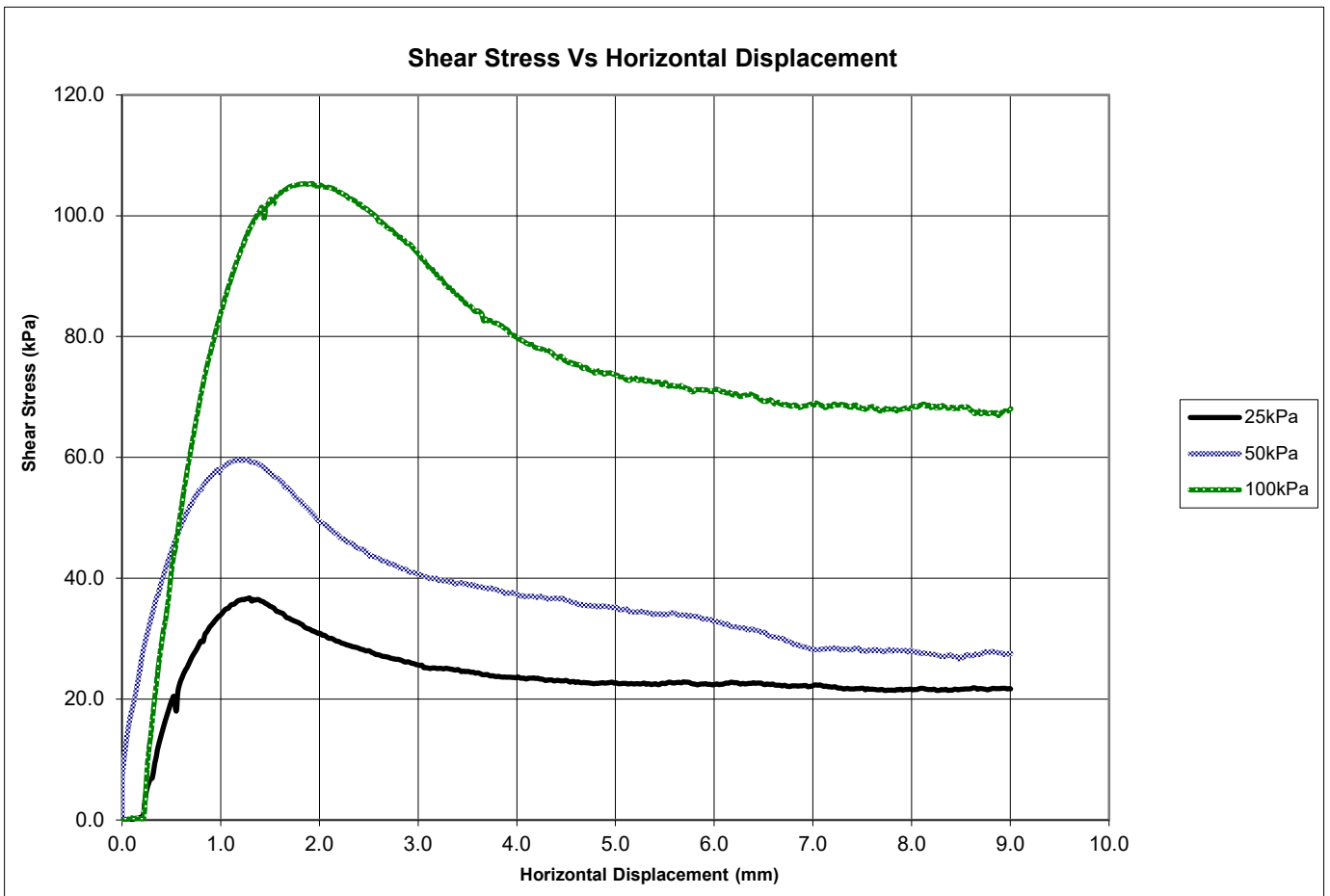
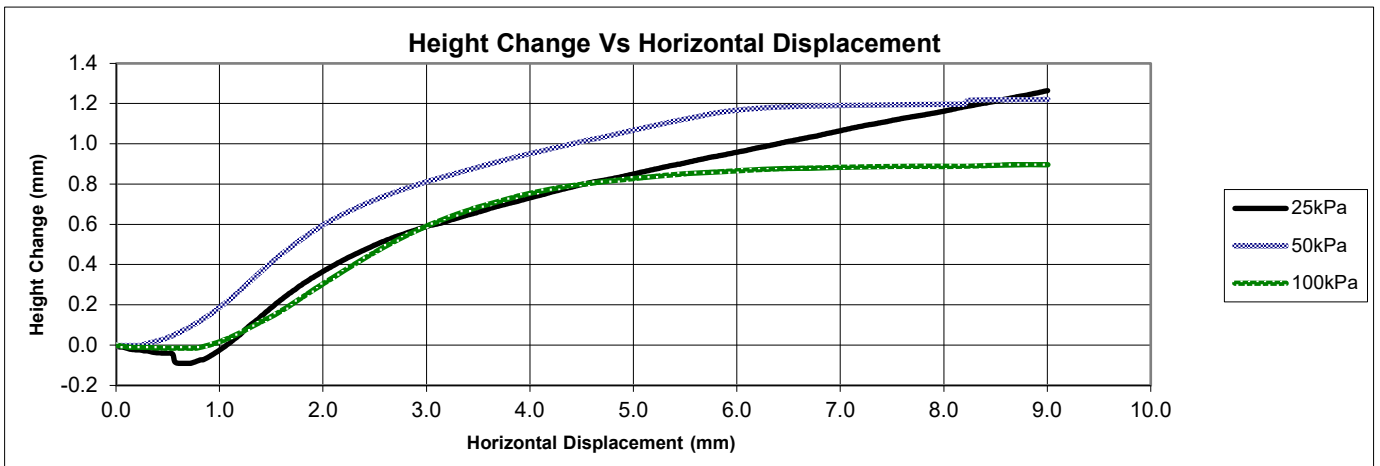
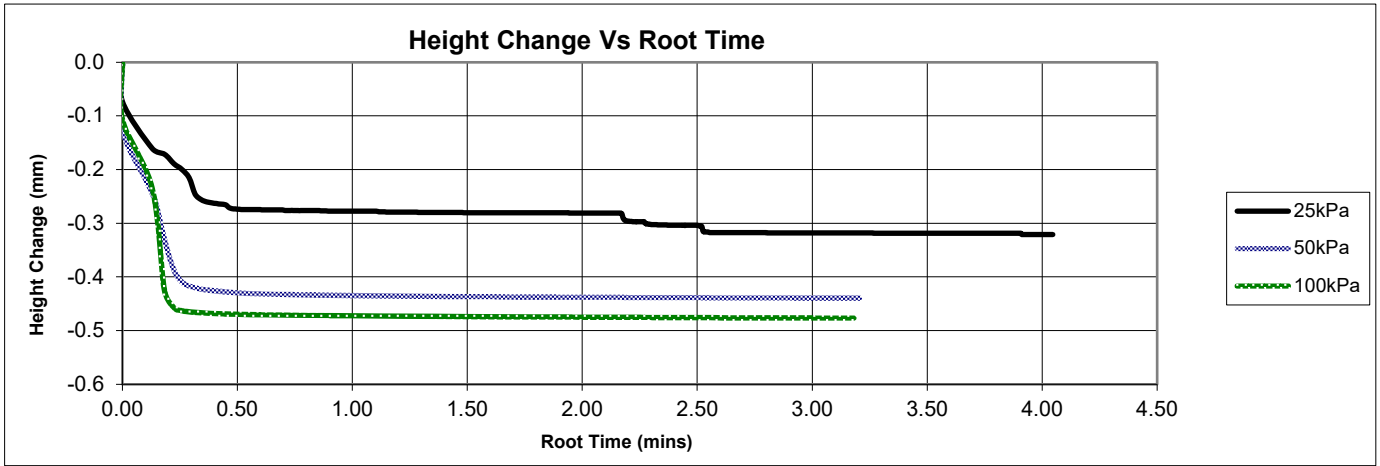
		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	1.29	1.26	1.91		
	Shear stress	kPa	36.760	59.659	105.341		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	14.0	-
φ'	degrees	42.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-18
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH31, K1100731, 5.45-6.20m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH31, K1100731, 5.45-6.20m
Designation (d/D) : Not Supplied
Description : Brown very gravelly fine to coarse SAND with silty clay pockets. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

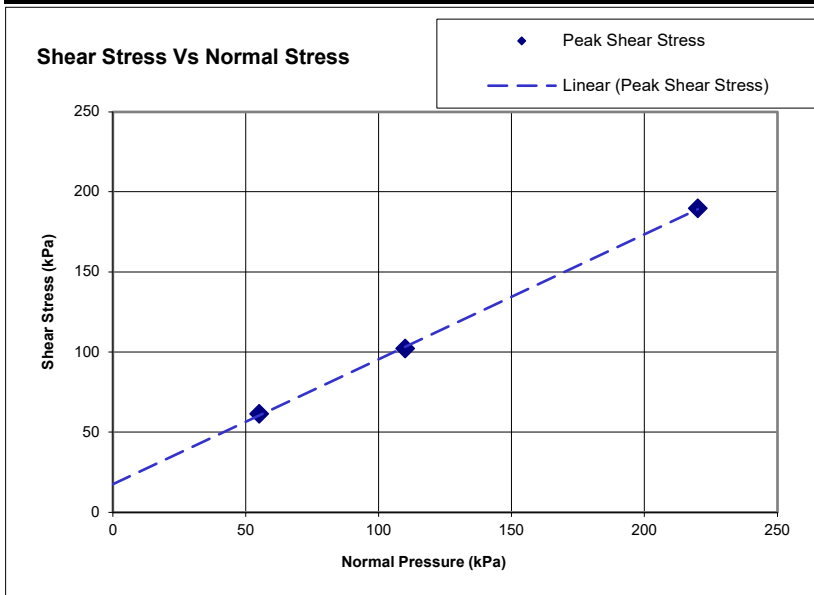
Date 21/12/2023

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		11.6	11.6	11.6		
	Bulk Density	Mg/m ³		1.99	1.98	1.99		
	Dry Density	Mg/m ³		1.78	1.78	1.78		
	Voids Ratio			0.487	0.491	0.489		
	Degree of Saturation	%		63	63	63		
Consol	Consolidation / Normal Stress	kPa		55	110	220		
	Change in height	mm		0.44	0.50	0.62		
	Voids ratio			0.458	0.458	0.449		
Final	Voids ratio			0.519	0.506	0.488		
	Water Content	%		10.8	10.7	10.7		
	Saturation	%		55	56	58		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage

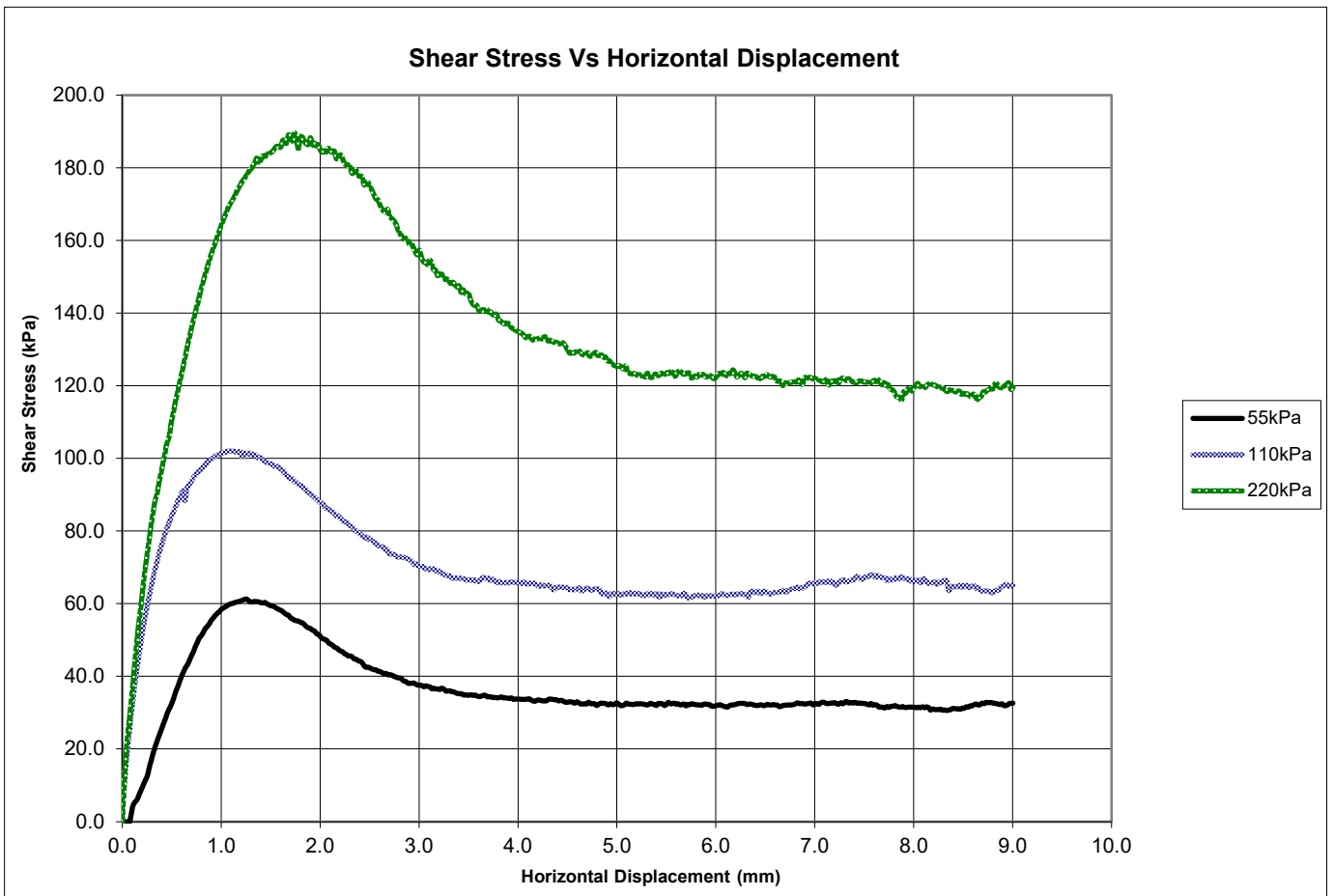
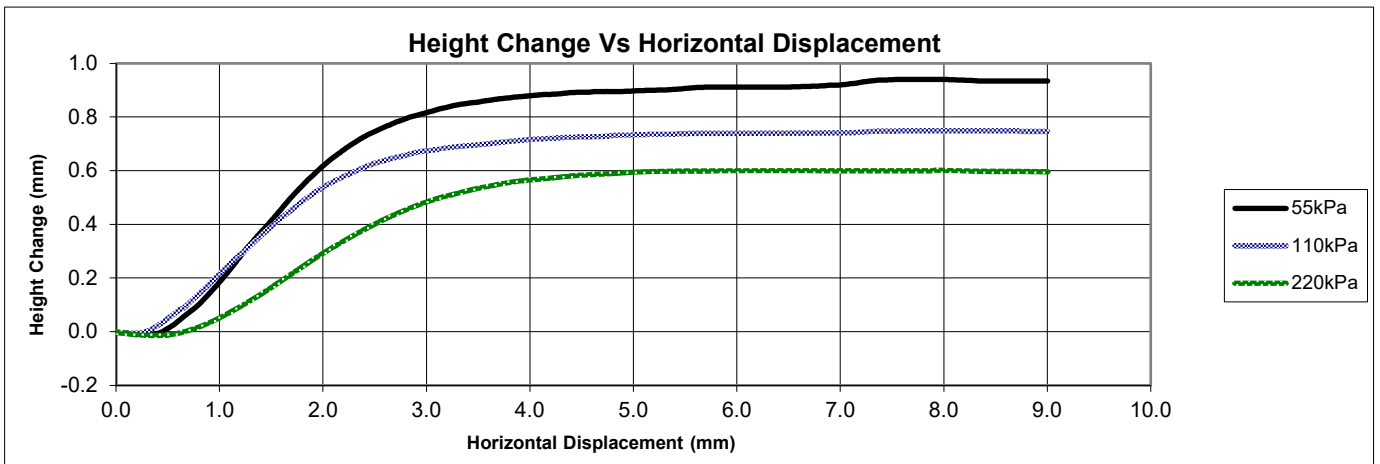
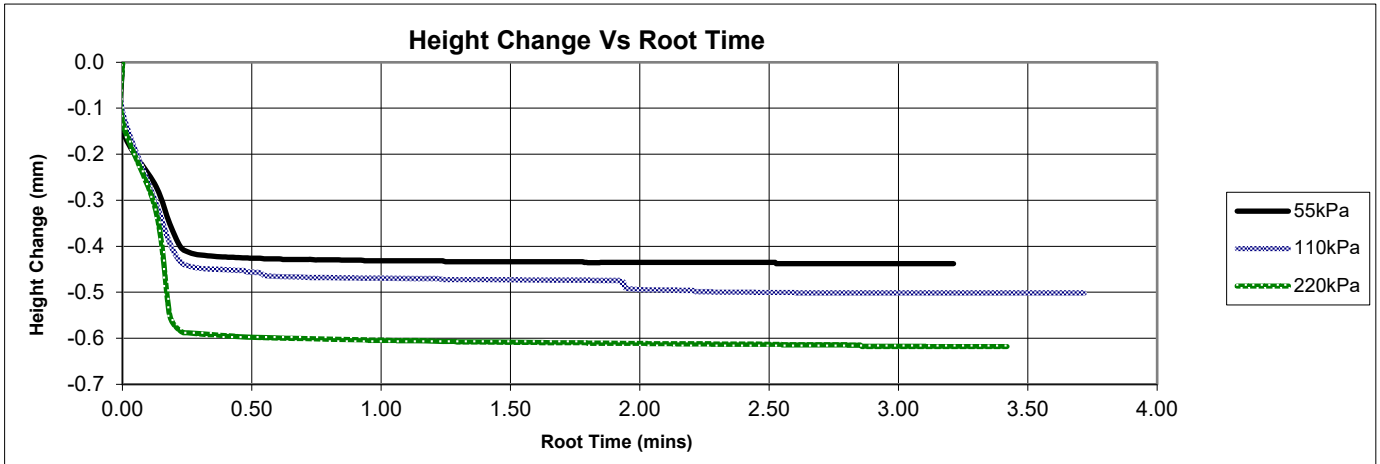
			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		1.24	1.09	1.74		
	Shear stress	kPa		61.280	102.093	189.638		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	17.5	-
φ'	degrees	38.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-19
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH34, K1099896, 0.40-1.40m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH34, K1099896, 0.40-1.40m
Designation (d/D) : Not Supplied
Description : Brown very gravelly slightly silty very sandy CLAY with sandstone fragments. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

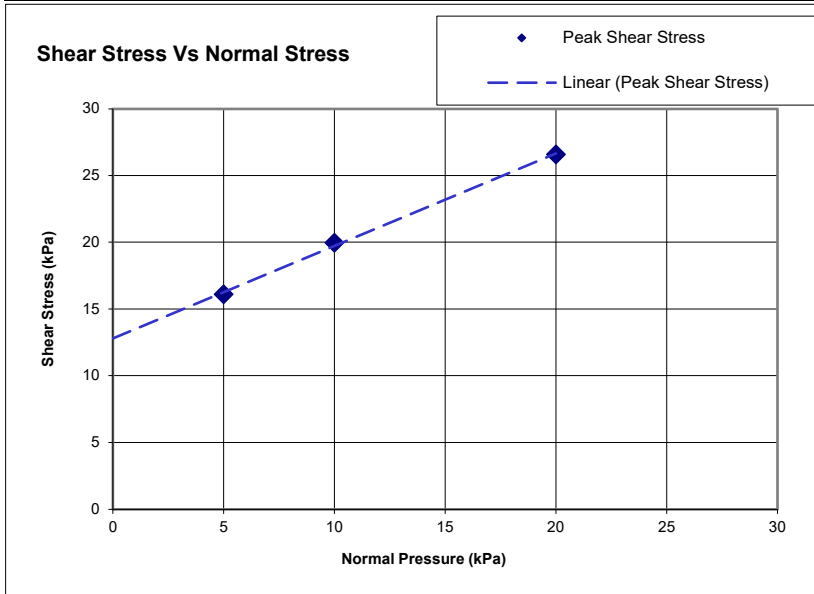
Date 21/12/2023

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	15.1	15.0	15.0		
	Bulk Density	Mg/m ³	2.02	2.02	2.02		
	Dry Density	Mg/m ³	1.75	1.76	1.76		
	Voids Ratio		0.511	0.506	0.506		
	Degree of Saturation	%	78	79	78		
Consol	Consolidation / Normal Stress	kPa	5	10	20		
	Change in height	mm	0.11	0.16	0.19		
	Voids ratio		0.504	0.496	0.494		
Final	Voids ratio		0.617	0.599	0.593		
	Water Content	%	21.5	20.0	19.6		
	Saturation	%	92	89	88		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

Shearing stage

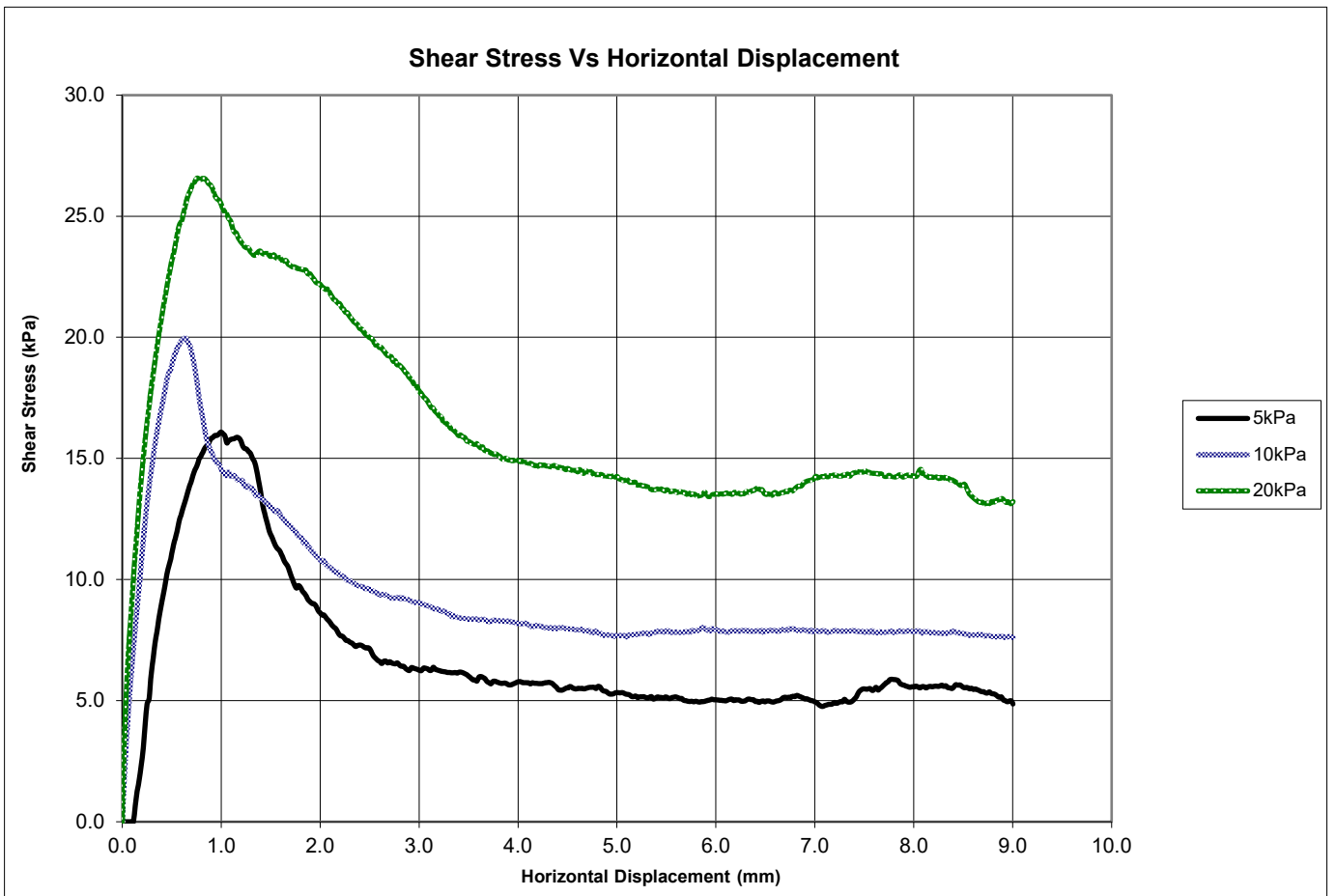
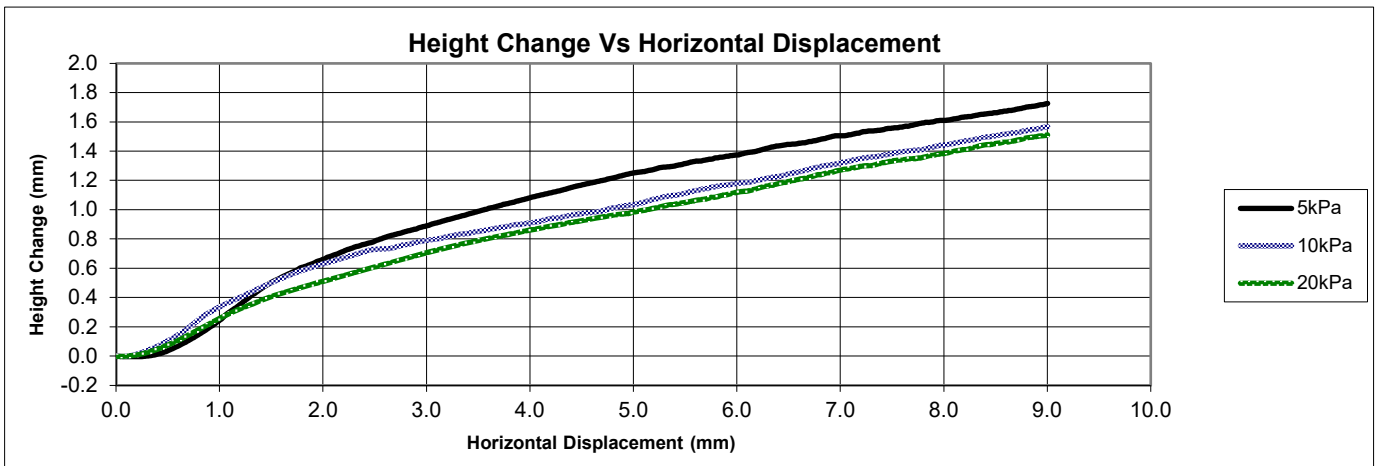
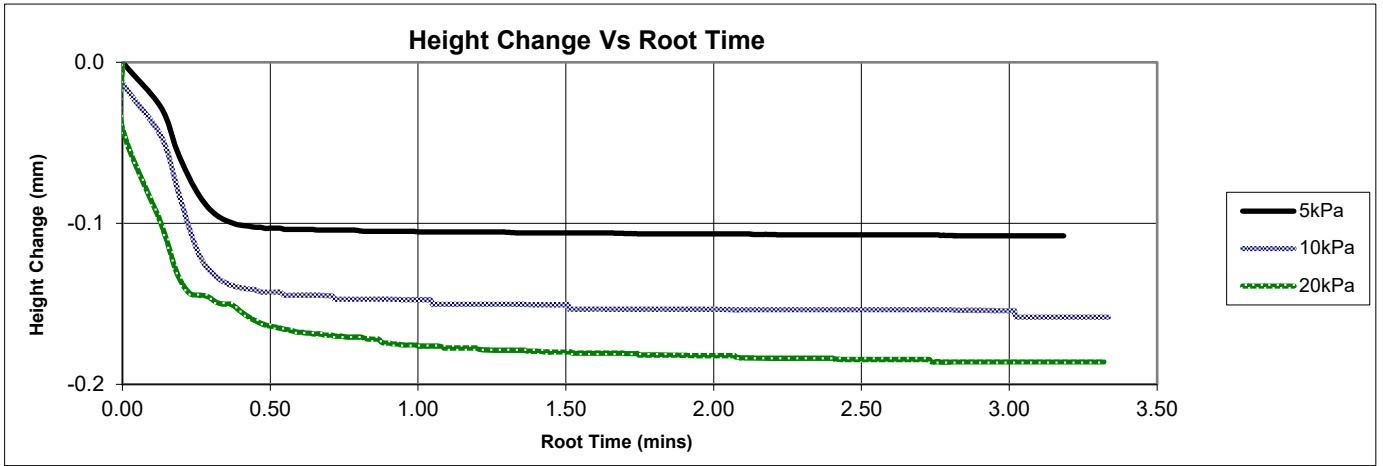
		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	0.99	0.63	0.75		
	Shear stress	kPa	16.093	19.968	26.572		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	13.0	-
φ'	degrees	34.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-20
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH36, K1099891, 0.40-1.30m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH36, K1099891, 0.40-1.30m
Designation (d/D) : Not Supplied
Description : Brown very gravelly very sandy CLAY with pockets of silt. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

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All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

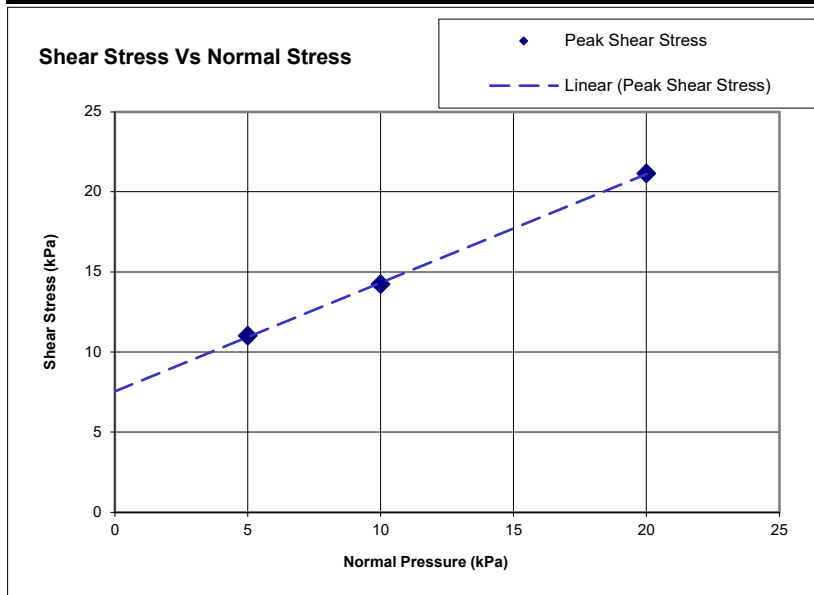
Date 21/12/2023

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		12.3	12.2	12.3		
	Bulk Density	Mg/m ³		2.13	2.12	2.12		
	Dry Density	Mg/m ³		1.89	1.89	1.89		
	Voids Ratio			0.400	0.400	0.406		
	Degree of Saturation	%		82	81	80		
Consol	Consolidation / Normal Stress	kPa		5	10	20		
	Change in height	mm		0.09	0.12	0.27		
	Voids ratio			0.394	0.392	0.389		
Final	Voids ratio			0.445	0.426	0.400		
	Water Content	%		17.8	16.4	16.1		
	Saturation	%		100	100	100		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage

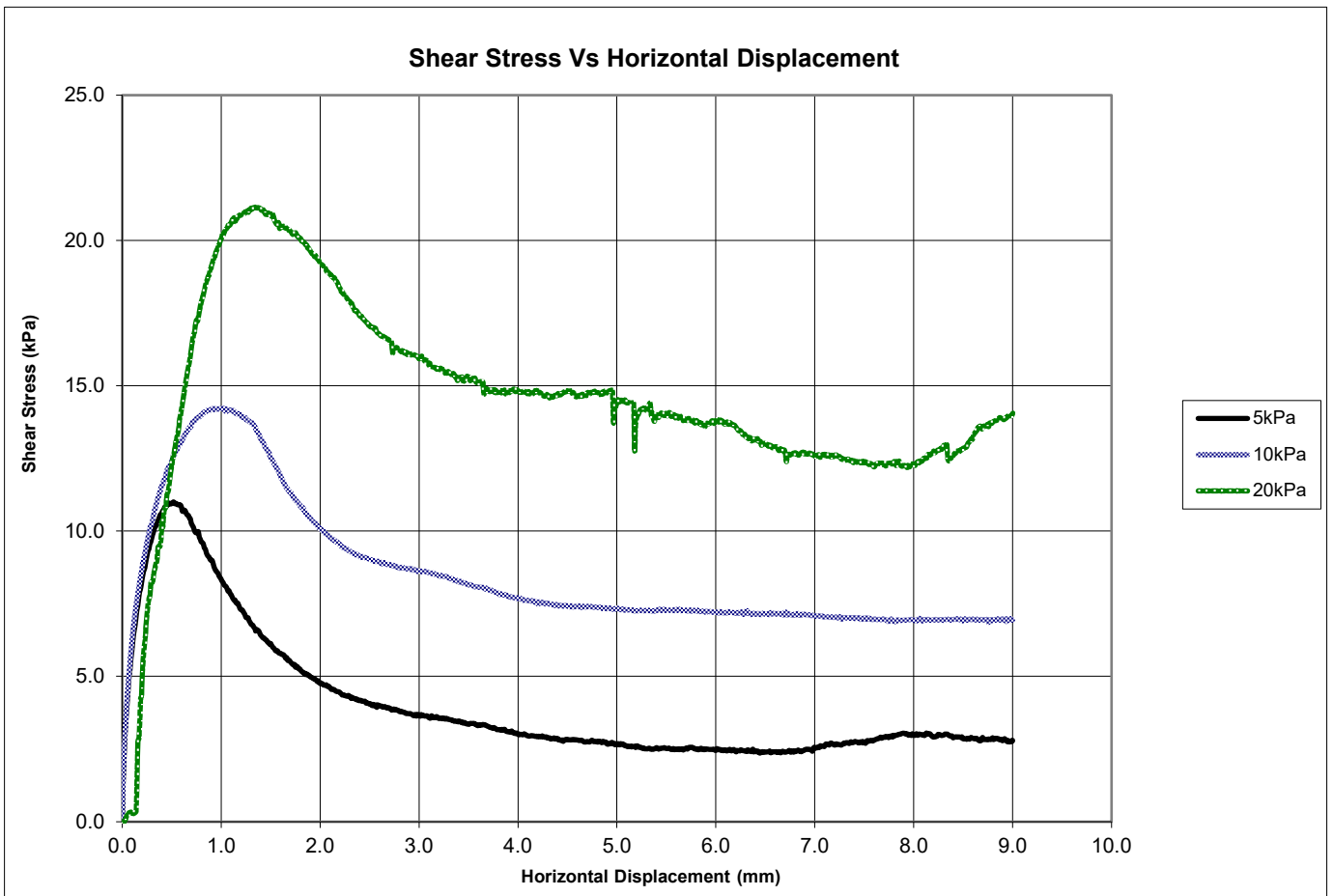
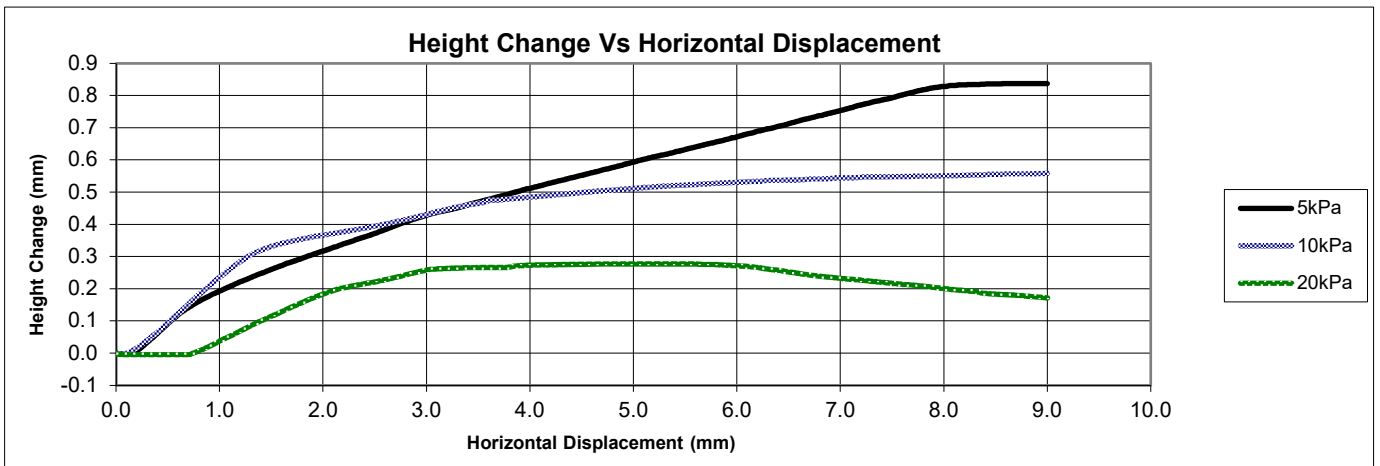
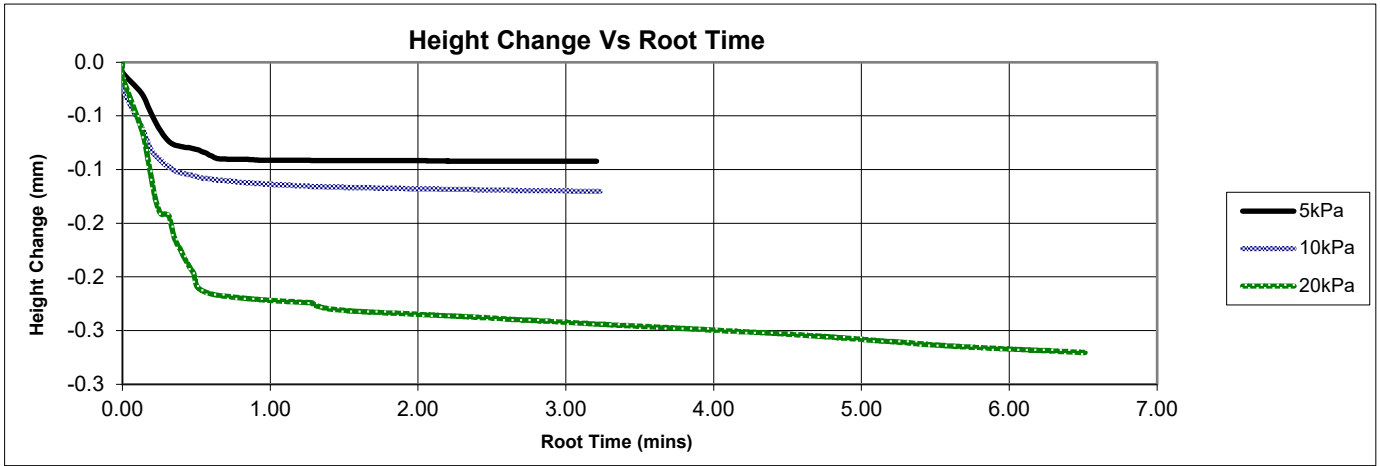
			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		0.52	1.02	1.34		
	Shear stress	kPa		11.005	14.232	21.148		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	7.5	-
φ'	degrees	34.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-21
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH36, K1099893, 1.85-2.20m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH36, K1099893, 1.85-2.20m
Designation (d/D) : Not Supplied
Description : Brown very gravelly very silty very sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

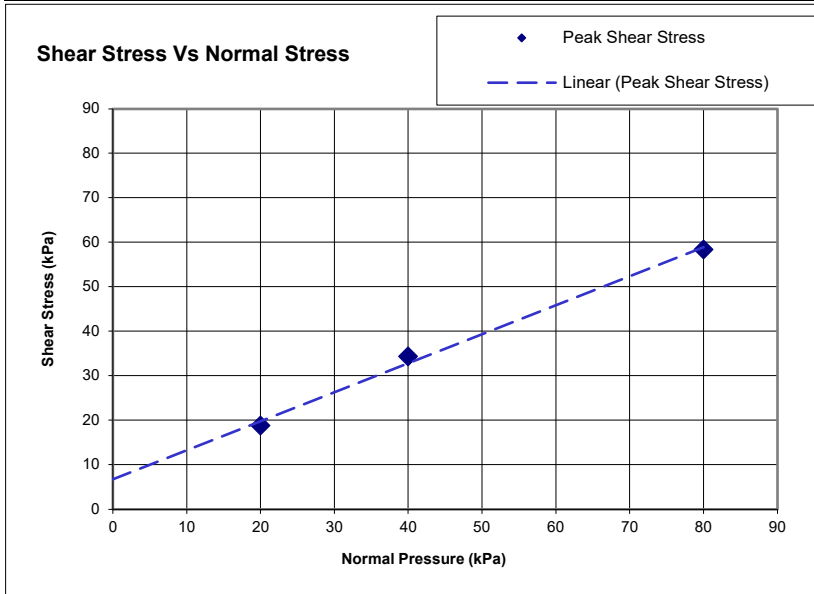
Date 21/12/2023

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		15.5	15.5	15.4		
	Bulk Density	Mg/m ³		1.75	1.75	1.75		
	Dry Density	Mg/m ³		1.52	1.51	1.52		
	Voids Ratio			0.748	0.754	0.748		
	Degree of Saturation	%		55	55	55		
Consol	Consolidation / Normal Stress	kPa		20	40	80		
	Change in height	mm		0.33	0.44	0.53		
	Voids ratio			0.723	0.720	0.708		
Final	Voids ratio			0.727	0.704	0.682		
	Water Content	%		29.9	28.5	27.9		
	Saturation	%		100	100	100		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage

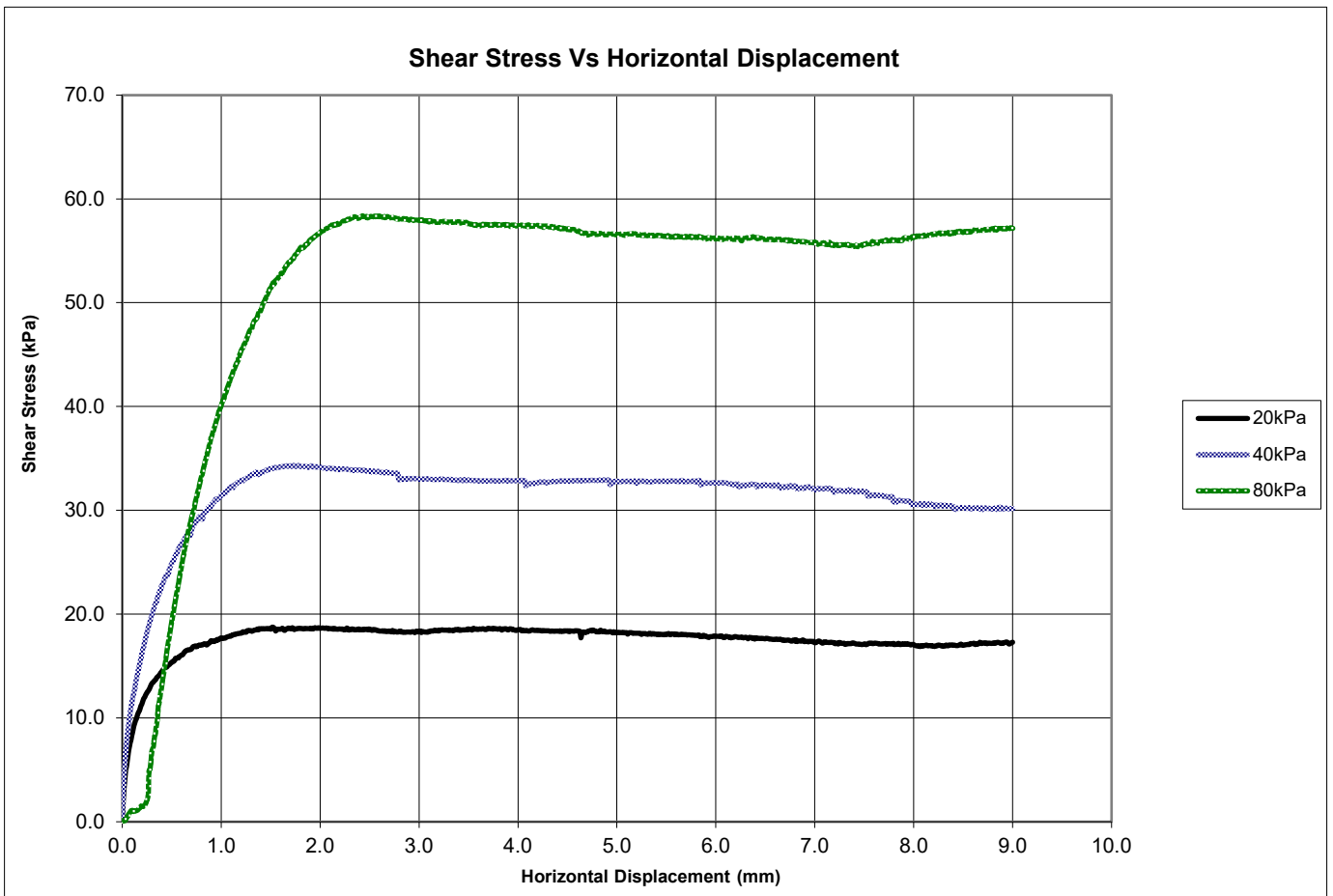
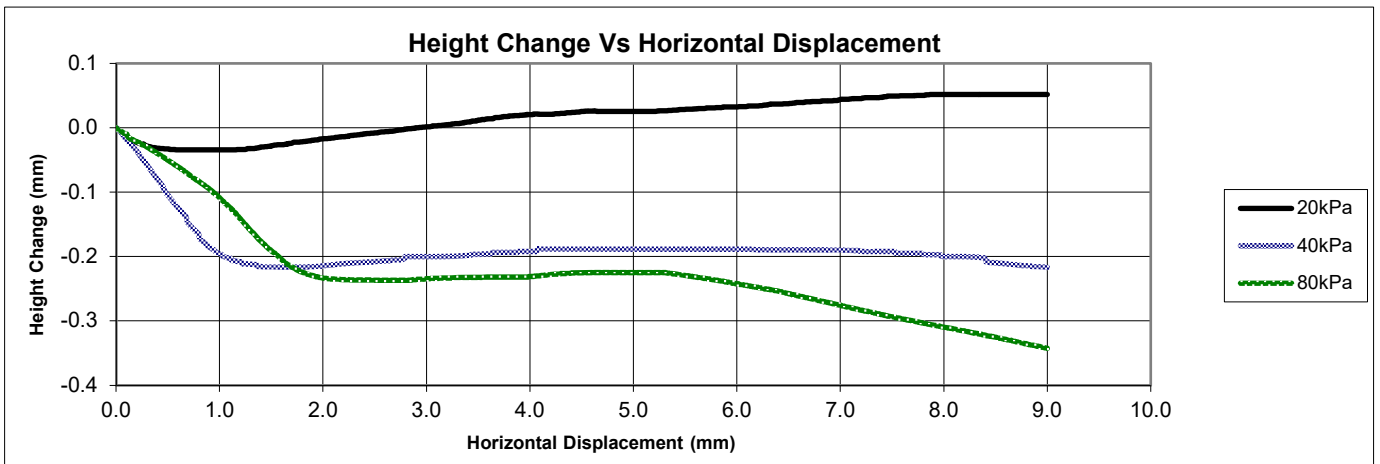
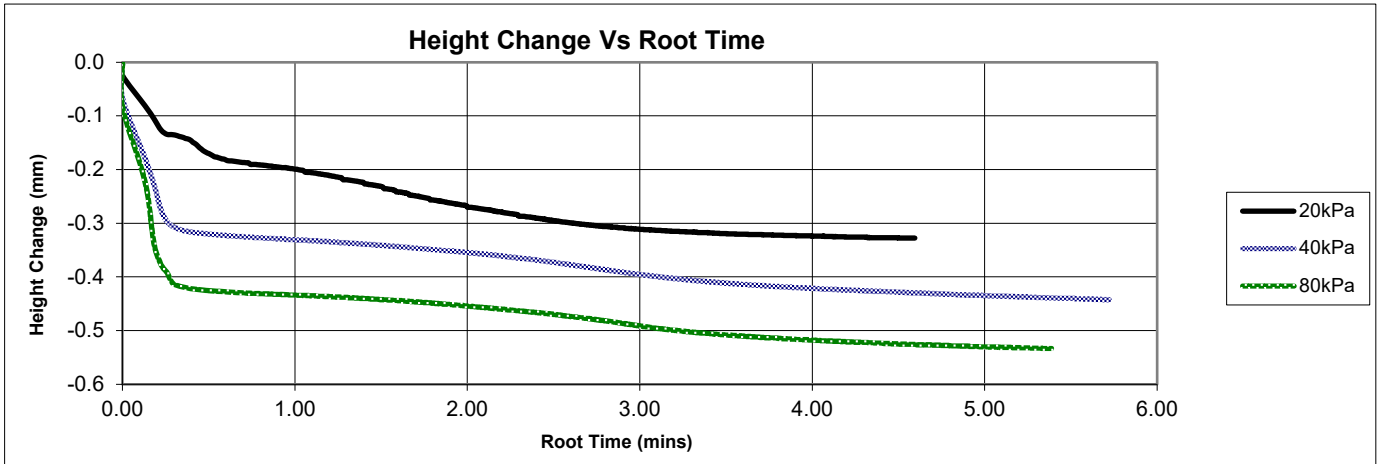
			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		1.52	1.73	2.43		
	Shear stress	kPa		18.751	34.323	58.382		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	6.5	-
φ'	degrees	33.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-22
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH38, K1099903, 0.50-0.60m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH38, K1099903, 0.50-0.60m
Designation (d/D) : Not Supplied
Description : Brown slightly clayey slightly silty fine to coarse SAND and GRAVEL / CRUSHED ROCK.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

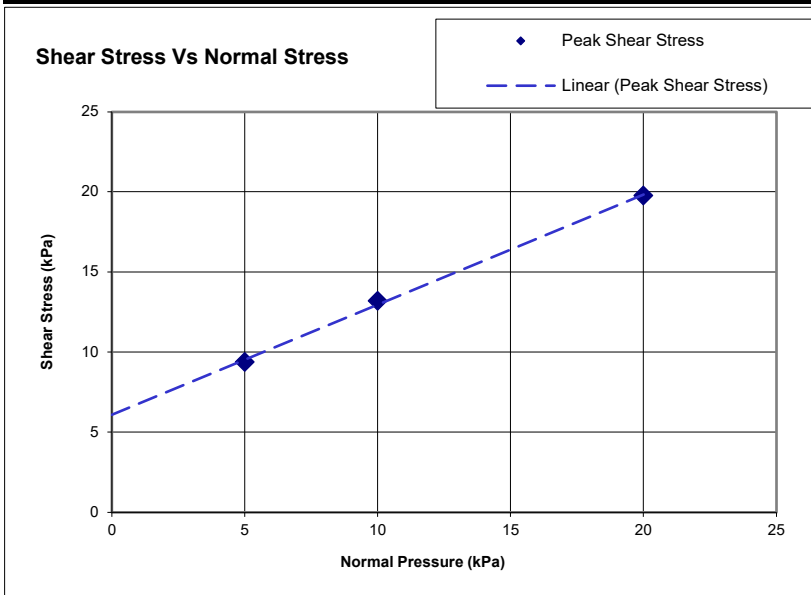
Approved for Issue

T McLelland (Director)

Date 21/12/2023

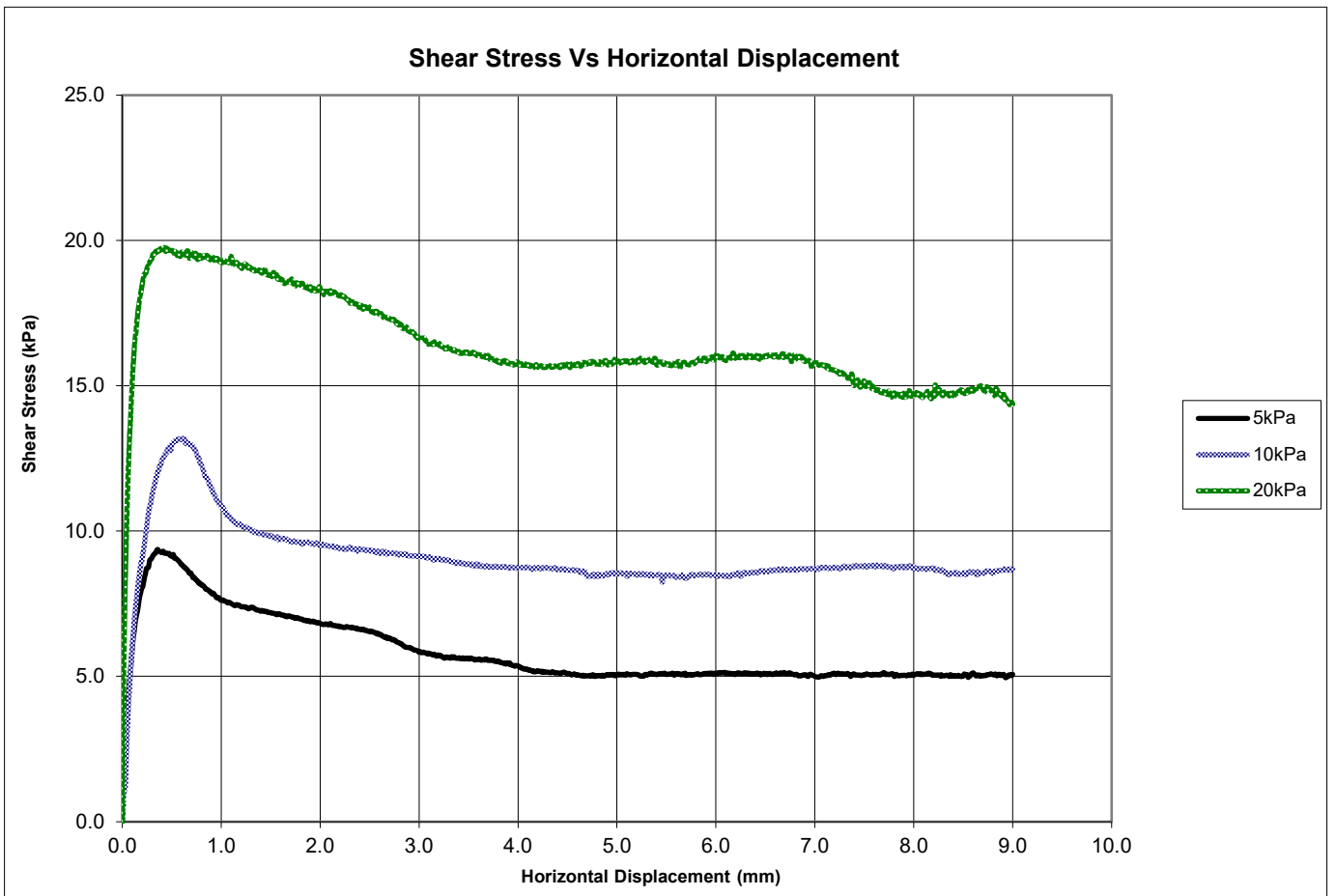
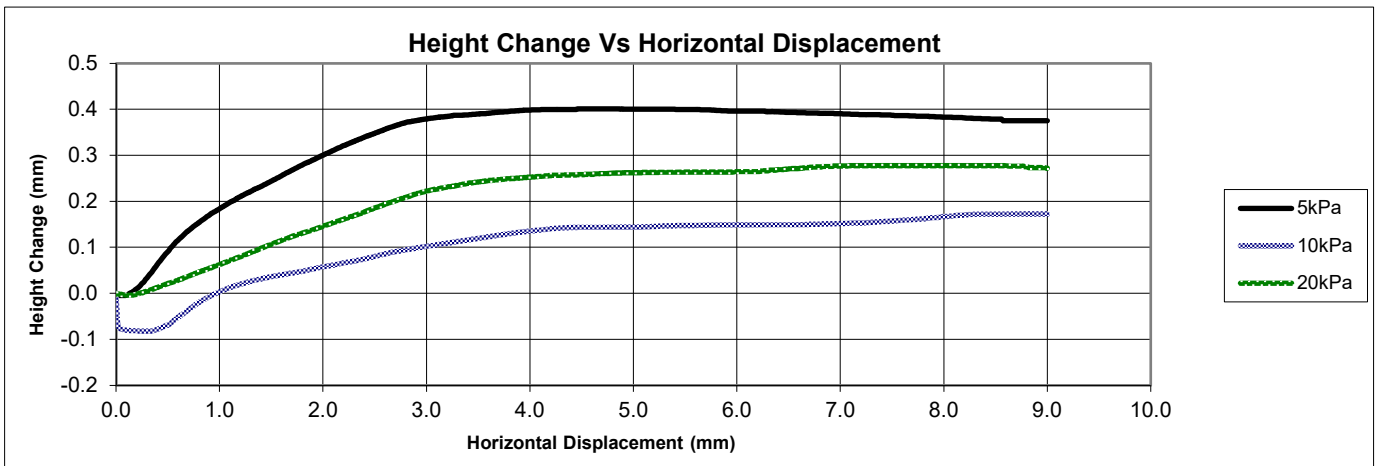
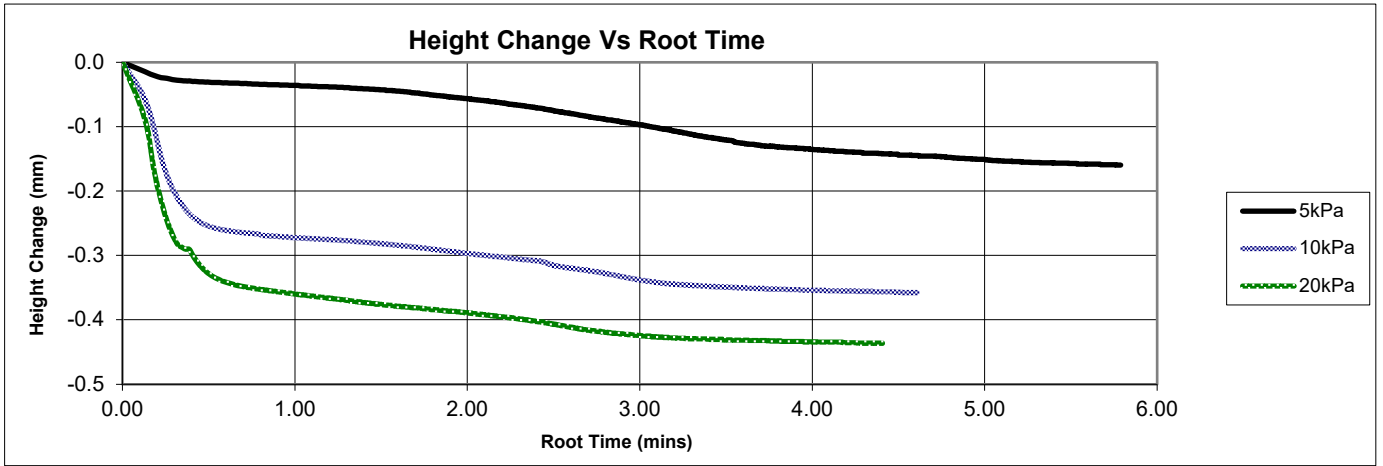
Specimen Details			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		8.7	8.7	8.8		
	Bulk Density	Mg/m ³		1.92	1.91	1.91		
	Dry Density	Mg/m ³		1.76	1.75	1.76		
	Voids Ratio			0.503	0.511	0.507		
	Degree of Saturation	%		46	45	46		
Consol	Consolidation / Normal Stress	kPa		5	10	20		
	Change in height	mm		0.16	0.36	0.44		
	Voids ratio			0.493	0.488	0.478		
Final	Voids ratio			0.517	0.499	0.496		
	Water Content	%		8.5	8.3	8.1		
	Saturation	%		43	44	43		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		0.35	0.61	0.42		
	Shear stress	kPa		9.372	13.194	19.761		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters			
Peak Strength		Regression	Manual
c'	kPa	6.0	-
φ'	degrees	34.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-23
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH39, K1099901, 0.40-1.40m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH39, K1099901, 0.40-1.40m
Designation (d/D) : Not Supplied
Description : Brown very gravelly very sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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This report should not be reproduced except in full without the written approval of the laboratory
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Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

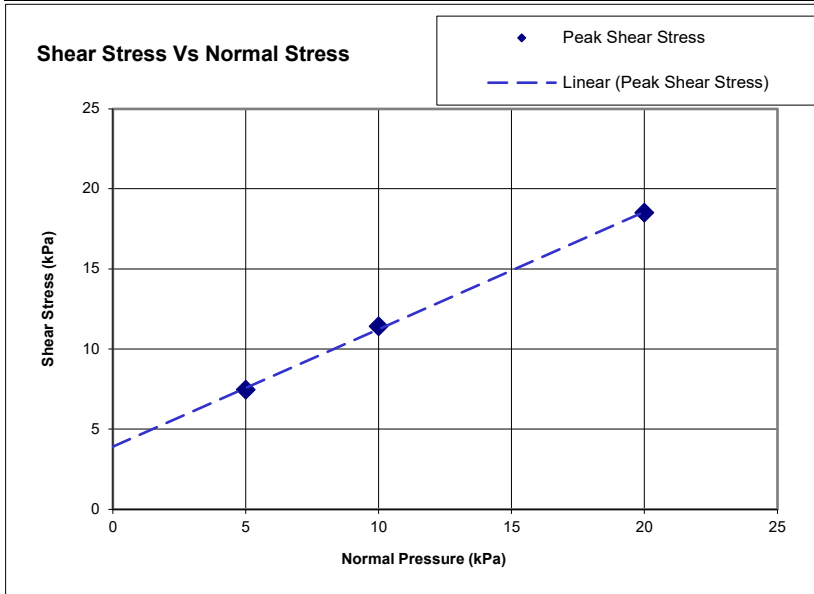
Date 21/12/2023

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.1	23.0		
	Water Content	%	19.6	19.5	19.5		
	Bulk Density	Mg/m ³	2.01	2.00	2.02		
	Dry Density	Mg/m ³	1.68	1.68	1.69		
	Voids Ratio		0.576	0.582	0.570		
	Degree of Saturation	%	90	89	91		
Consol	Consolidation / Normal Stress	kPa	5	10	20		
	Change in height	mm	0.12	0.18	0.27		
	Voids ratio		0.568	0.570	0.552		
Final	Voids ratio		0.595	0.585	0.573		
	Water Content	%	19.8	19.7	19.5		
	Saturation	%	88	89	90		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

Shearing stage

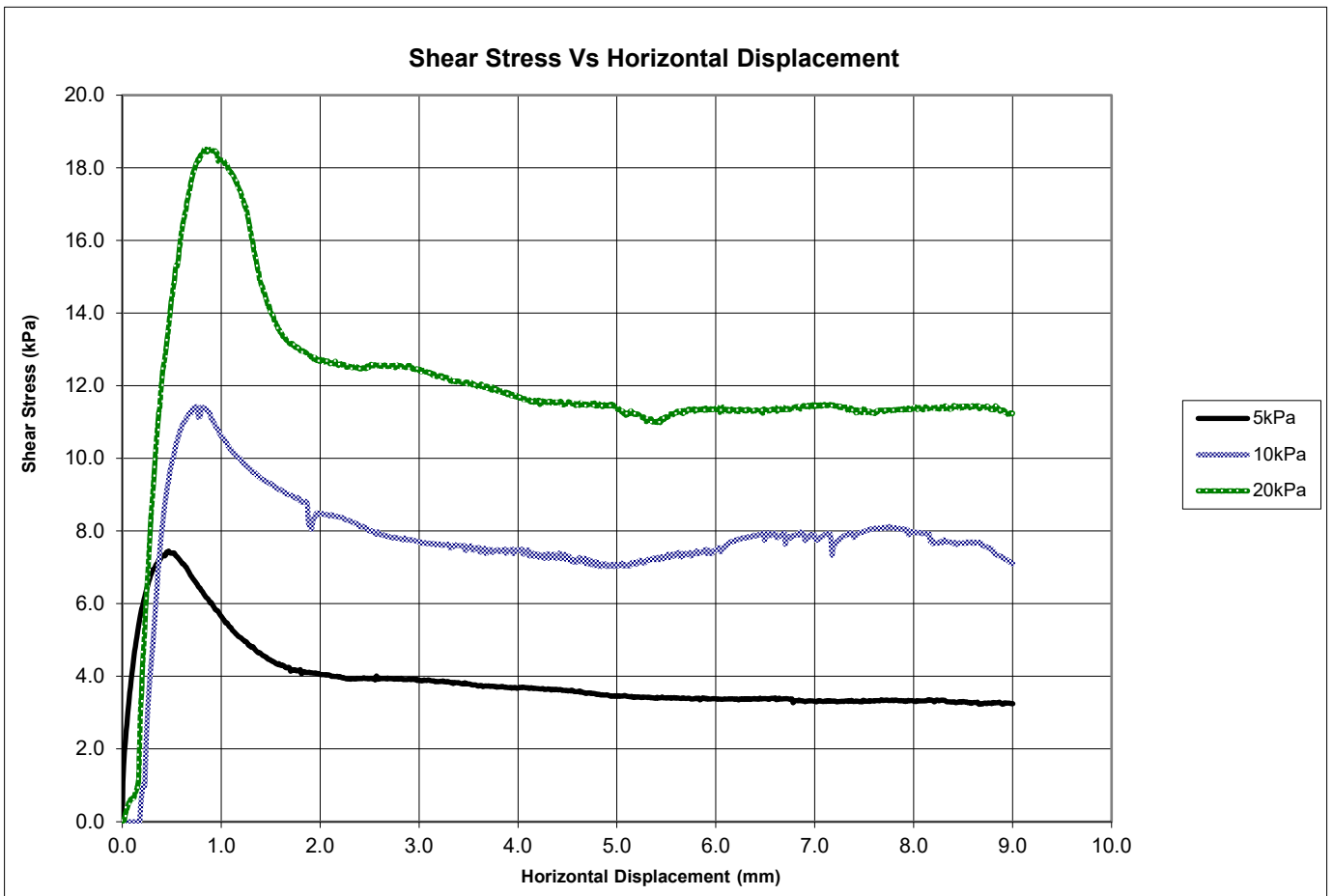
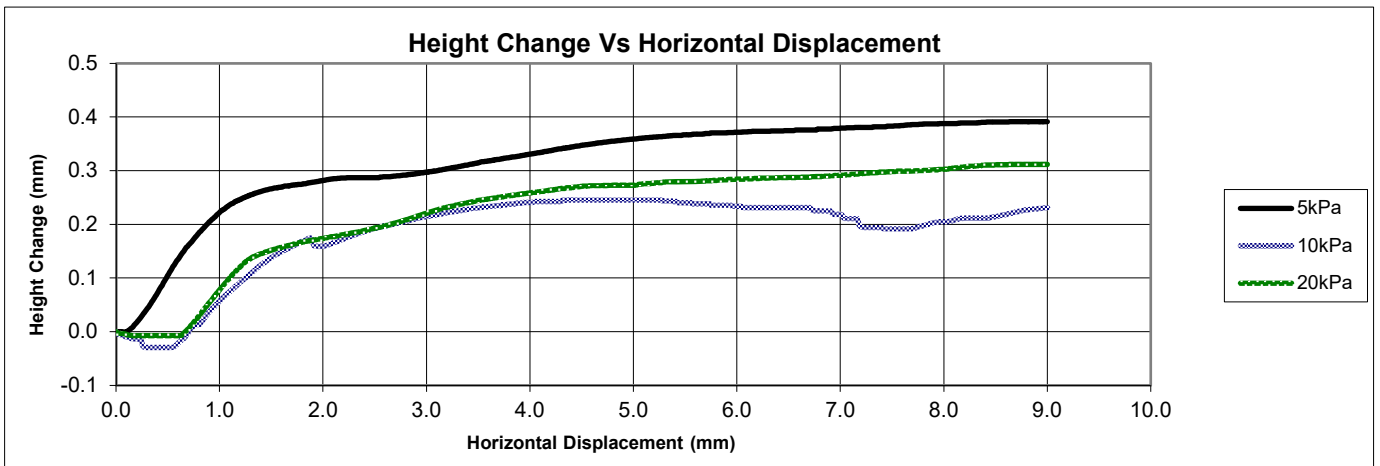
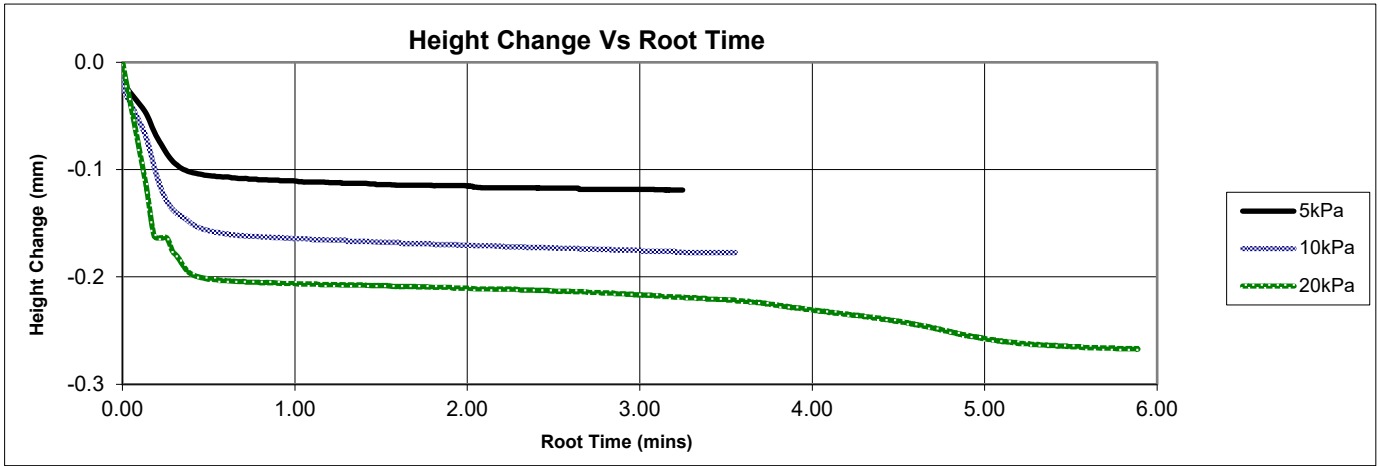
		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	0.47	0.75	0.85		
	Shear stress	kPa	7.450	11.424	18.512		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	4.0	-
φ'	degrees	36.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Certificate No : 23/1202 - 03-4
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH40, K1091823, 0.50m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH40, K1091823, 0.50m
Designation (d/D) : Not Supplied
Description : Brown gravelly very sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

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Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 14/12/2023



Certificate No :

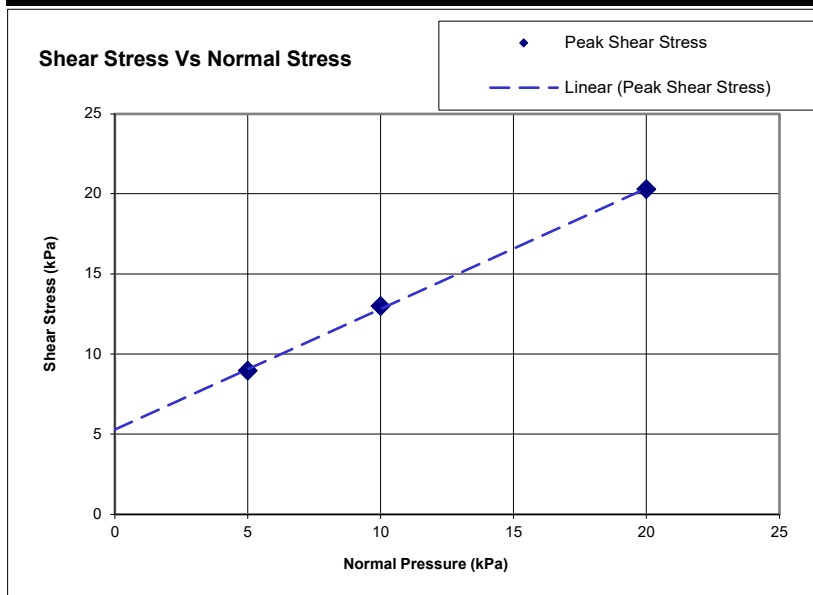
23/1202 - 03-4

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		18.9	19.0	19.0		
	Bulk Density	Mg/m ³		1.93	1.94	1.94		
	Dry Density	Mg/m ³		1.62	1.63	1.63		
	Voids Ratio			0.632	0.625	0.623		
	Degree of Saturation	%		79	81	81		
Consol	Consolidation / Normal Stress	kPa		5	10	20		
	Change in height	mm		0.23	0.46	0.68		
	Voids ratio			0.615	0.593	0.575		
Final	Voids ratio			0.640	0.592	0.578		
	Water Content	%		21.3	20.9	20.7		
	Saturation	%		88	94	95		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

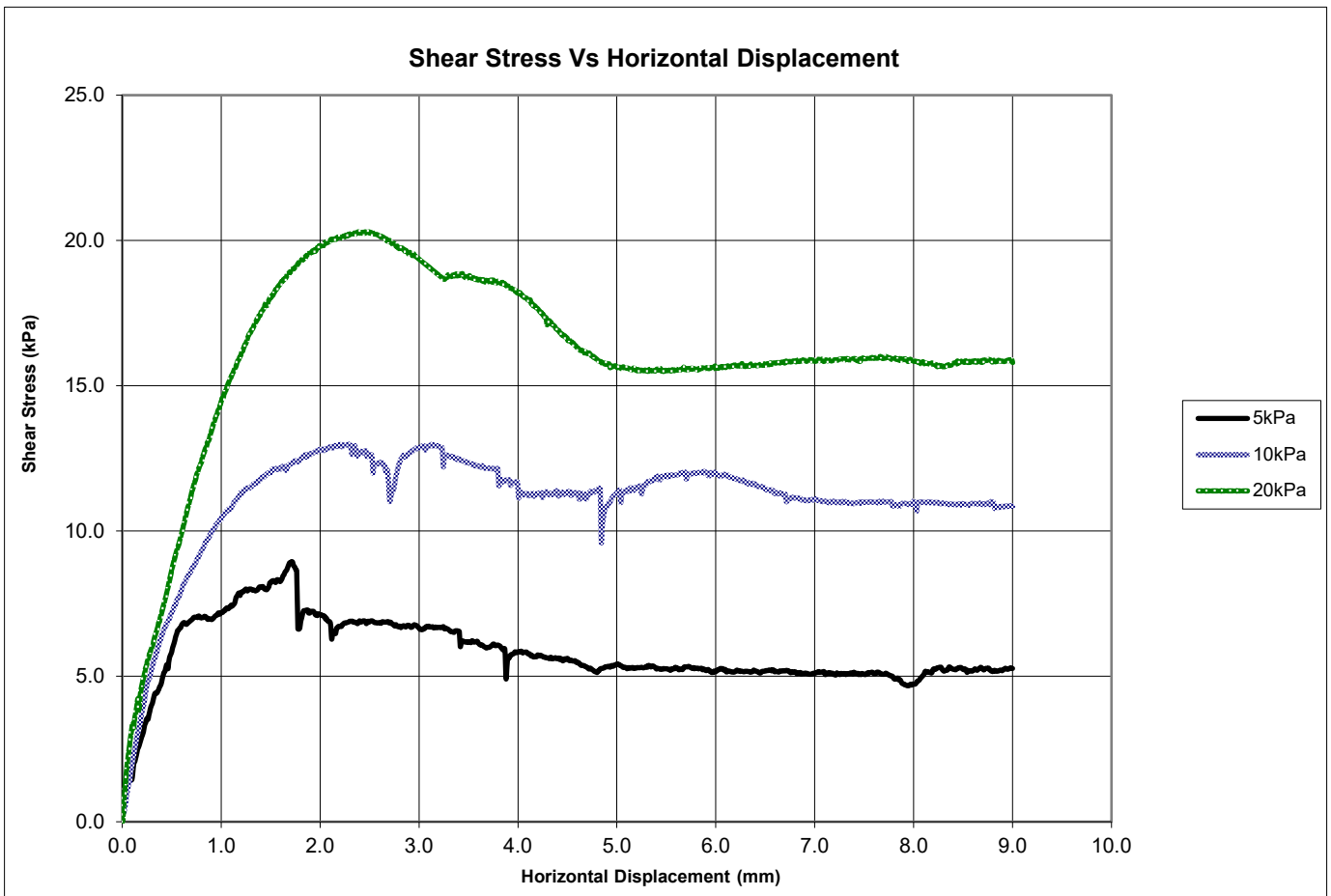
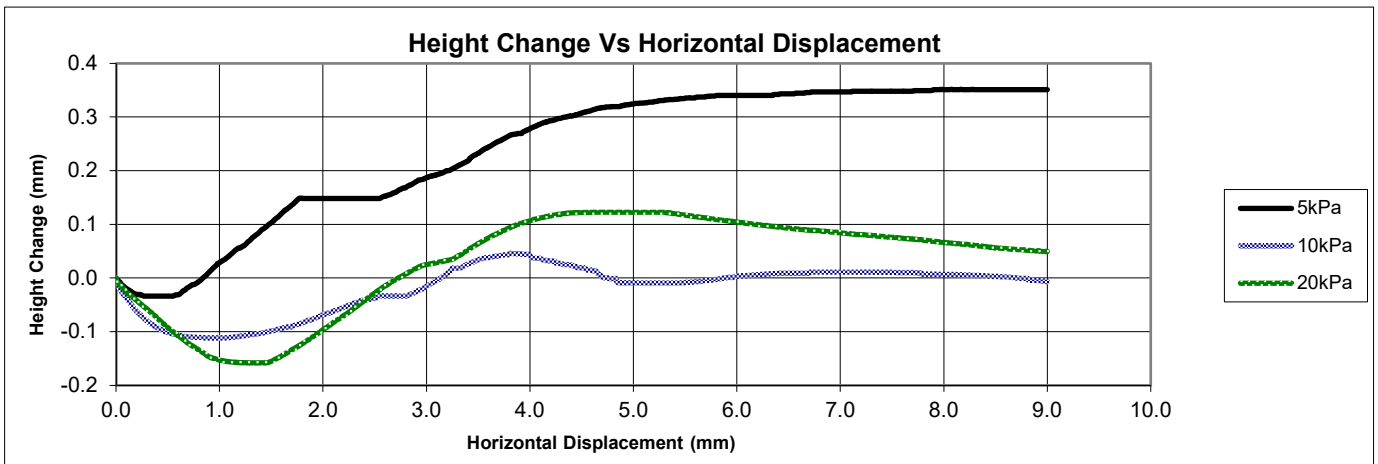
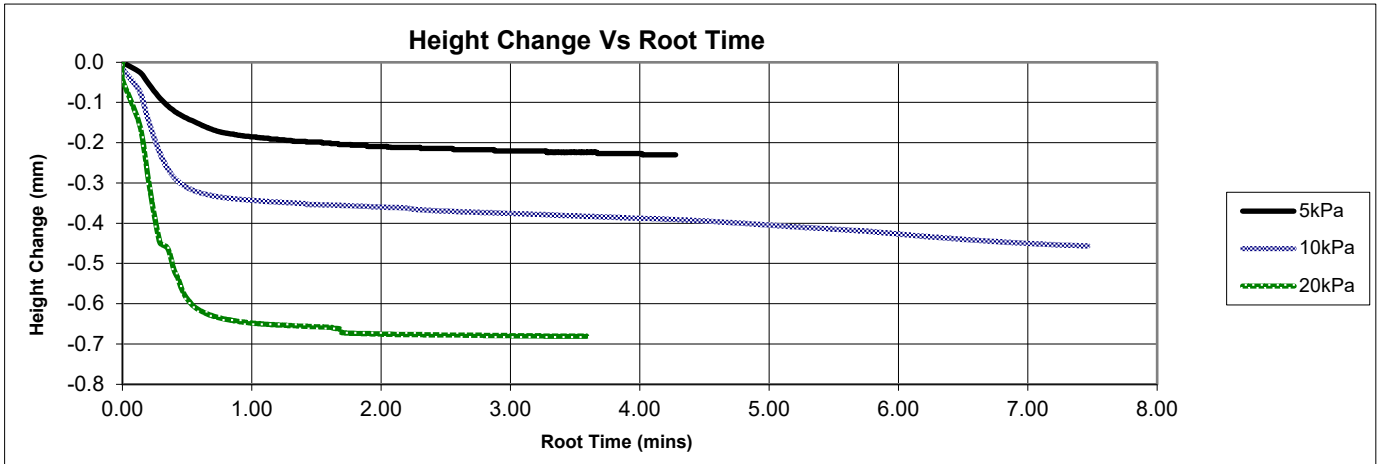
Shearing stage

			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		1.71	2.29	2.39		
	Shear stress	kPa		8.950	12.991	20.298		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	5.5	-
ϕ'	degrees	37.0	-

Residual Strength		Regression	Manual
c'_R	kPa	-	-
ϕ'_R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-24
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH42, K1095781, 4.00-5.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH42, K1095781, 4.00-5.00m
Designation (d/D) : Not Supplied
Description : Brown slightly gravelly slightly clayey very sandy SILT. Gravel is fine to medium.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

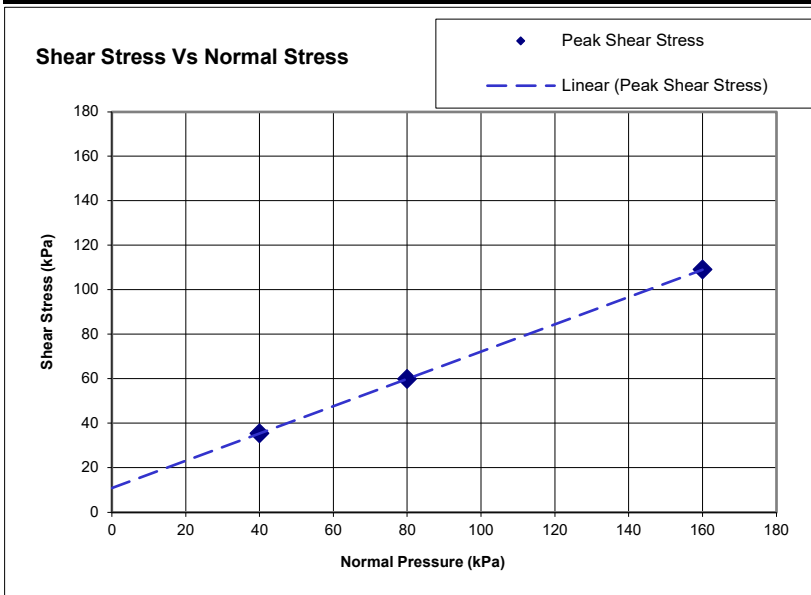
Approved for Issue

T McLelland (Director)

Date 21/12/2023

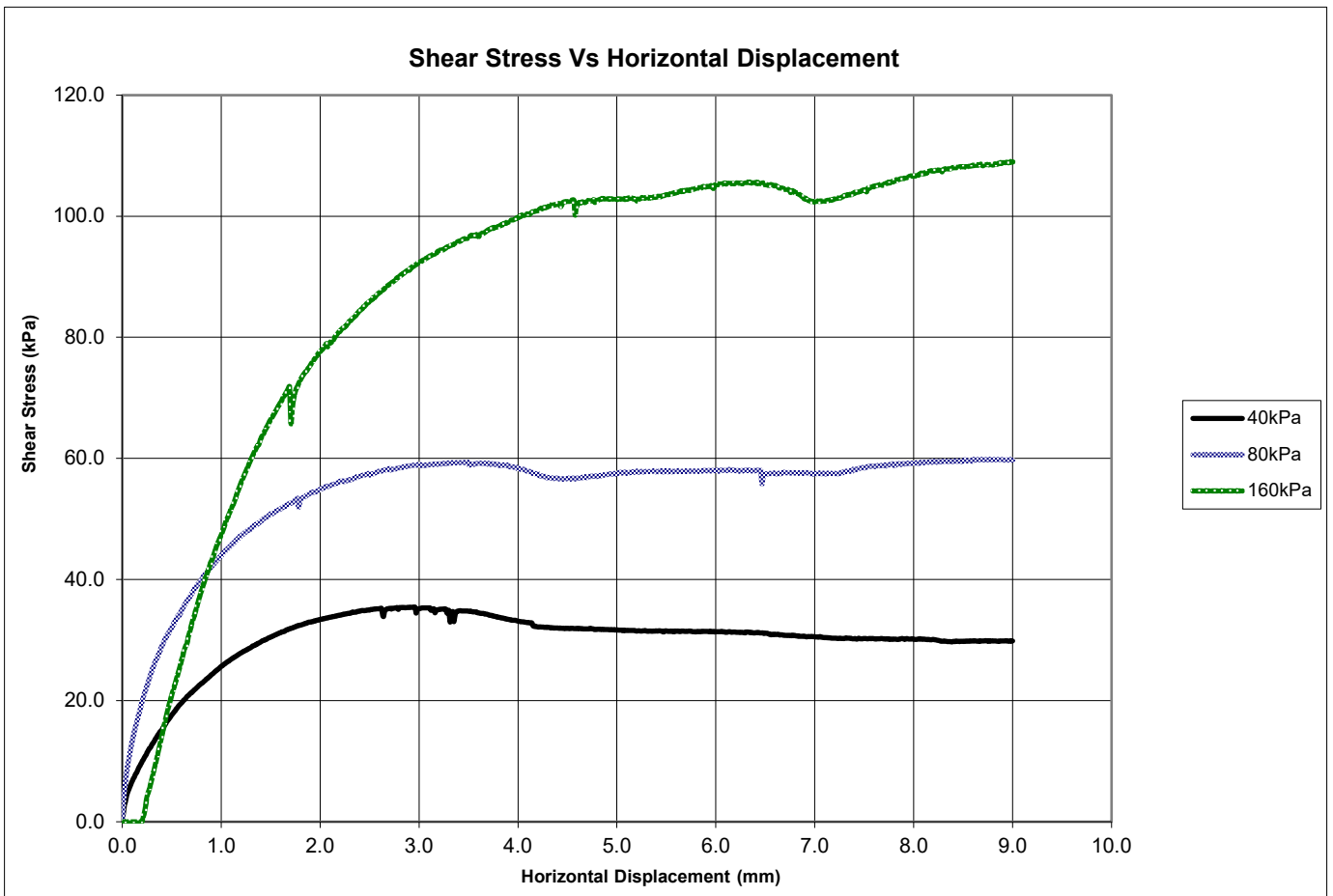
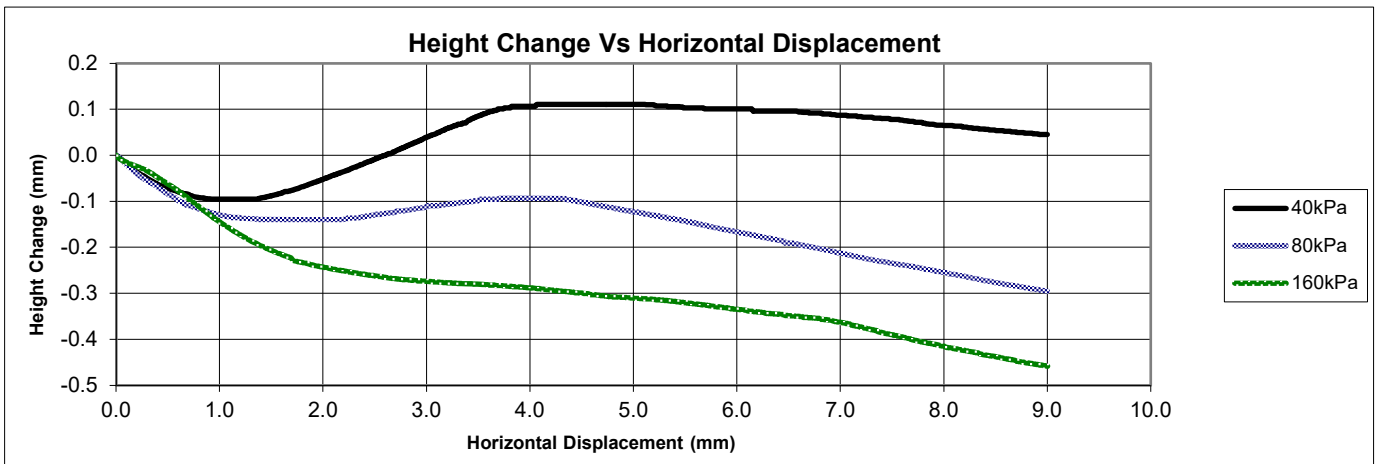
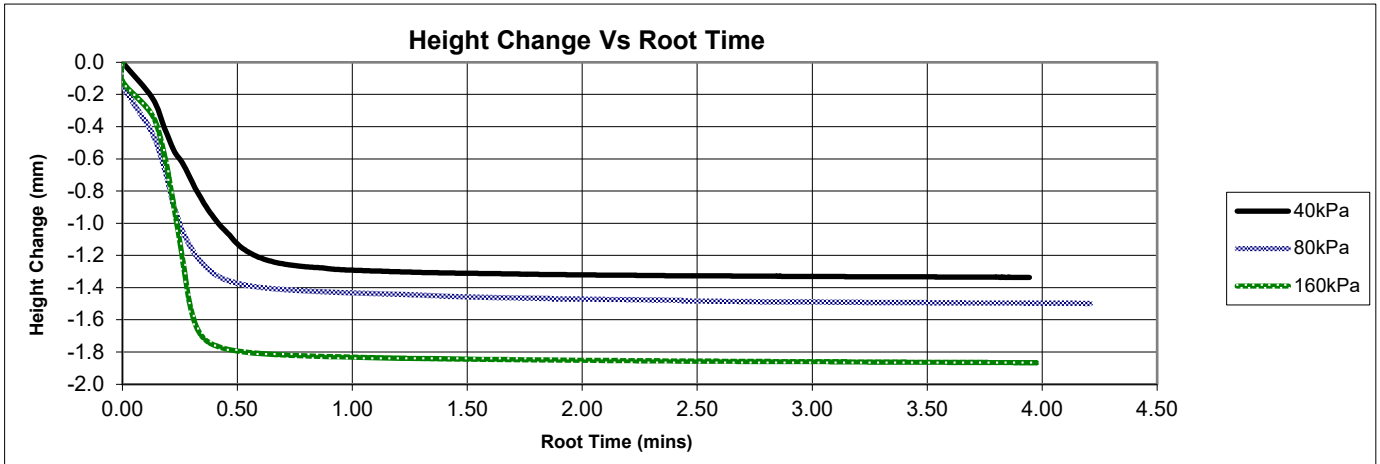
Specimen Details			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		25.0	24.9	24.9		
	Bulk Density	Mg/m ³		1.86	1.85	1.85		
	Dry Density	Mg/m ³		1.49	1.48	1.48		
	Voids Ratio			0.780	0.794	0.790		
	Degree of Saturation	%		85	83	84		
Consol	Consolidation / Normal Stress	kPa		40	80	160		
	Change in height	mm		1.34	1.50	1.87		
	Voids ratio			0.677	0.678	0.645		
Final	Voids ratio			0.681	0.655	0.610		
	Water Content	%		27.0	26.9	25.3		
	Saturation	%		100	100	100		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		2.96	8.77	8.98		
	Shear stress	kPa		35.442	59.848	109.043		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters			
Peak Strength		Regression	Manual
c'	kPa	11.0	-
φ'	degrees	31.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

Certificate No : 23/1202 - 03-25
To : Jack Ross
Client : BAM Ritchies Ltd.
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH44, K1095767, 1.00-1.10m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH44, K1095767, 1.00-1.10m
Designation (d/D) : Not Supplied
Description : Brown / grey very gravelly sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue

T McLelland (Director)

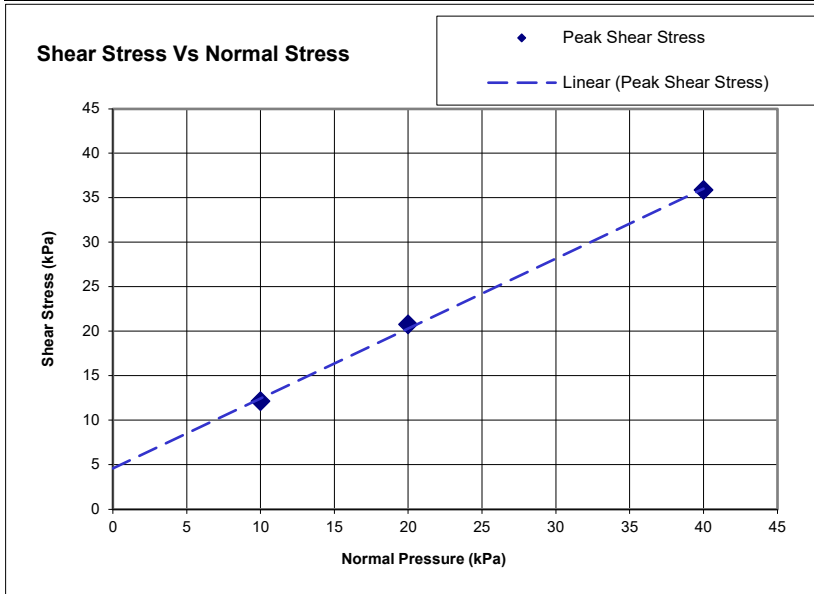
Date 21/12/2023

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		15.5	15.6	15.6		
	Bulk Density	Mg/m ³		2.11	2.13	2.12		
	Dry Density	Mg/m ³		1.83	1.84	1.83		
	Voids Ratio			0.451	0.440	0.447		
	Degree of Saturation	%		91	94	93		
Consol	Consolidation / Normal Stress	kPa		10	20	40		
	Change in height	mm		0.58	0.70	1.04		
	Voids ratio			0.414	0.396	0.382		
Final	Voids ratio			0.427	0.394	0.376		
	Water Content	%		16.6	16.4	16.2		
	Saturation	%		100	100	100		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage

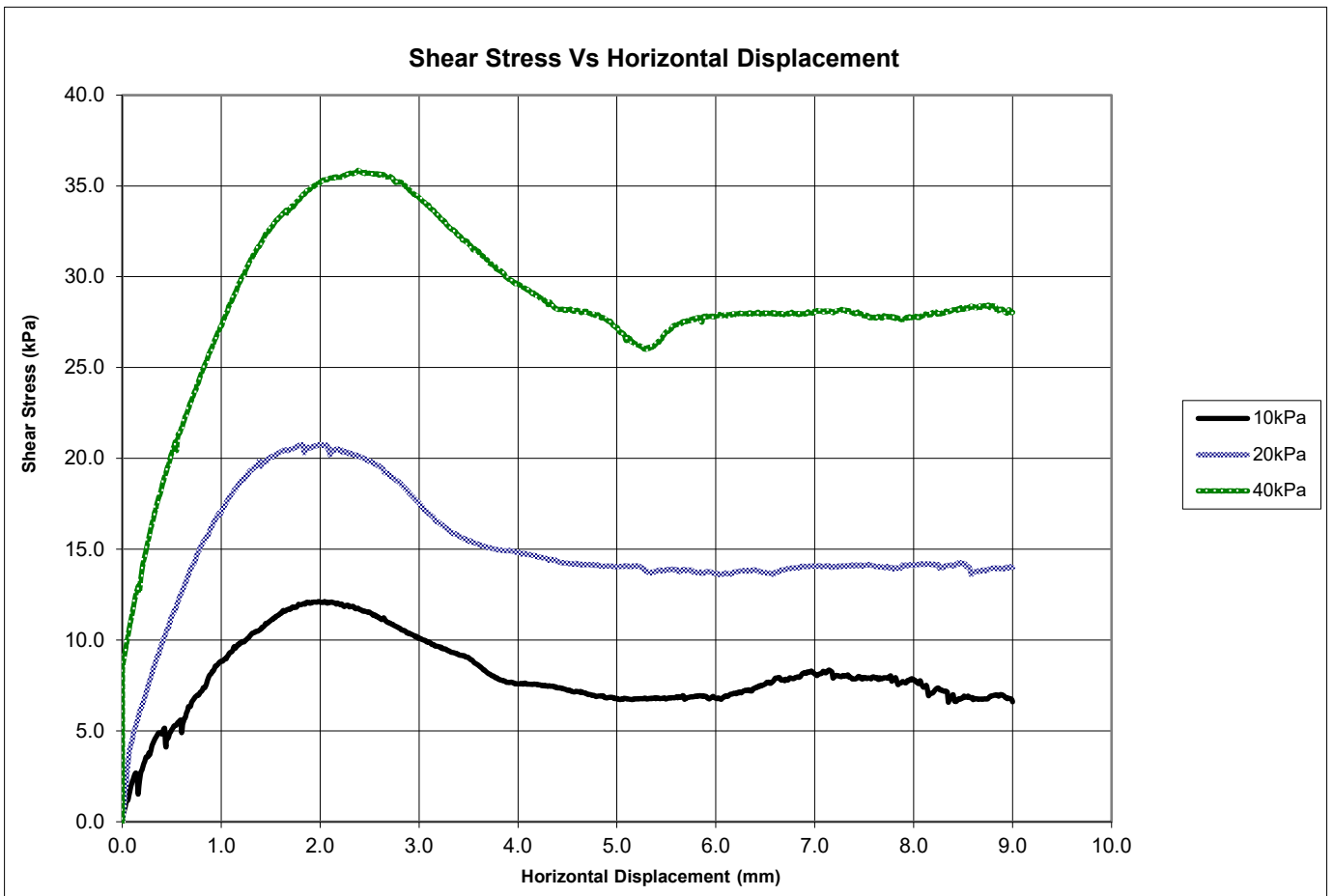
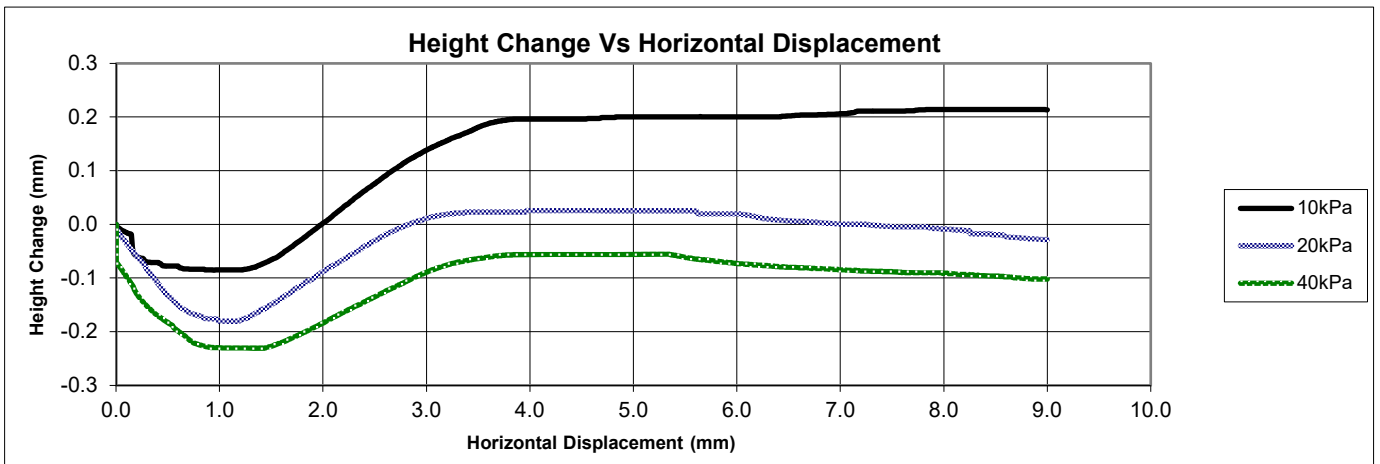
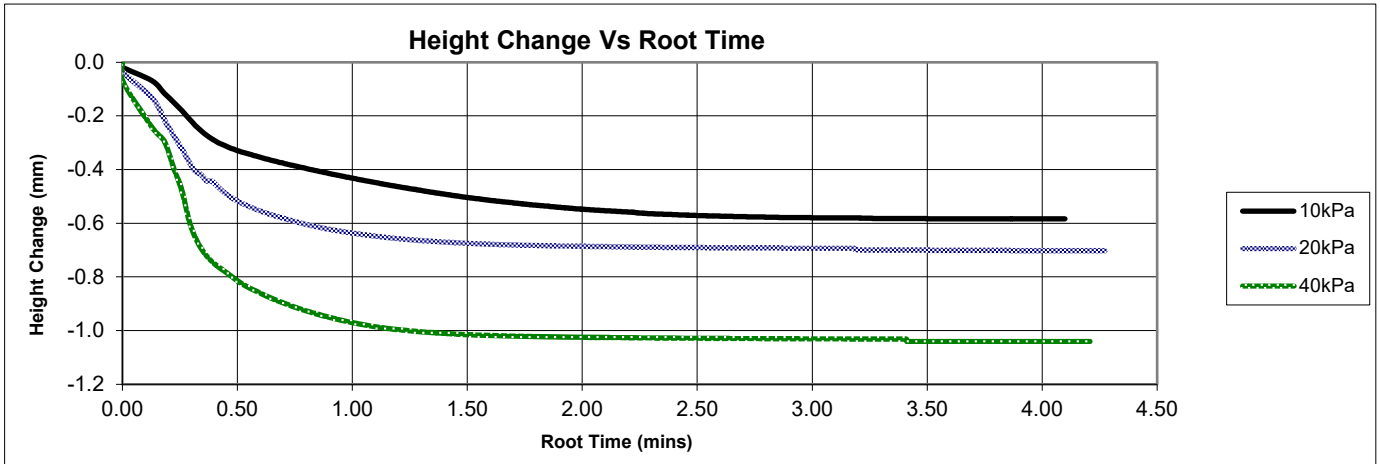
			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		1.98	2.00	2.38		
	Shear stress	kPa		12.138	20.773	35.861		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	4.5	-
φ'	degrees	38.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-26
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : BH46, K1096699, 1.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : BH46, K1096699, 1.00m
Designation (d/D) : Not Supplied
Description : Brown very gravelly very sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 16/01/2024



Certificate No :

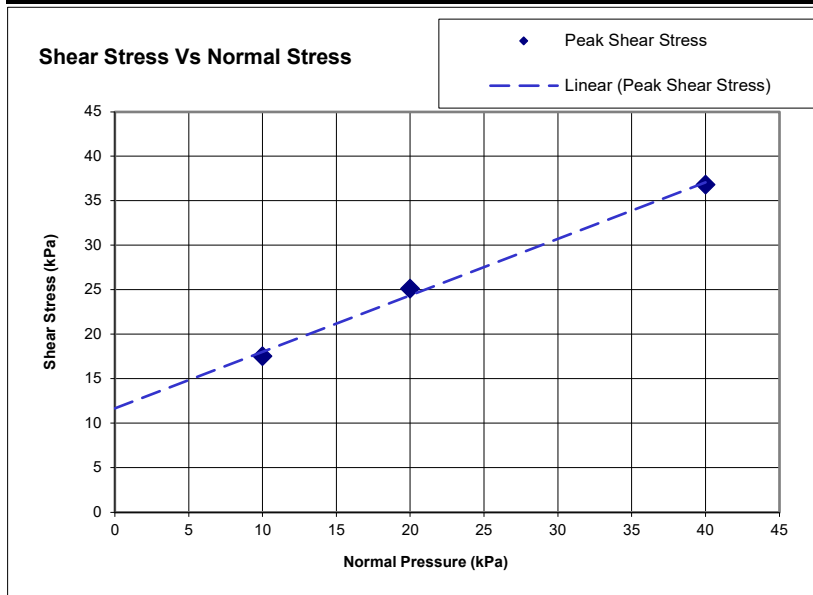
23/1202 - 03-26

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.1	23.0		
	Water Content	%		19.8	19.8	19.8		
	Bulk Density	Mg/m ³		1.95	1.94	1.95		
	Dry Density	Mg/m ³		1.62	1.62	1.63		
	Voids Ratio			0.632	0.633	0.630		
	Degree of Saturation	%		83	83	83		
Consol	Consolidation / Normal Stress	kPa		10	20	40		
	Change in height	mm		0.32	0.53	0.62		
	Voids ratio			0.610	0.595	0.586		
Final	Voids ratio			0.619	0.602	0.580		
	Water Content	%		23.2	22.9	22.7		
	Saturation	%		99	100	100		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

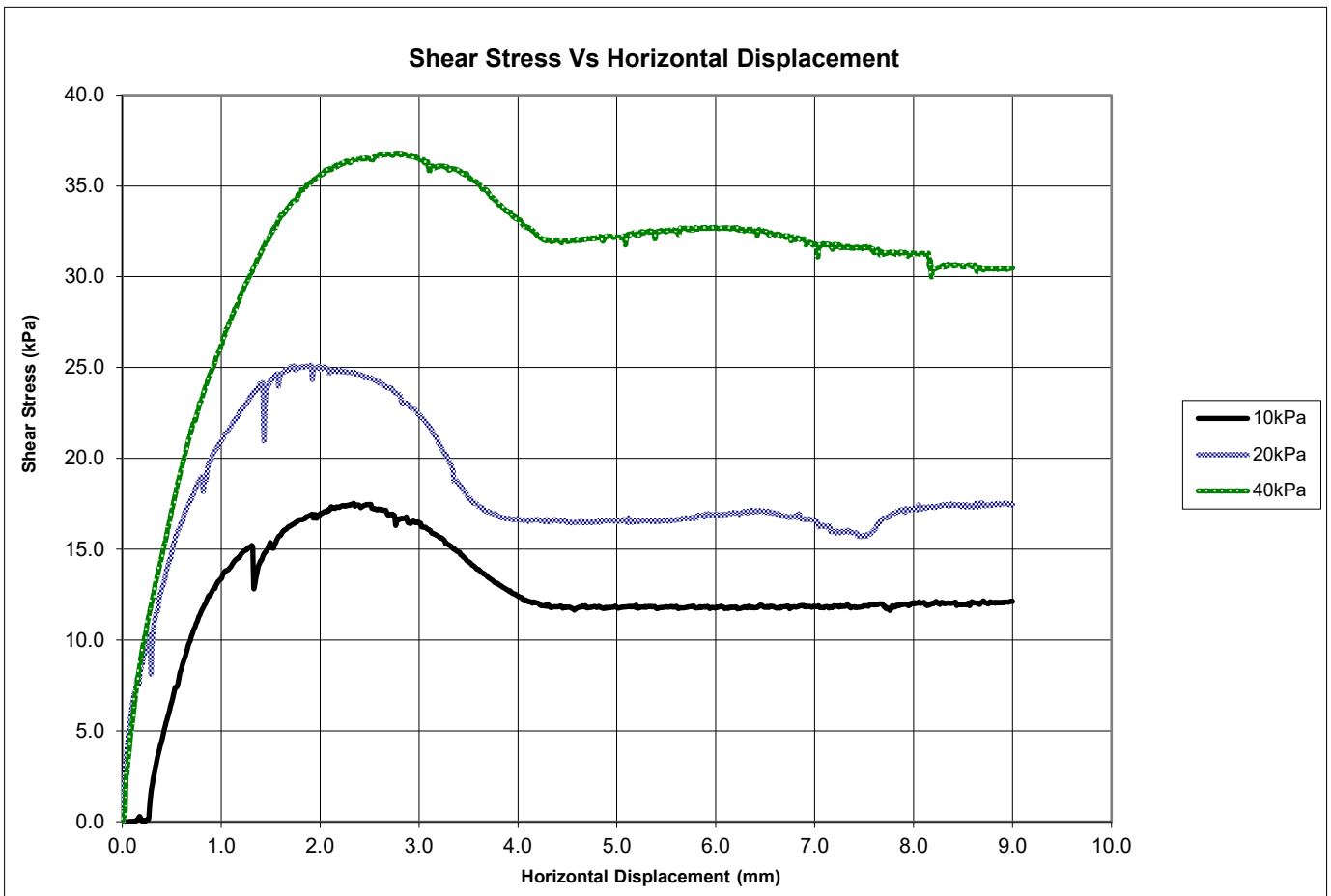
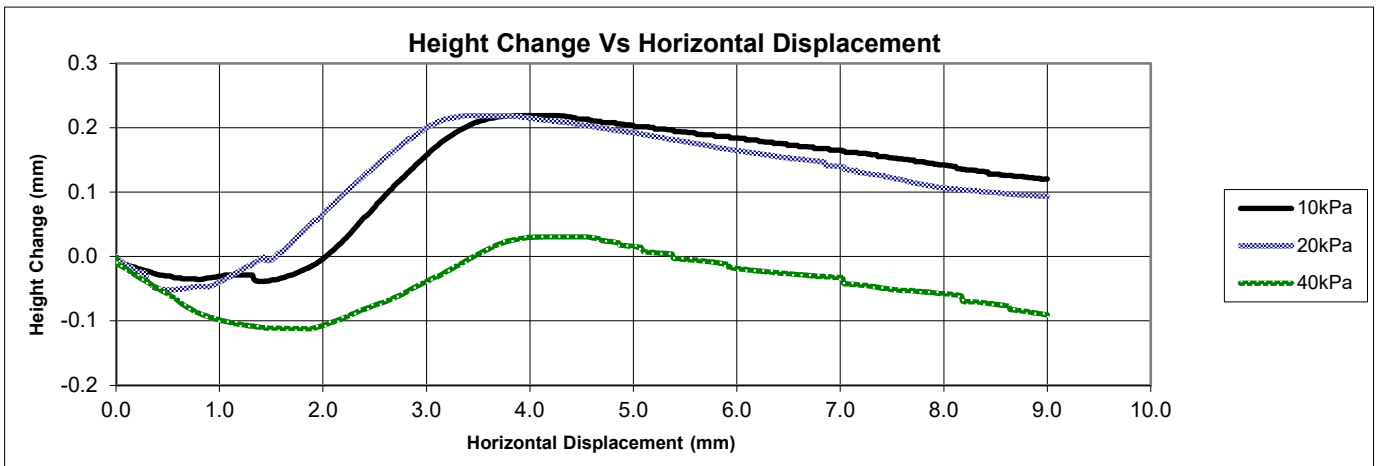
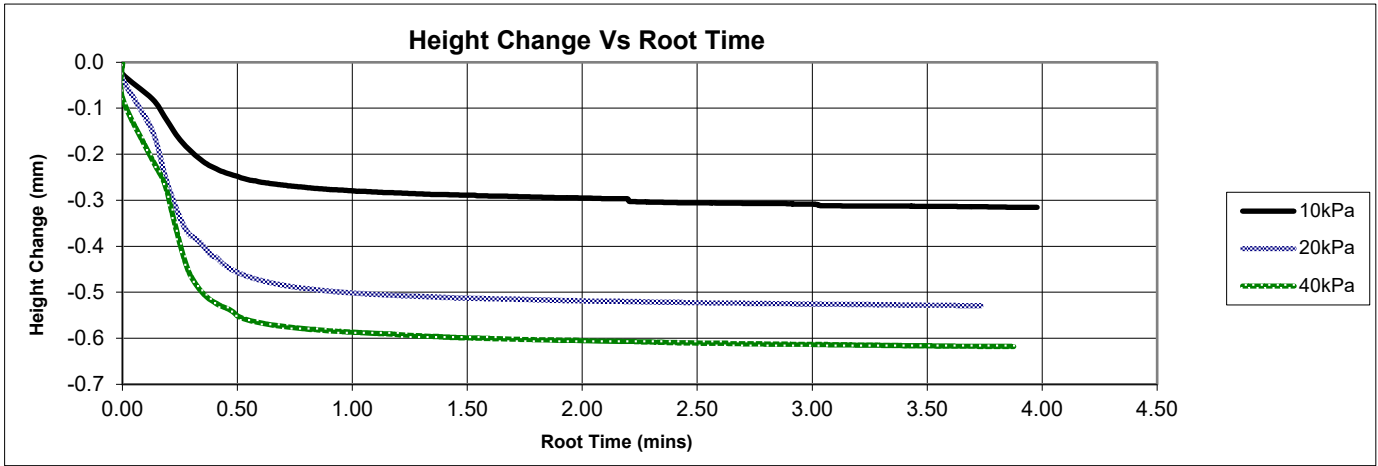
Shearing stage

			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		2.34	1.91	2.77		
	Shear stress	kPa		17.529	25.126	36.811		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	11.5	-
φ'	degrees	32.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Certificate No : 23/1202 - 01-1
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 01st November 2023.

Material & Source

Sample Reference : TP02, K1086103, 1.50m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP02, K1086103, 1.50m
Designation (d/D) : Not Supplied
Description : Brown clayey fine to coarse SAND and GRAVEL
Date Sampled : Not Supplied
Date Tested : 01st November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 16/11/2023



Certificate No :

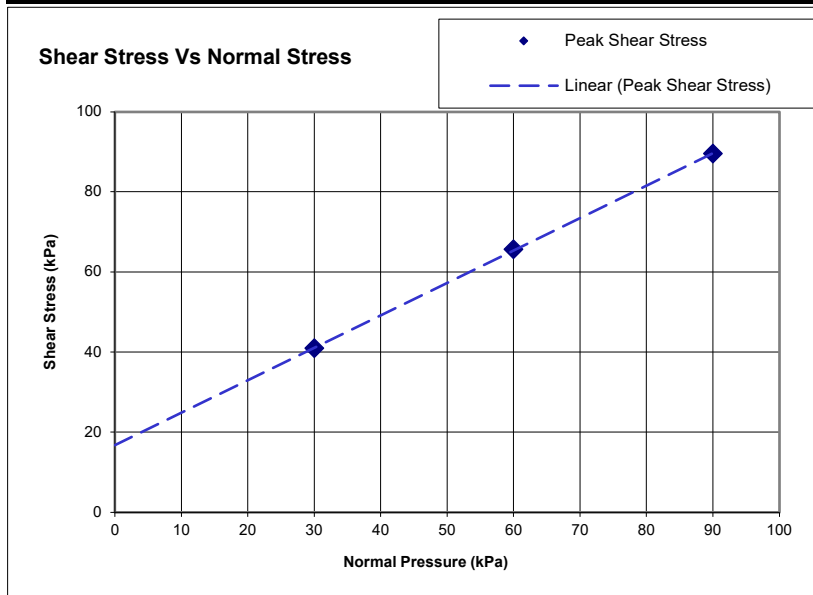
23/1202 - 01-1

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	8.7	8.8	8.7		
	Bulk Density	Mg/m ³	1.97	1.97	1.97		
	Dry Density	Mg/m ³	1.81	1.81	1.81		
	Voids Ratio		0.466	0.464	0.465		
	Degree of Saturation	%	50	50	50		
Consol	Consolidation / Normal Stress	kPa	30	60	90		
	Change in height	mm	0.38	0.51	0.63		
	Voids ratio		0.442	0.432	0.425		
Final	Voids ratio		0.534	0.504	0.470		
	Water Content	%	8.5	8.4	8.3		
	Saturation	%	42	44	47		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

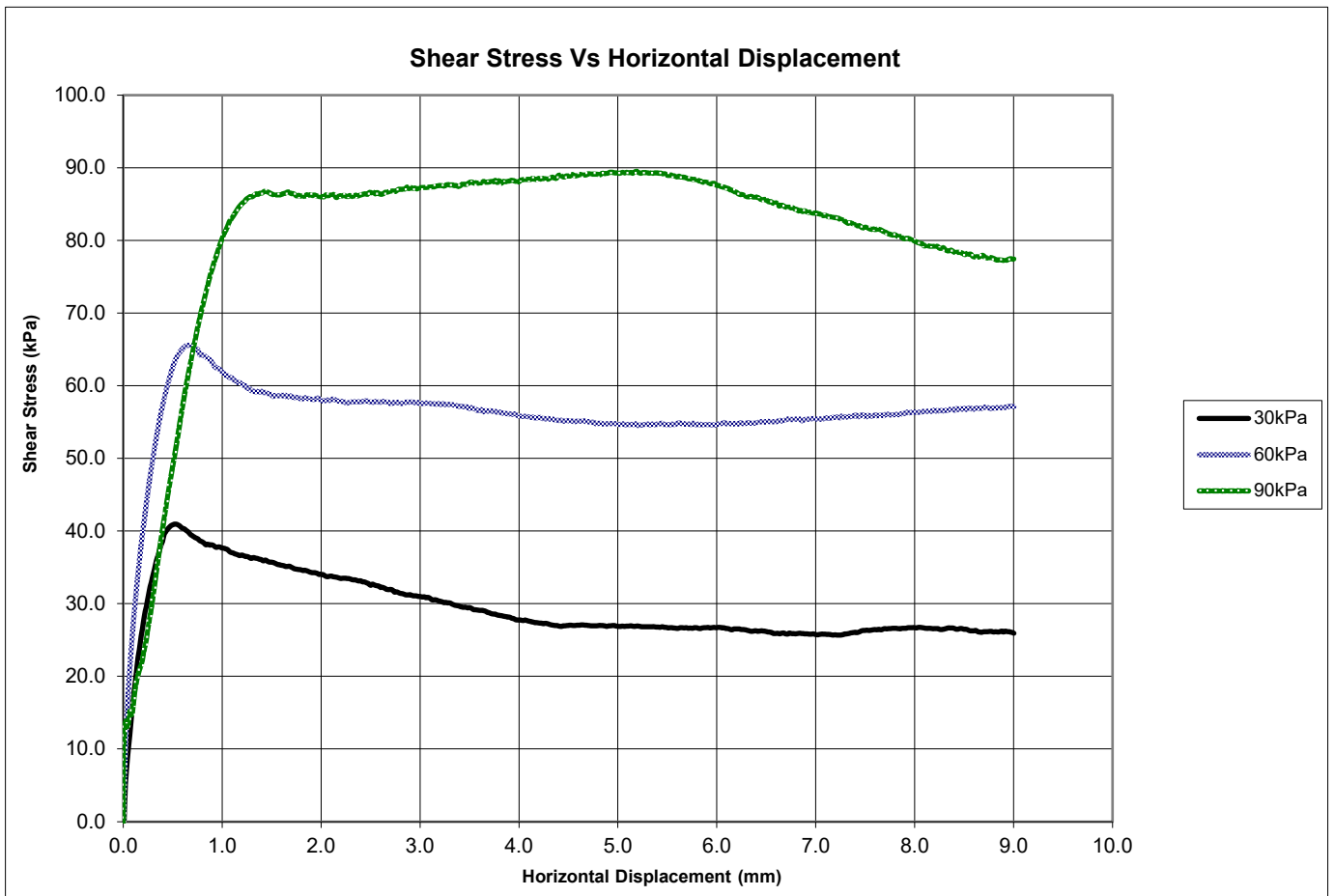
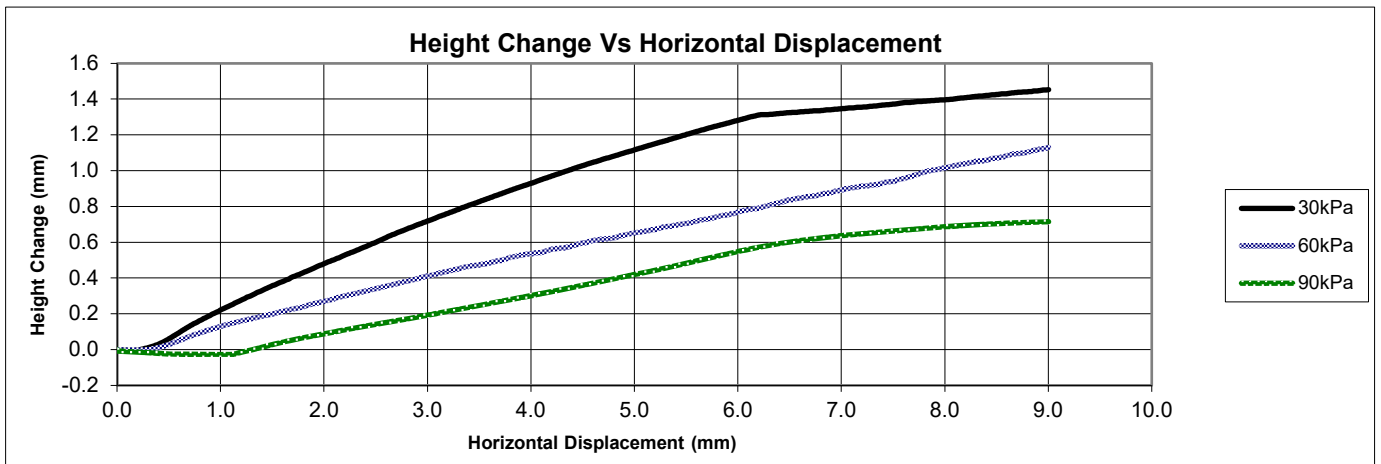
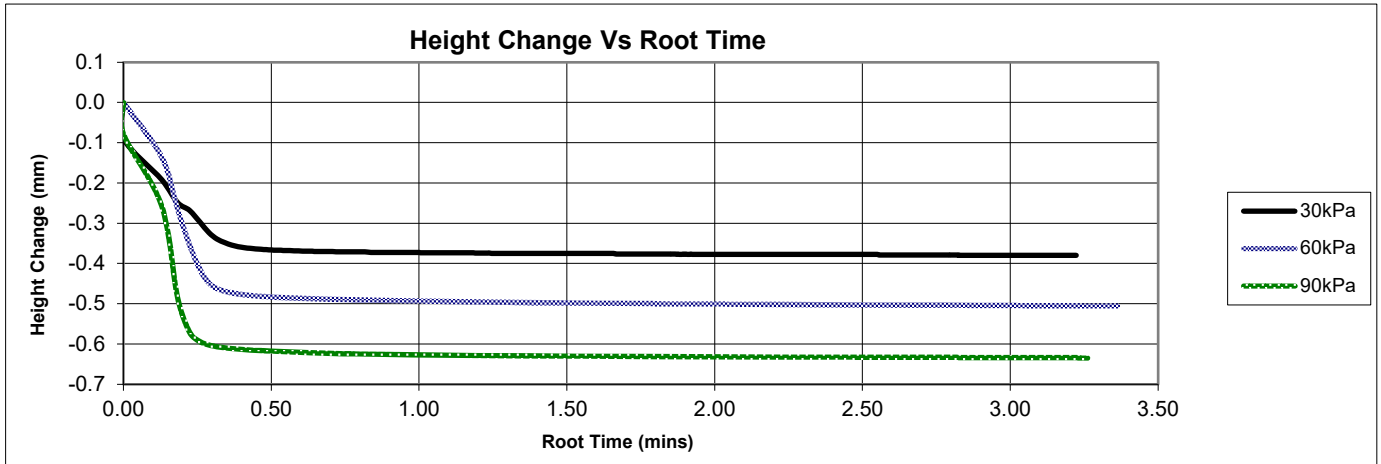
Shearing stage

		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	0.51	0.65	5.19		
	Shear stress	kPa	40.957	65.607	89.530		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	17.0	-
ϕ'	degrees	39.0	-

Residual Strength		Regression	Manual
c'_R	kPa	-	-
ϕ'_R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 01-2
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 01st November 2023.

Material & Source

Sample Reference : TP04, K1102368, 1.50m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP04, K1102368, 1.50m
Designation (d/D) : Not Supplied
Description : Brown very clayey fine to coarse SAND and GRAVEL
Date Sampled : Not Supplied
Date Tested : 01st November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 16/11/2023



Certificate No :

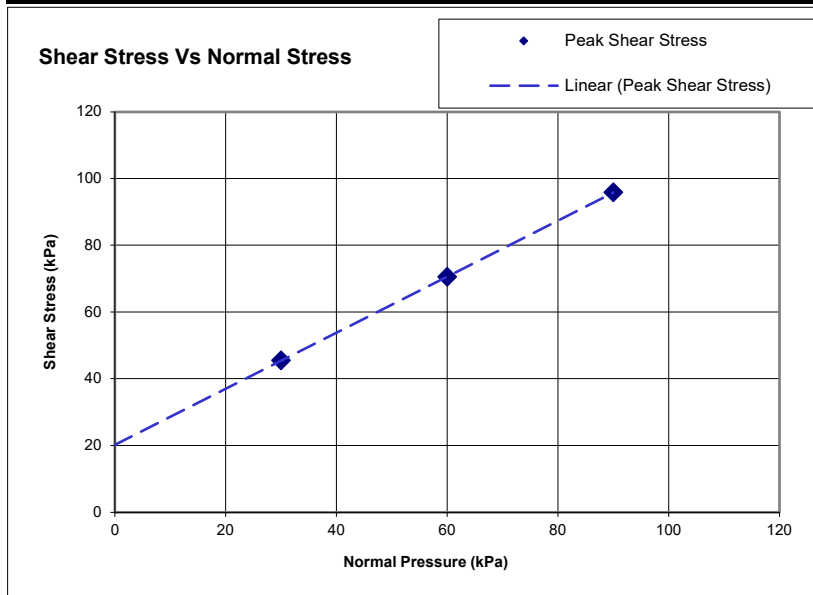
23/1202 - 01-2

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	12.6	12.6	12.5		
	Bulk Density	Mg/m ³	2.10	2.09	2.09		
	Dry Density	Mg/m ³	1.86	1.86	1.86		
	Voids Ratio		0.422	0.427	0.426		
	Degree of Saturation	%	79	78	78		
Consol	Consolidation / Normal Stress	kPa	30	60	90		
	Change in height	mm	0.44	0.99	1.09		
	Voids ratio		0.394	0.366	0.358		
Final	Voids ratio		0.446	0.405	0.371		
	Water Content	%	12.5	12.1	11.8		
	Saturation	%	74	79	84		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

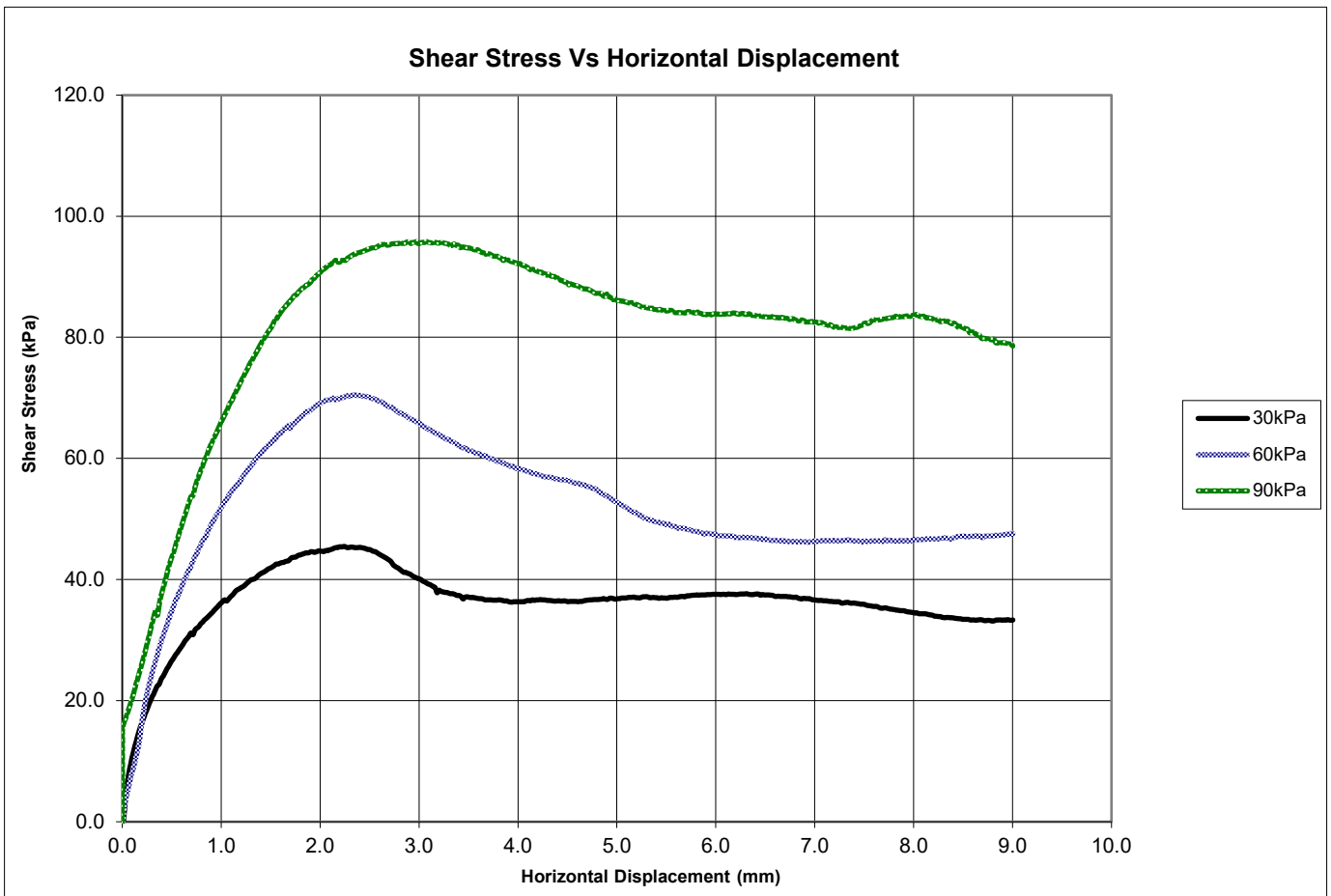
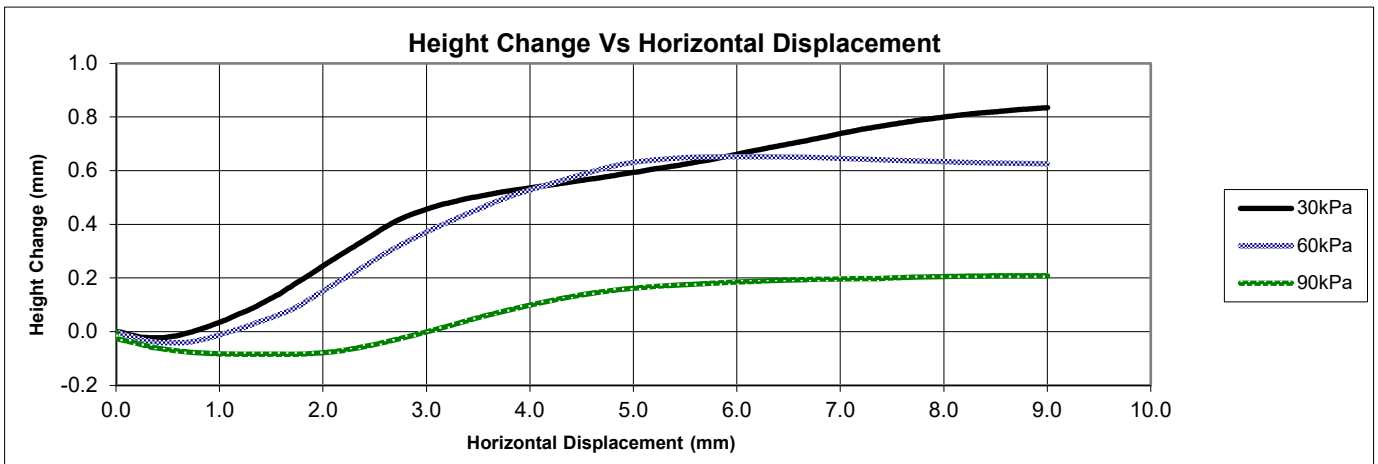
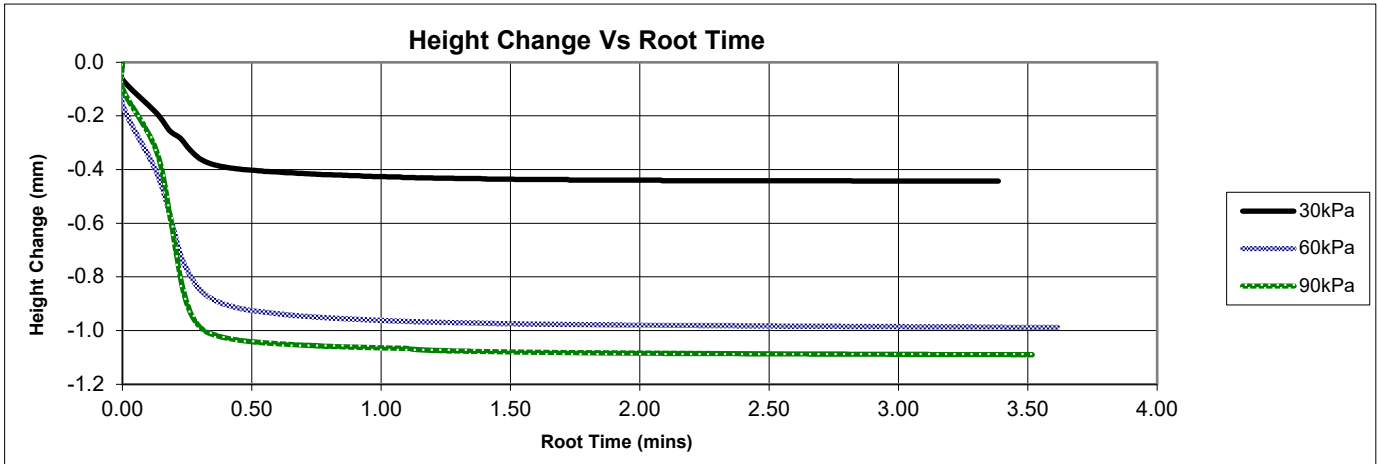
Shearing stage

		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	2.24	2.34	2.97		
	Shear stress	kPa	45.473	70.497	95.830		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	20.0	-
ϕ'	degrees	40.0	-

Residual Strength		Regression	Manual
c'_R	kPa	-	-
ϕ'_R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 01-3
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 01st November 2023.

Material & Source

Sample Reference : TP06, K1103014, 1.50m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP06, K1103014, 1.50m
Designation (d/D) : Not Supplied
Description : Brown very clayey fine to coarse SAND and GRAVEL
Date Sampled : Not Supplied
Date Tested : 01st November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
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All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 16/11/2023



Certificate No :

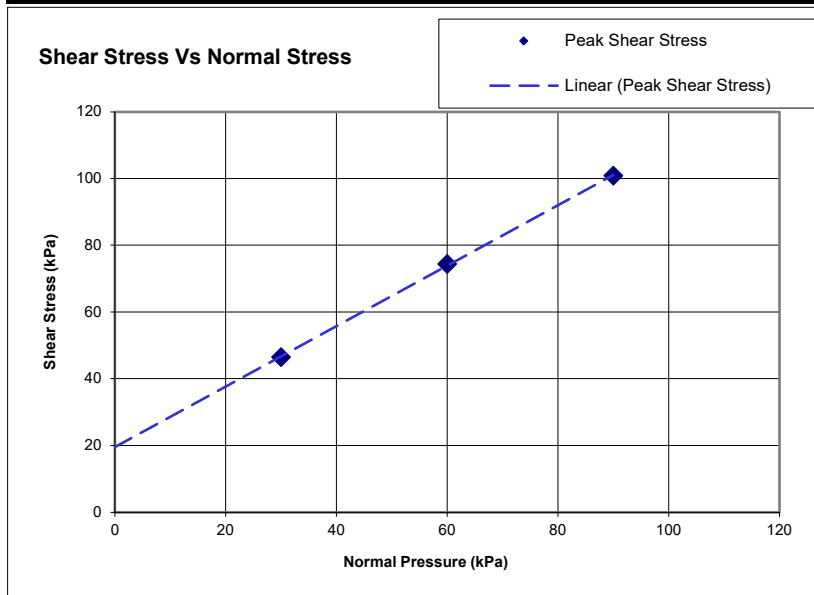
23/1202 - 01-3

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	9.5	9.6	9.5		
	Bulk Density	Mg/m ³	2.10	2.09	2.10		
	Dry Density	Mg/m ³	1.92	1.91	1.92		
	Voids Ratio		0.381	0.386	0.382		
	Degree of Saturation	%	66	66	66		
Consol	Consolidation / Normal Stress	kPa	30	60	90		
	Change in height	mm	0.29	0.43	0.82		
	Voids ratio		0.363	0.360	0.333		
Final	Voids ratio		0.446	0.438	0.388		
	Water Content	%	9.0	8.8	8.5		
	Saturation	%	54	53	58		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

Shearing stage

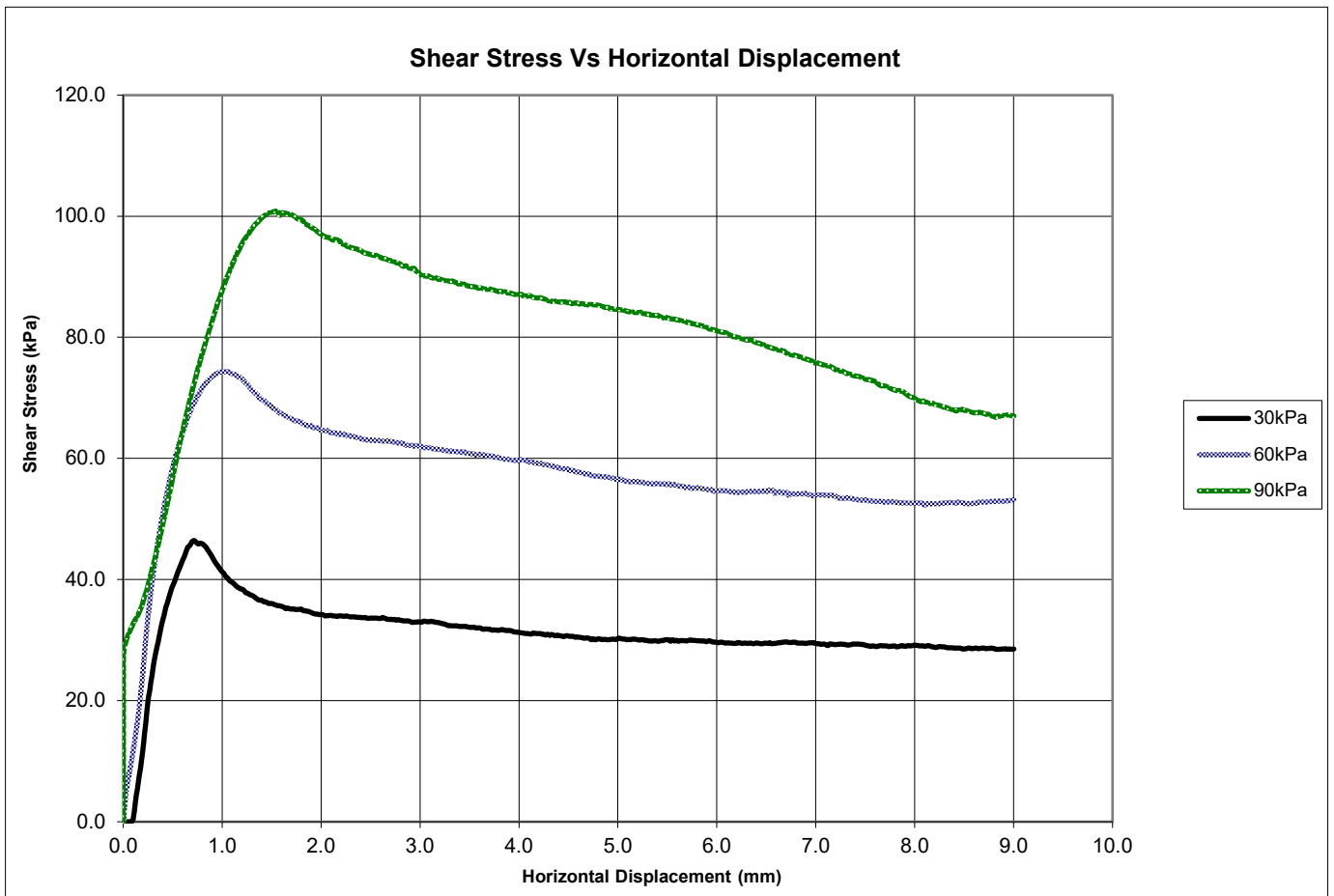
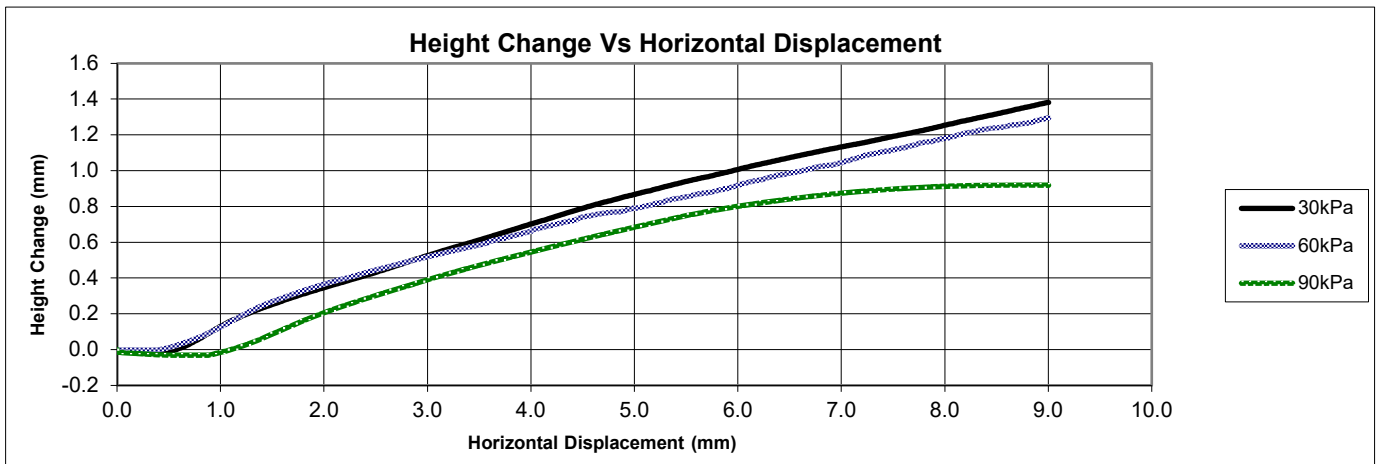
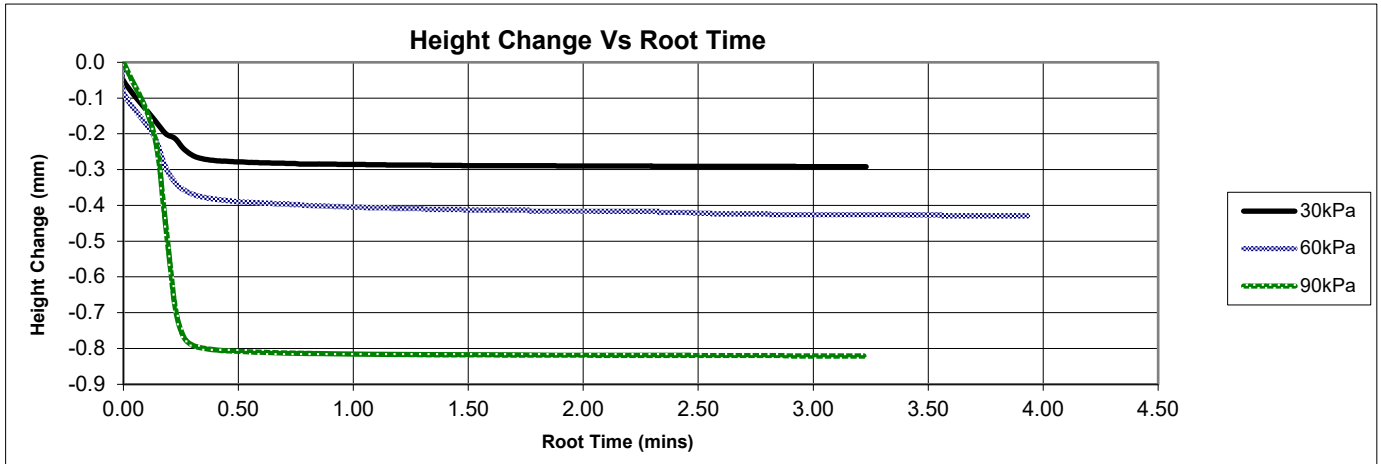
		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	0.71	1.05	1.54		
	Shear stress	kPa	46.437	74.367	100.835		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	19.5	-
φ'	degrees	42.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 01-4
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 01st November 2023.

Material & Source

Sample Reference : TP07, K1103024, 1.50m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP07, K1103024, 1.50m
Designation (d/D) : Not Supplied
Description : Brown very clayey fine to coarse SAND and GRAVEL
Date Sampled : Not Supplied
Date Tested : 01st November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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This report should not be reproduced except in full without the written approval of the laboratory
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Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 16/11/2023



Certificate No :

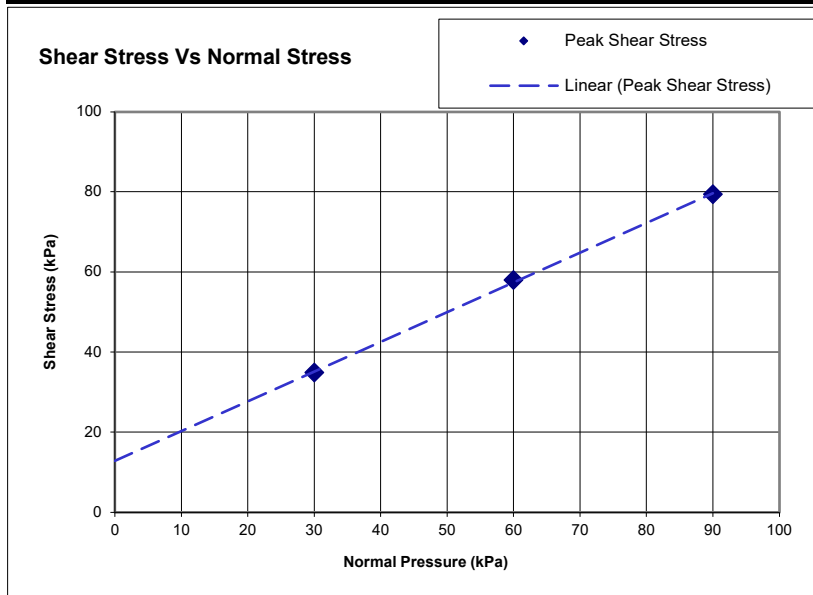
23/1202 - 01-4

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.1		
	Water Content	%	9.9	9.7	9.9		
	Bulk Density	Mg/m ³	1.88	1.88	1.88		
	Dry Density	Mg/m ³	1.71	1.72	1.71		
	Voids Ratio		0.548	0.542	0.547		
	Degree of Saturation	%	48	47	48		
Consol	Consolidation / Normal Stress	kPa	30	60	90		
	Change in height	mm	0.68	0.71	0.83		
	Voids ratio		0.502	0.494	0.491		
Final	Voids ratio		0.550	0.524	0.502		
	Water Content	%	9.8	9.3	8.6		
	Saturation	%	47	47	45		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

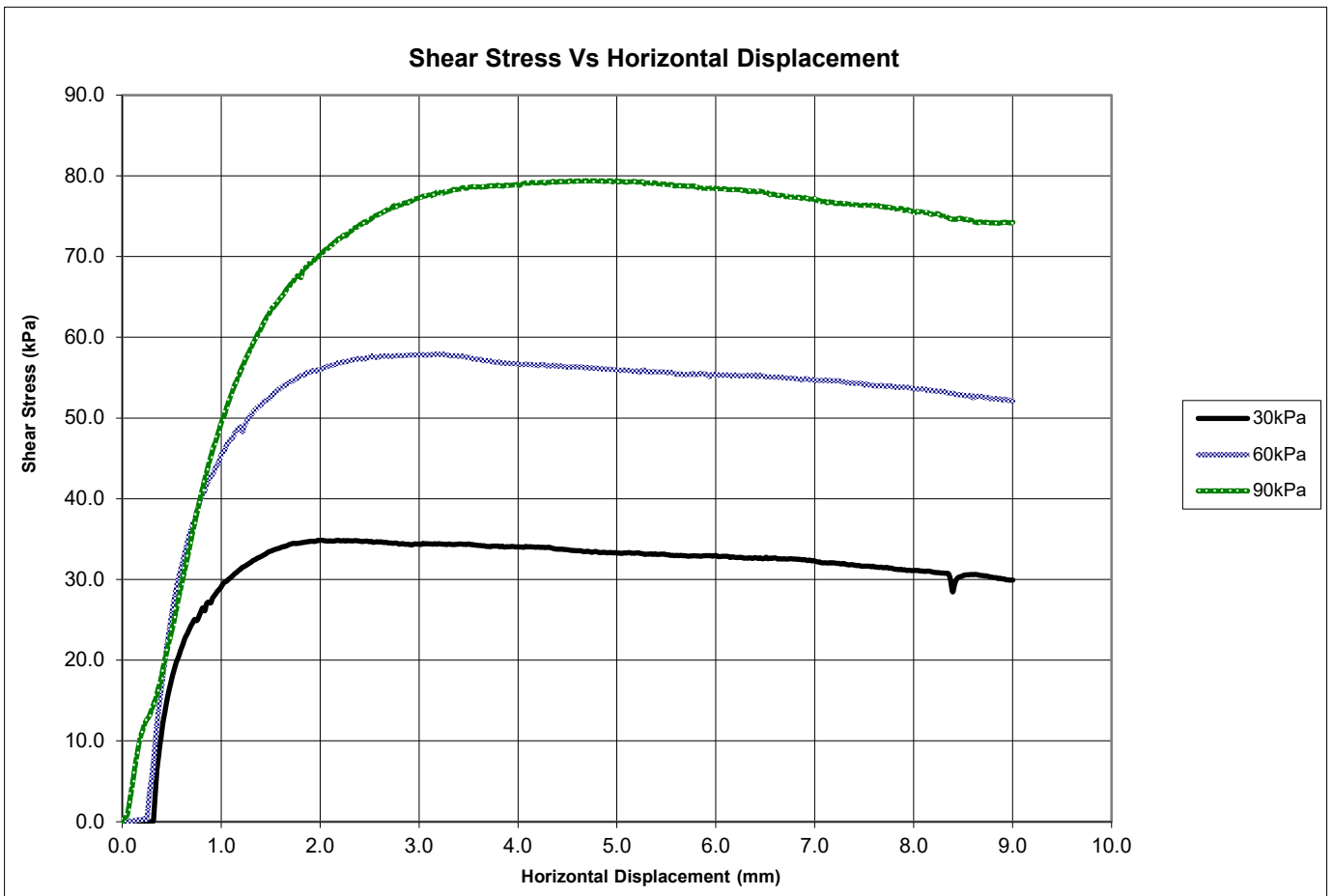
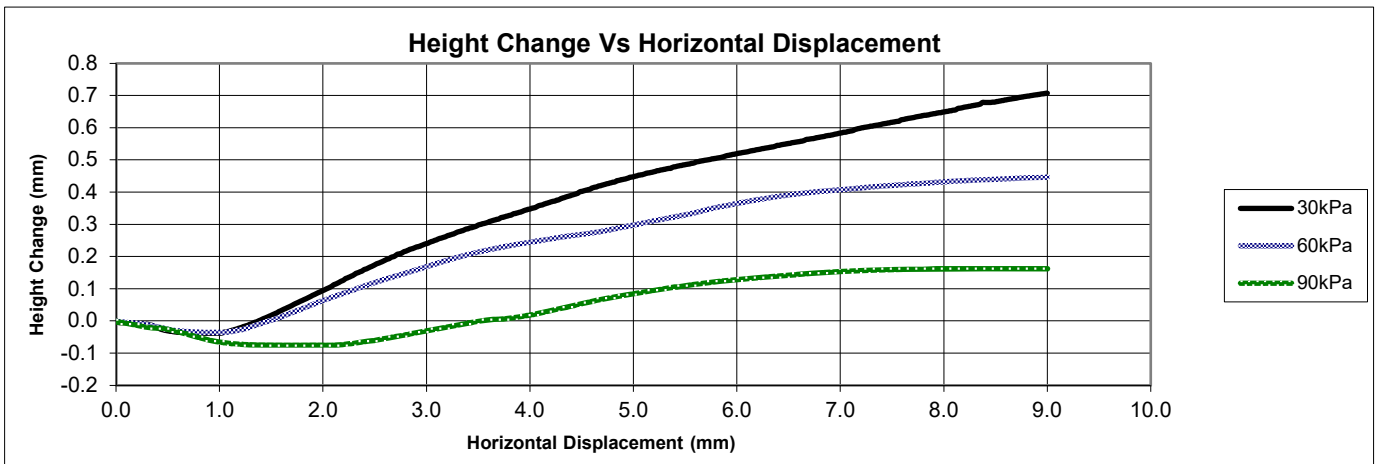
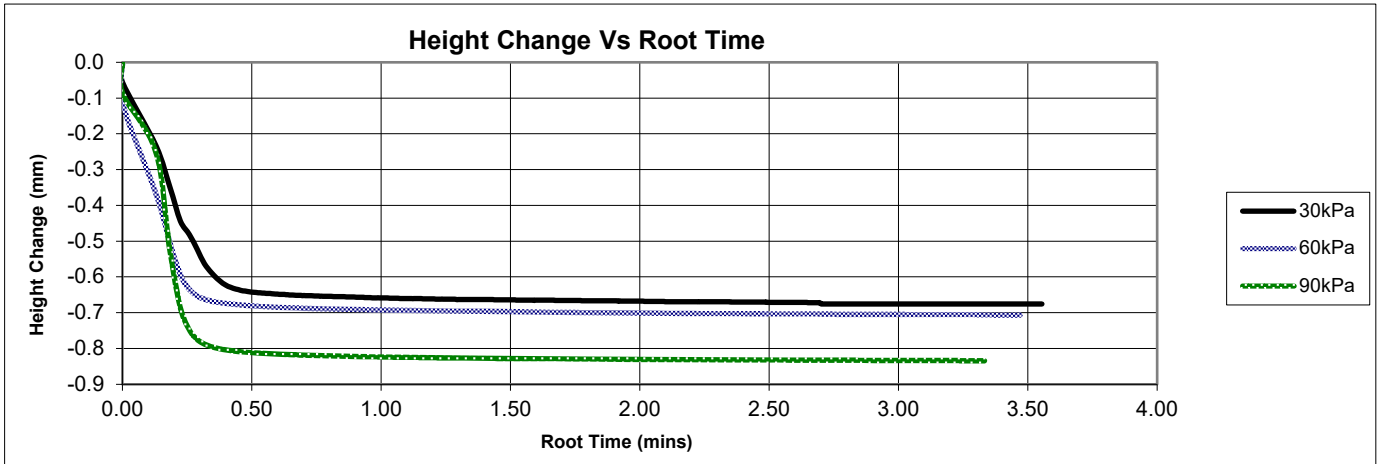
Shearing stage

		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	2.18	3.18	4.72		
	Shear stress	kPa	34.882	57.949	79.436		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	13.0	-
ϕ'	degrees	36.5	-

Residual Strength		Regression	Manual
c'_R	kPa	-	-
ϕ'_R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 01-5
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 01st November 2023.

Material & Source

Sample Reference : TP08, K1103039, 1.50m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP08, K1103039, 1.50m
Designation (d/D) : Not Supplied
Description : Brown very clayey fine to coarse SAND and GRAVEL
Date Sampled : Not Supplied
Date Tested : 01st November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 16/11/2023



Certificate No :

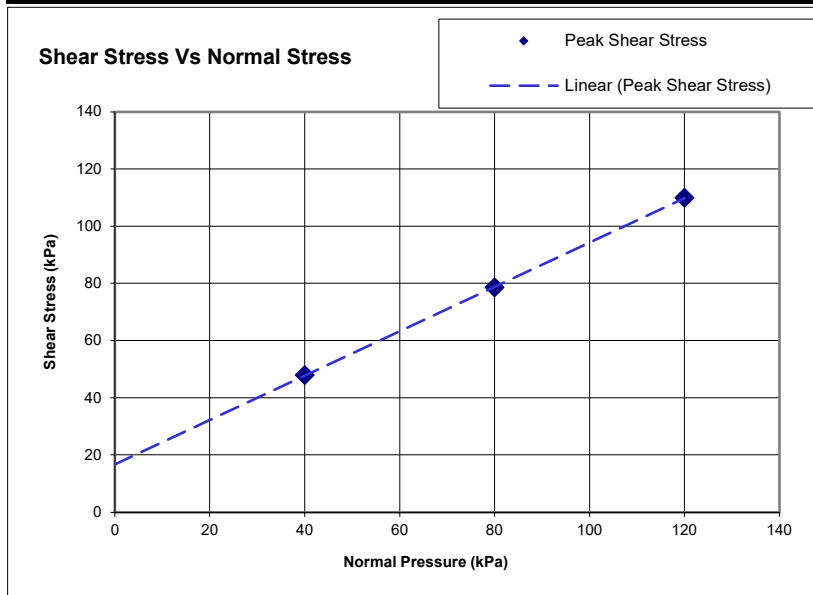
23/1202 - 01-5

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		10.2	10.3	10.3		
	Bulk Density	Mg/m ³		2.10	2.09	2.09		
	Dry Density	Mg/m ³		1.90	1.90	1.89		
	Voids Ratio			0.393	0.398	0.399		
	Degree of Saturation	%		69	68	68		
Consol	Consolidation / Normal Stress	kPa		40	80	120		
	Change in height	mm		0.30	0.54	0.81		
	Voids ratio			0.375	0.365	0.350		
Final	Voids ratio			0.464	0.437	0.407		
	Water Content	%		10.0	9.6	9.0		
	Saturation	%		57	58	59		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

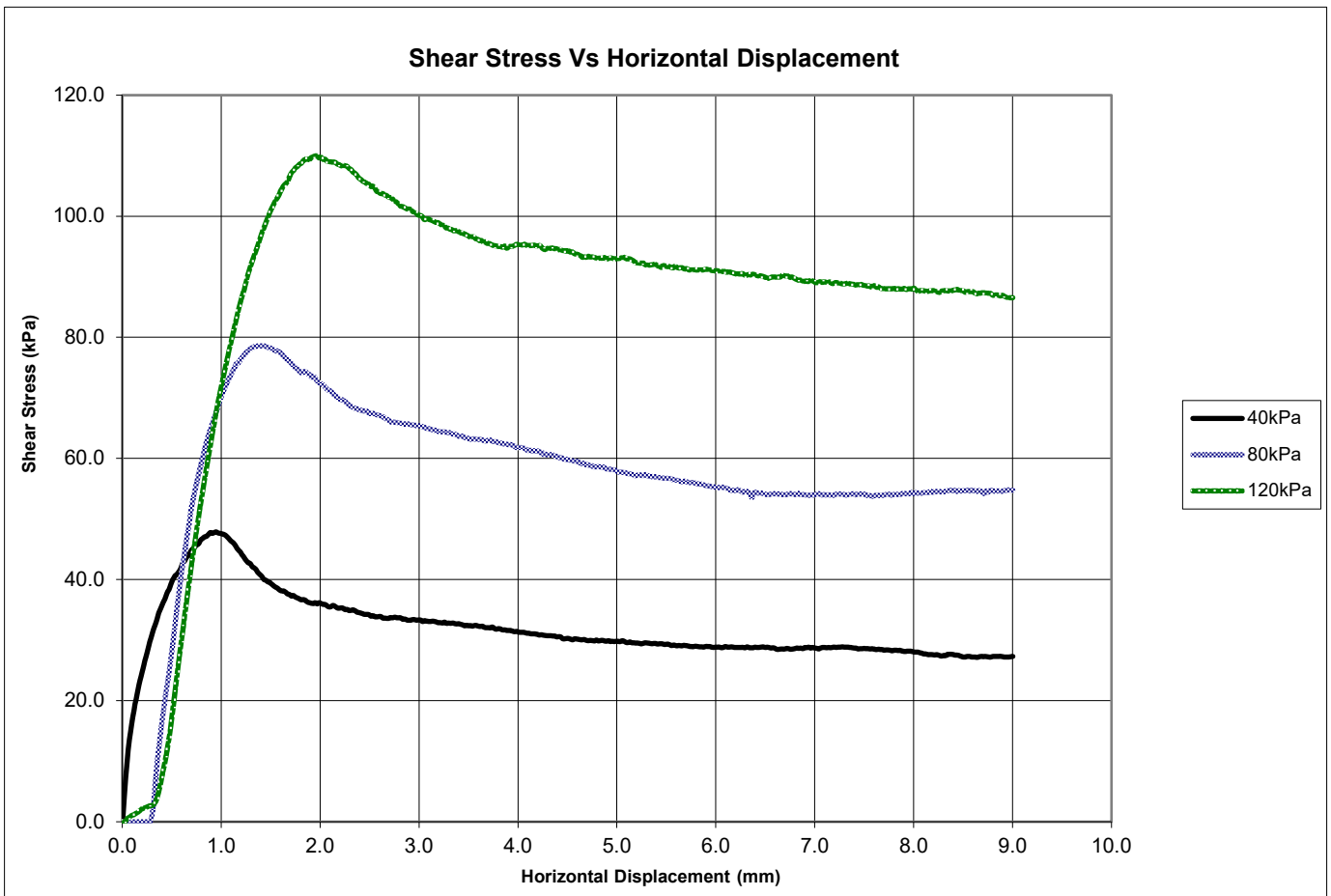
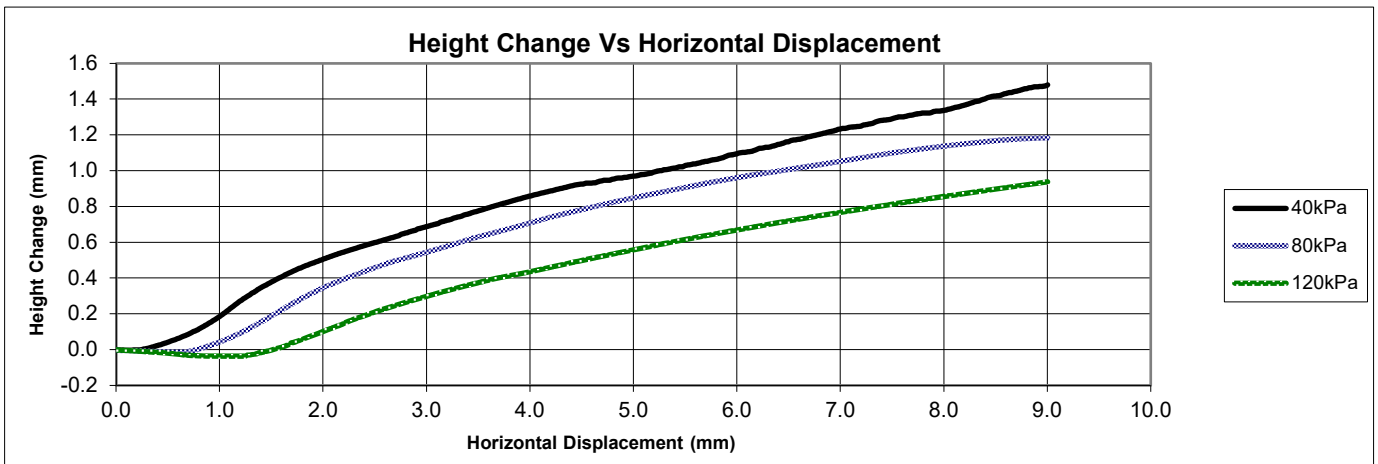
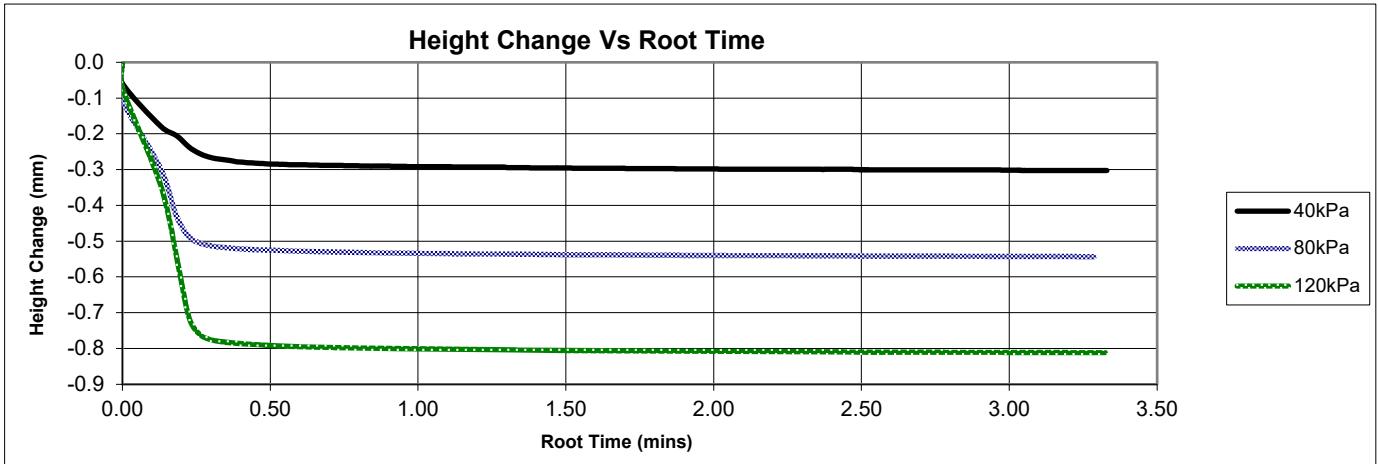
Shearing stage

			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		0.95	1.43	1.95		
	Shear stress	kPa		47.871	78.616	109.974		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	16.5	-
ϕ'	degrees	38.0	-

Residual Strength		Regression	Manual
c'_R	kPa	-	-
ϕ'_R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-5
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : TP44A, K1103004, 1.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP44A, K1103004, 1.00m
Designation (d/D) : Not Supplied
Description : Brown very gravelly silty sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

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Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 14/12/2023



Certificate No :

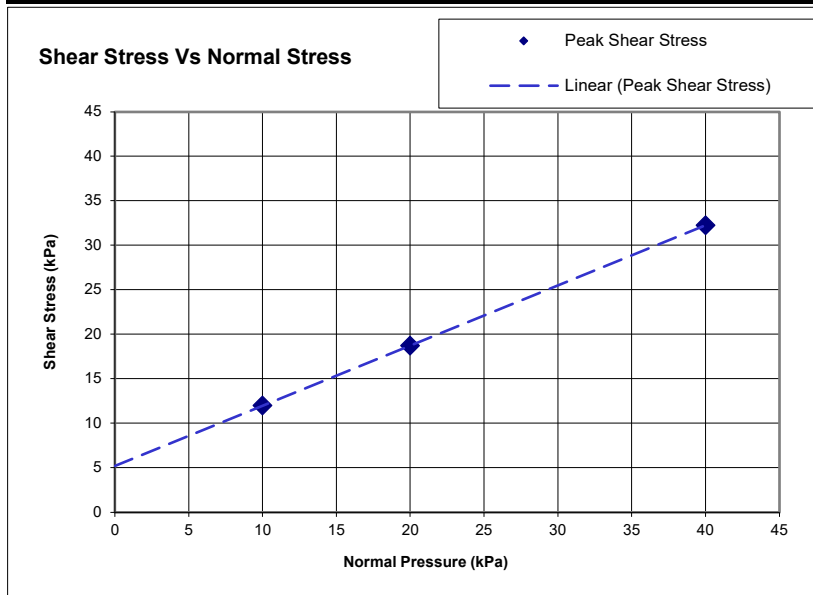
23/1202 - 03-5

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		19.3	19.2	19.2		
	Bulk Density	Mg/m ³		1.96	1.96	1.95		
	Dry Density	Mg/m ³		1.64	1.64	1.64		
	Voids Ratio			0.615	0.614	0.617		
	Degree of Saturation	%		83	83	82		
Consol	Consolidation / Normal Stress	kPa		10	20	40		
	Change in height	mm		0.25	0.37	0.71		
	Voids ratio			0.598	0.589	0.567		
Final	Voids ratio			0.619	0.602	0.580		
	Water Content	%		24.4	24.2	23.7		
	Saturation	%		100	100	100		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

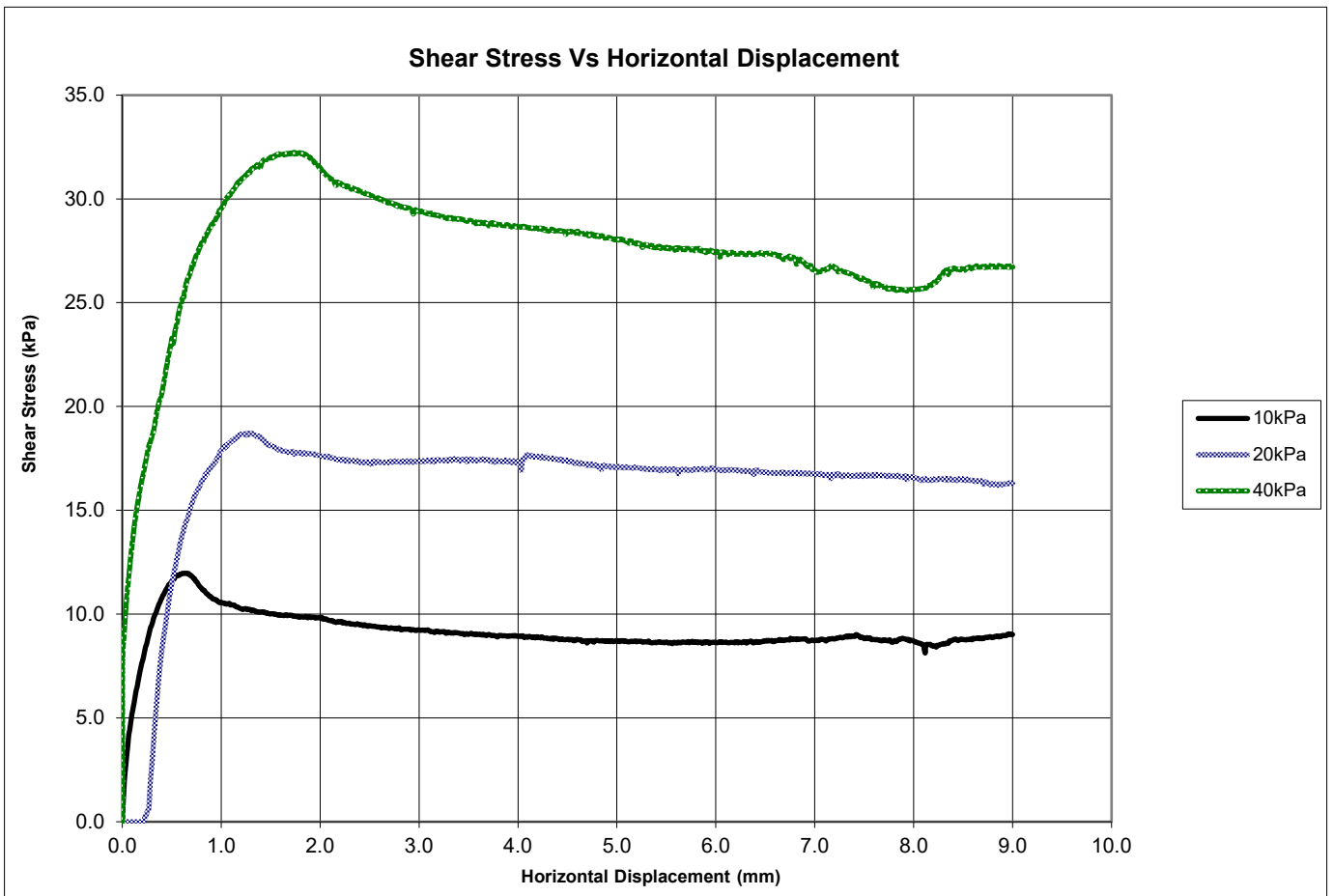
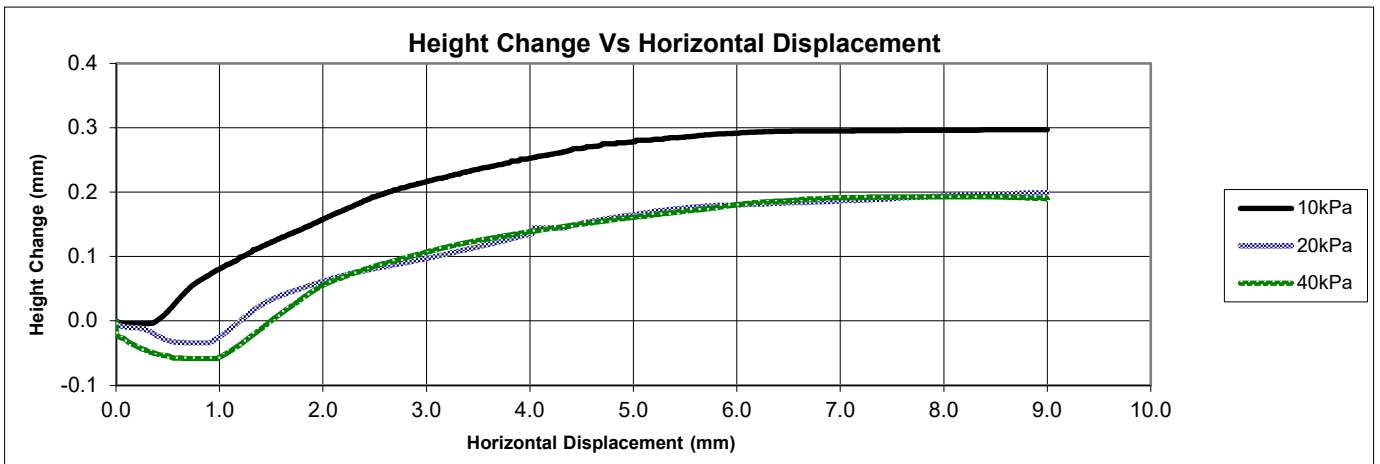
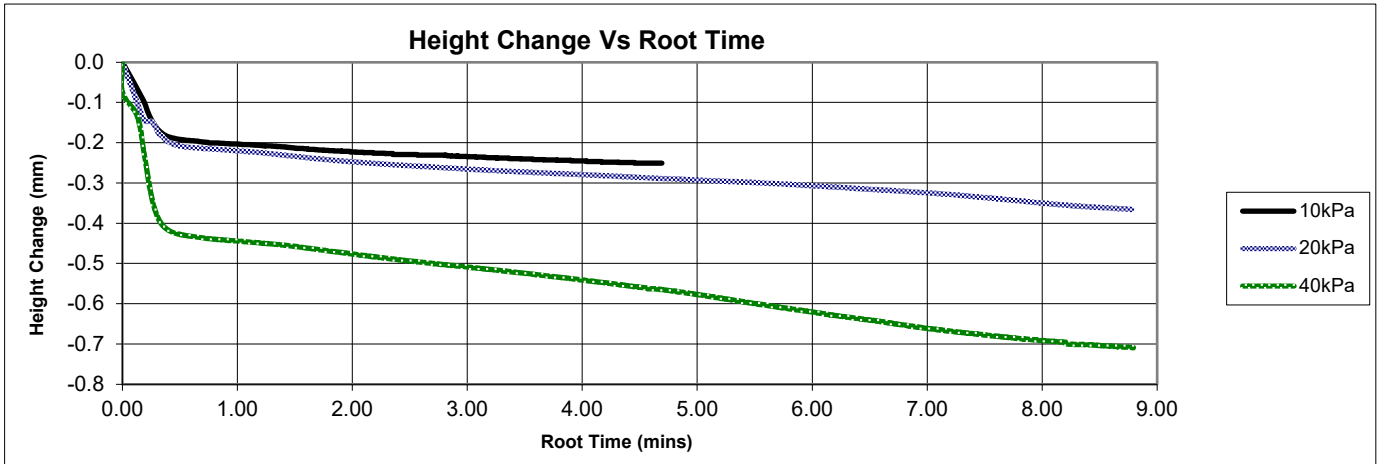
Shearing stage

			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		0.61	1.30	1.73		
	Shear stress	kPa		11.974	18.719	32.242		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	5.0	-
φ'	degrees	34.0	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-6
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : TP45, K1102340, 1.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP45, K1102340, 1.00m
Designation (d/D) : Not Supplied
Description : Brown very gravelly slightly silty sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

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Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 14/12/2023



Certificate No :

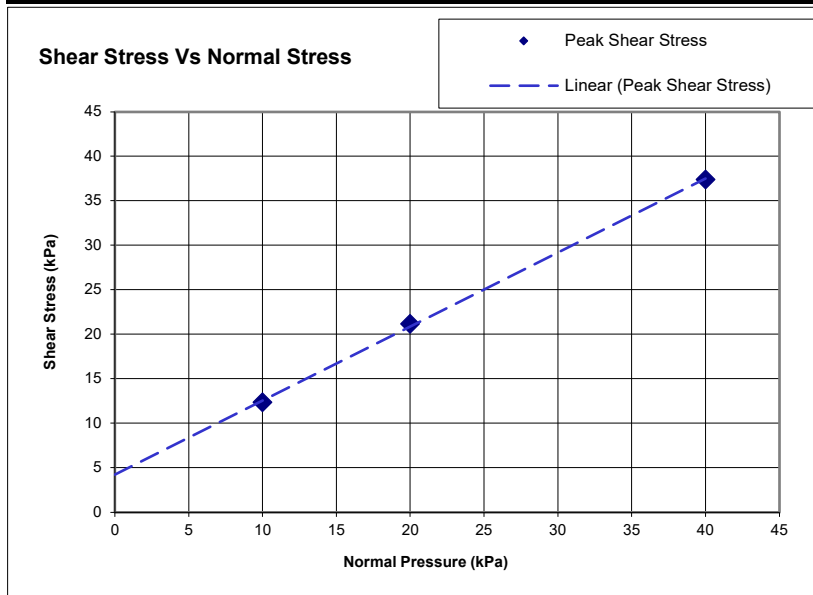
23/1202 - 03-6

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		15.8	15.8	15.7		
	Bulk Density	Mg/m ³		2.05	2.05	2.05		
	Dry Density	Mg/m ³		1.77	1.77	1.77		
	Voids Ratio			0.500	0.499	0.497		
	Degree of Saturation	%		84	84	84		
Consol	Consolidation / Normal Stress	kPa		10	20	40		
	Change in height	mm		0.24	0.31	0.51		
	Voids ratio			0.485	0.479	0.463		
Final	Voids ratio			0.530	0.500	0.481		
	Water Content	%		20.9	19.8	19.5		
	Saturation	%		100	100	100		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

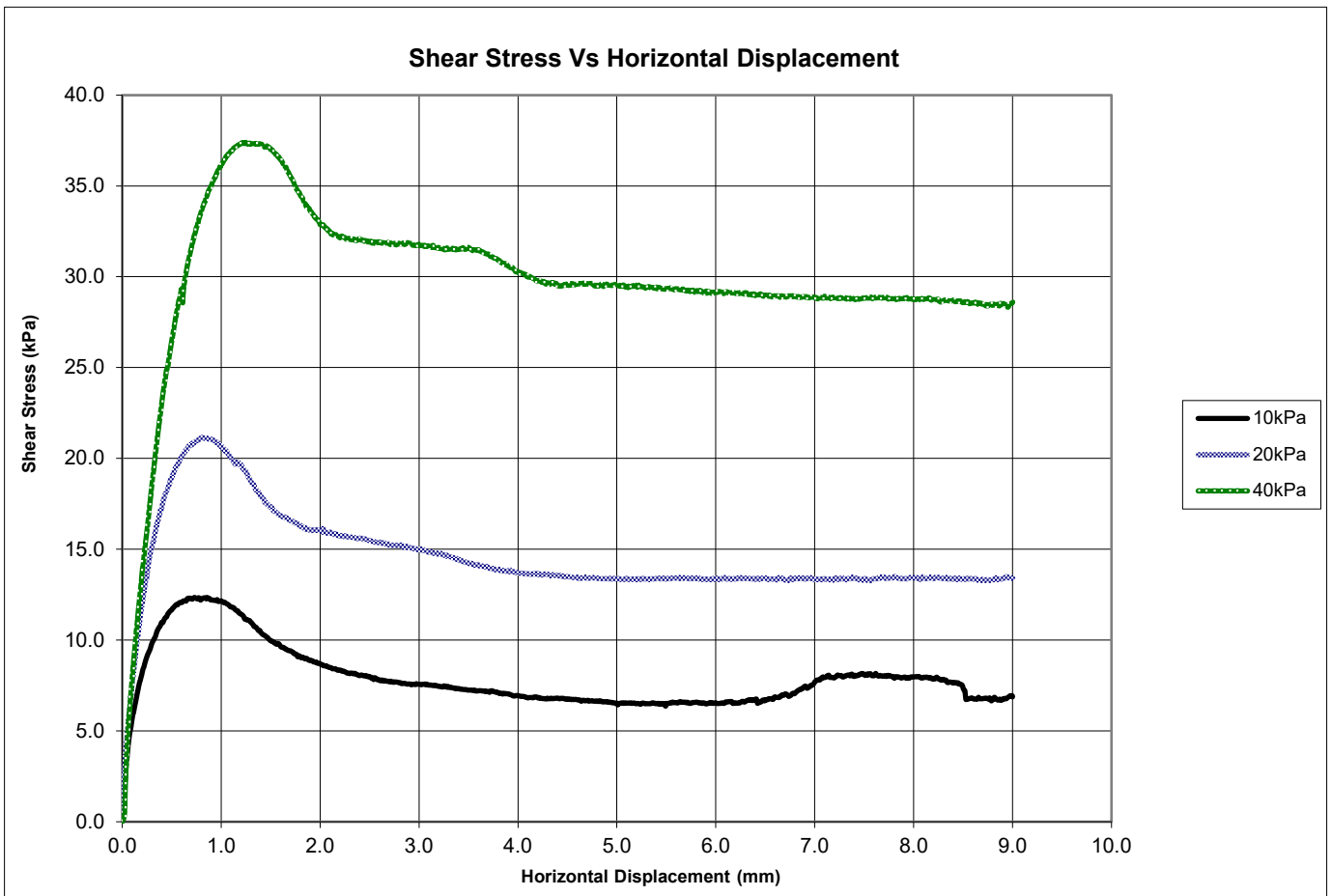
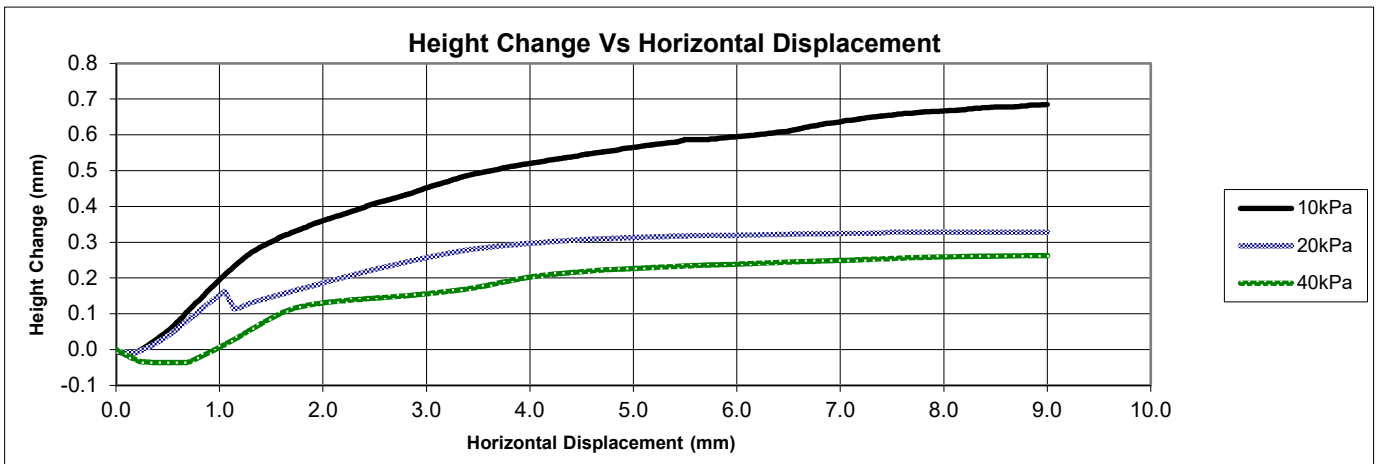
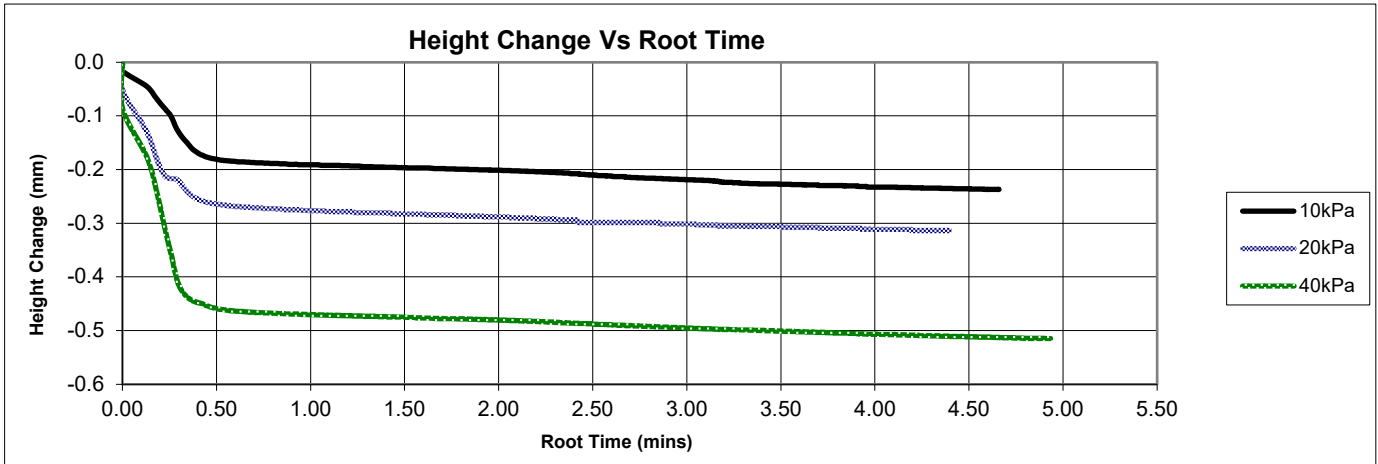
Shearing stage

			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		0.86	0.81	1.25		
	Shear stress	kPa		12.351	21.155	37.394		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	4.0	-
φ'	degrees	39.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-7
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : TP46, K1102352, 3.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP46, K1102352, 3.00m
Designation (d/D) : Not Supplied
Description : Brown very gravelly very silty very sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 14/12/2023



Certificate No :

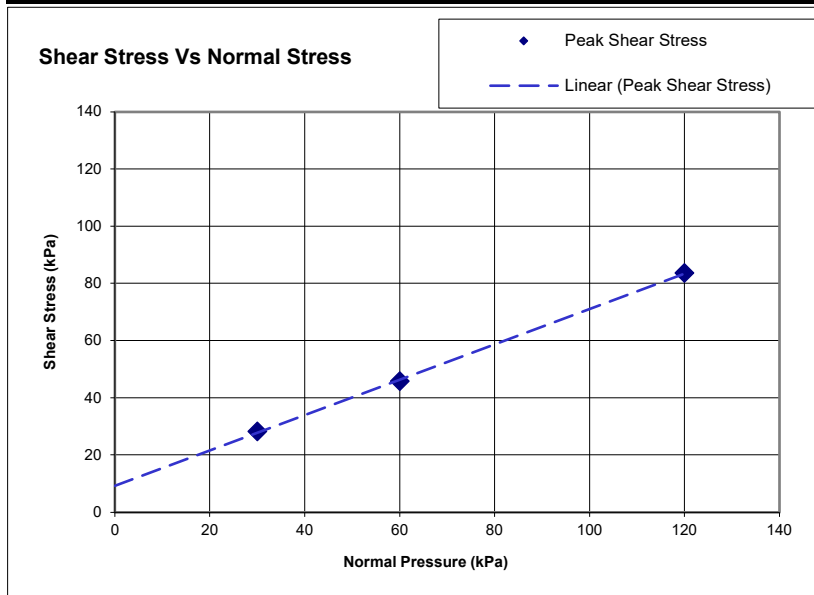
23/1202 - 03-7

Specimen Details

			No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³		2.65	2.65	2.65		
	Length	mm		60.0	60.0	60.0		
	Width	mm		60.1	60.1	60.1		
	Height	mm		23.0	23.0	23.0		
	Water Content	%		17.6	17.5	17.6		
	Bulk Density	Mg/m ³		2.00	2.00	2.00		
	Dry Density	Mg/m ³		1.70	1.71	1.70		
	Voids Ratio			0.560	0.553	0.557		
	Degree of Saturation	%		83	84	84		
Consol	Consolidation / Normal Stress	kPa		30	60	120		
	Change in height	mm		0.48	0.99	1.33		
	Voids ratio			0.528	0.487	0.467		
Final	Voids ratio			0.538	0.478	0.458		
	Water Content	%		21.8	21.2	20.8		
	Saturation	%		100	100	100		
SHW	Optimum Water Content	%		-				
	Maximum Dry Density	Mg/m ³		-				

Shearing stage

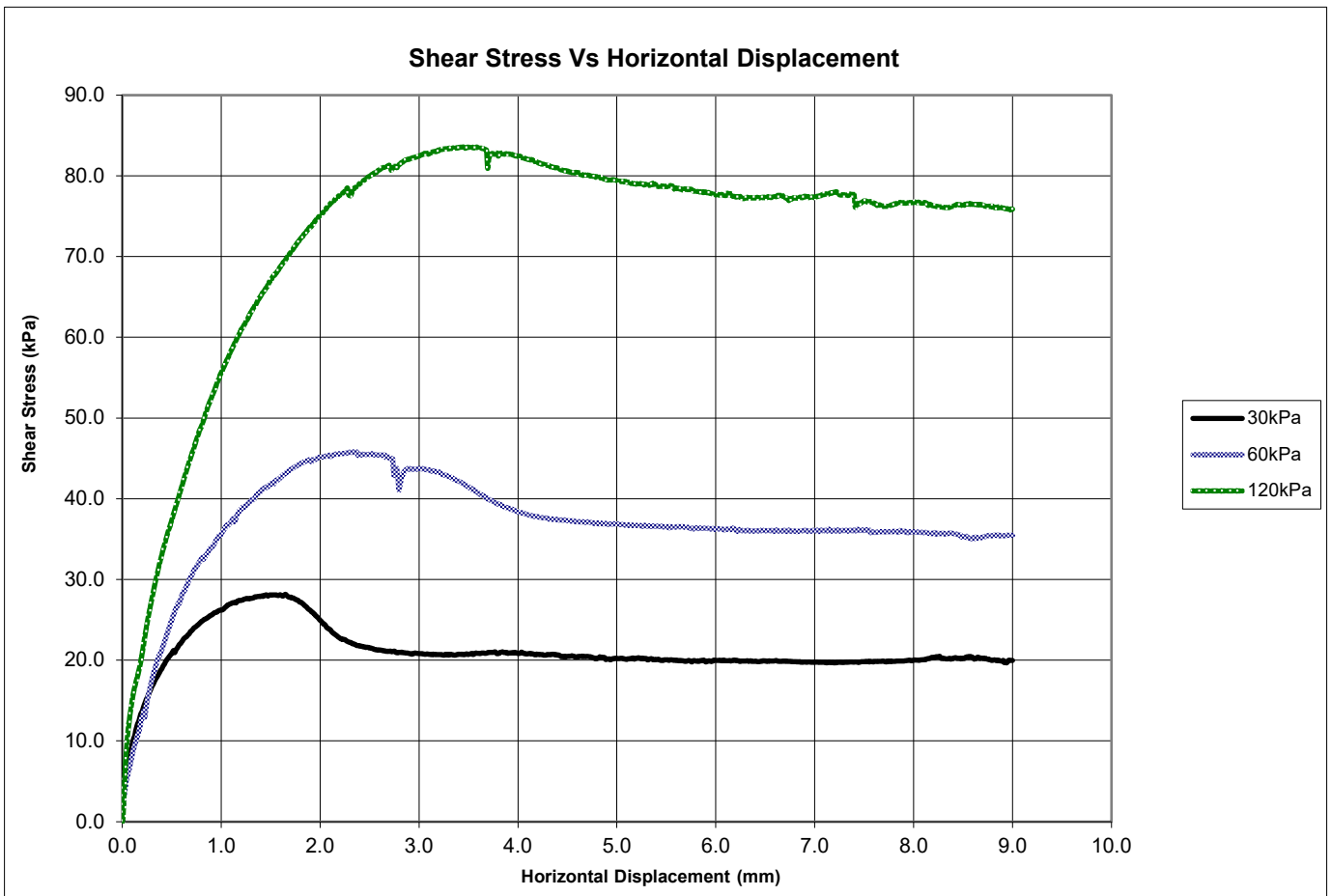
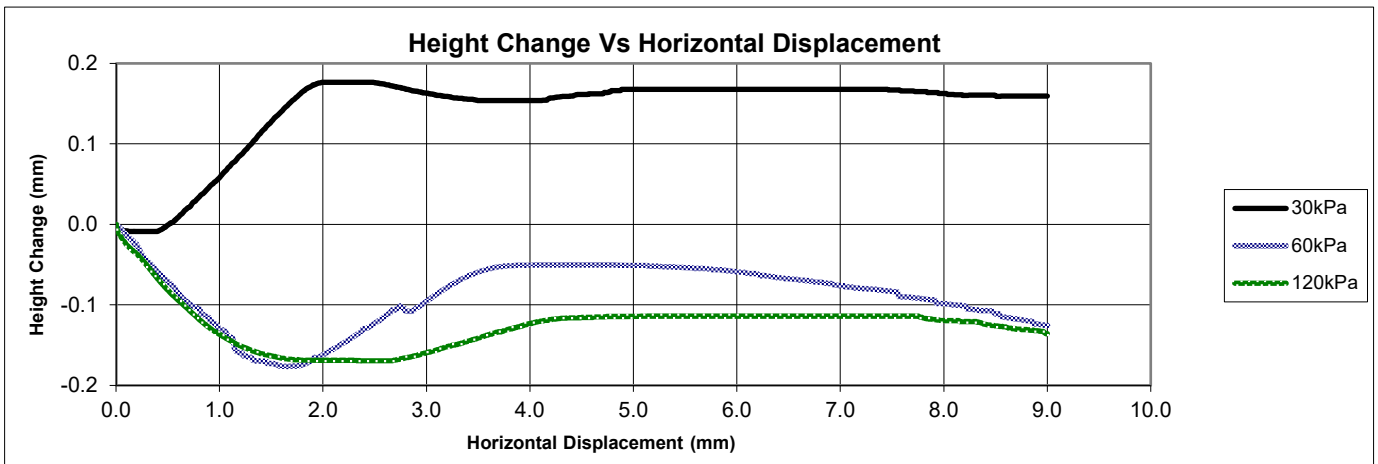
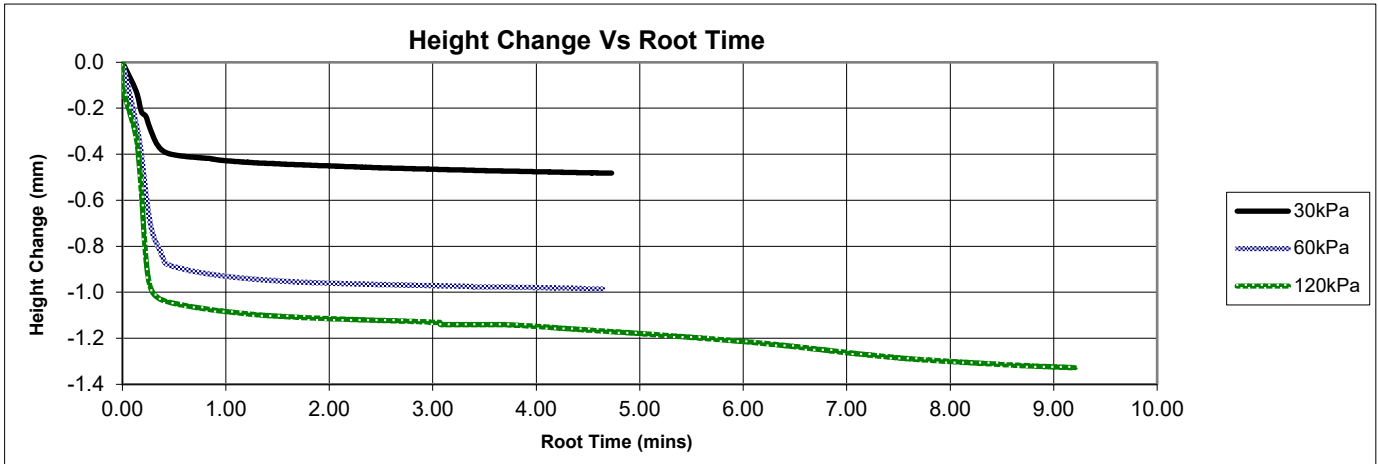
			No.	1	2	3	4	5
Rate of displacement	Peak	mm/min		0.600	0.600	0.600		
	Residual	mm/min						
Peak values	Relative displacement	mm		1.65	2.36	3.44		
	Shear stress	kPa		28.165	45.811	83.607		
Residual values	No. of reversals							
	Final displacement	mm						
	Shear stress	kPa						



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	9.5	-
φ'	degrees	31.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-27
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : TP47, K1102356, 1.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP47, K1102356, 1.00m
Designation (d/D) : Not Supplied
Description : Brown very gravelly very sandy CLAY. Gravel is fine to coarse.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Submerged

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 16/01/2024



Certificate No :

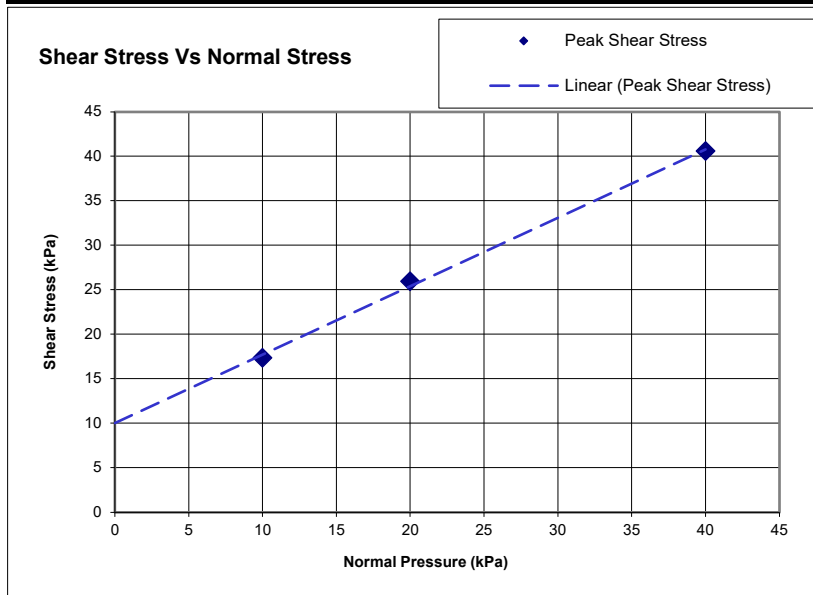
23/1202 - 03-27

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.1	23.0		
	Water Content	%	9.3	9.3	9.2		
	Bulk Density	Mg/m ³	2.12	2.12	2.11		
	Dry Density	Mg/m ³	1.94	1.94	1.93		
	Voids Ratio		0.365	0.367	0.372		
	Degree of Saturation	%	68	67	66		
Consol	Consolidation / Normal Stress	kPa	10	20	40		
	Change in height	mm	0.27	0.39	0.66		
	Voids ratio		0.349	0.344	0.333		
Final	Voids ratio		0.374	0.369	0.347		
	Water Content	%	15.4	15.0	14.6		
	Saturation	%	100	100	100		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

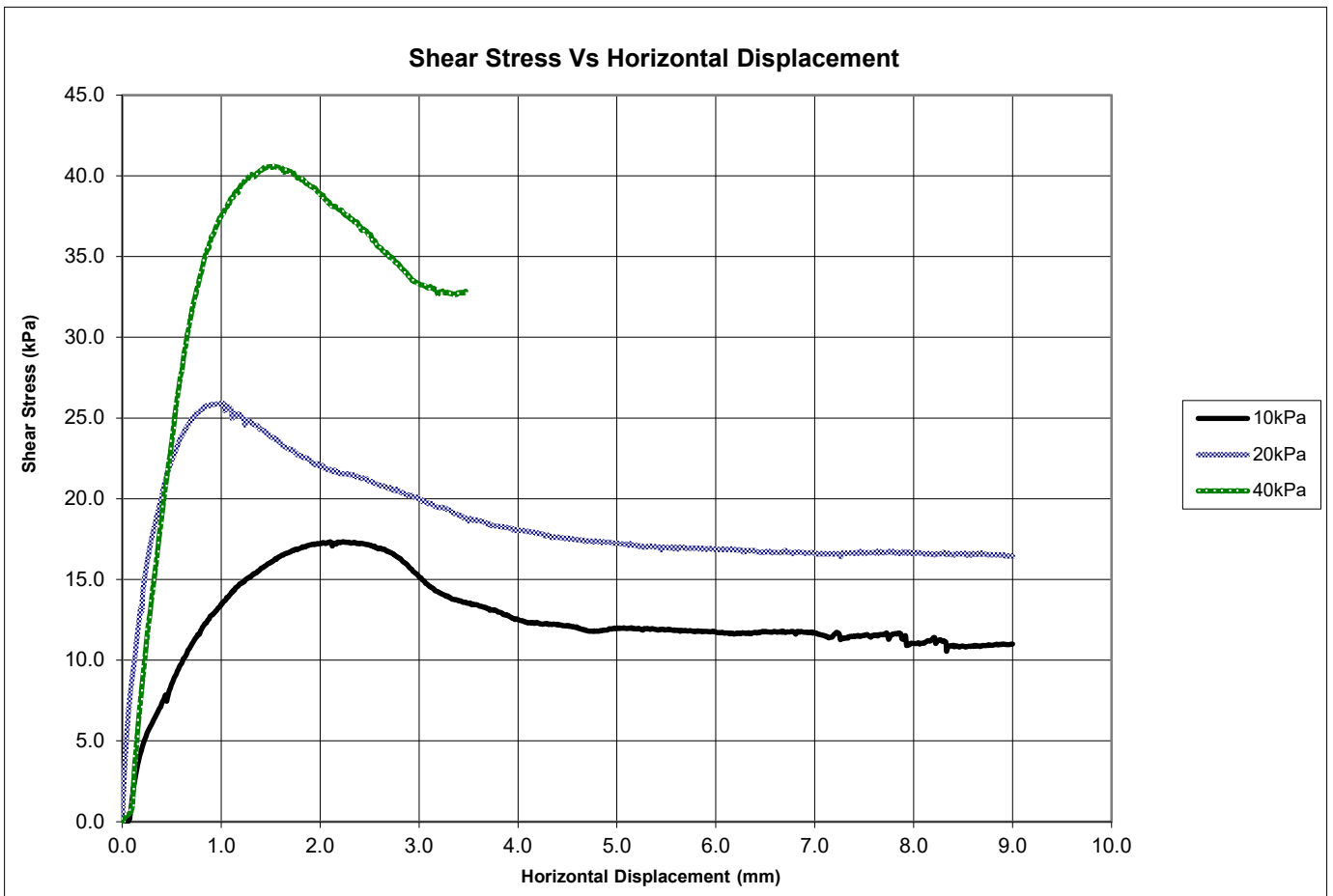
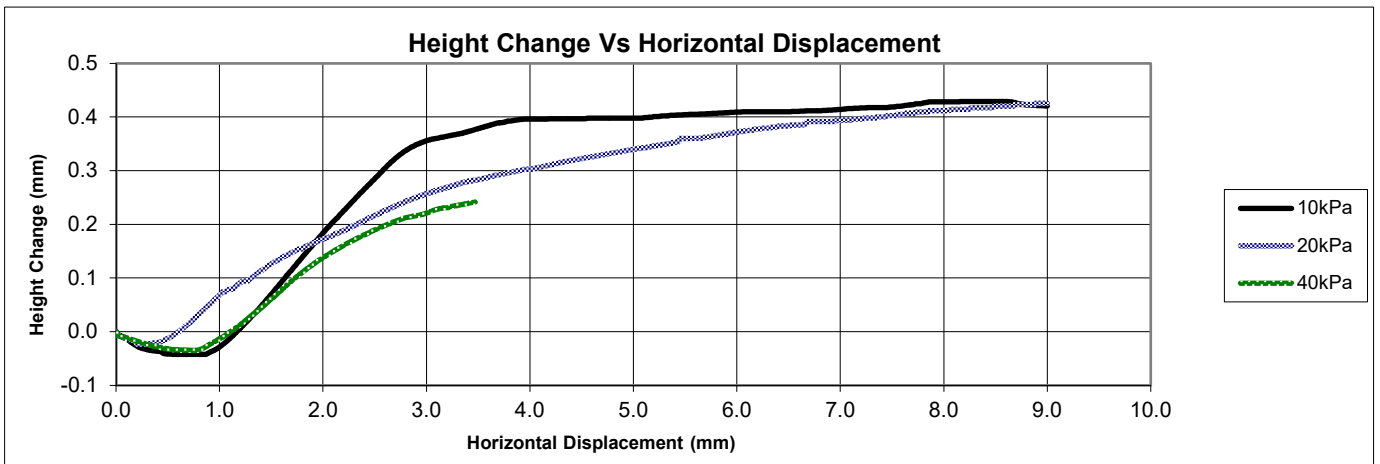
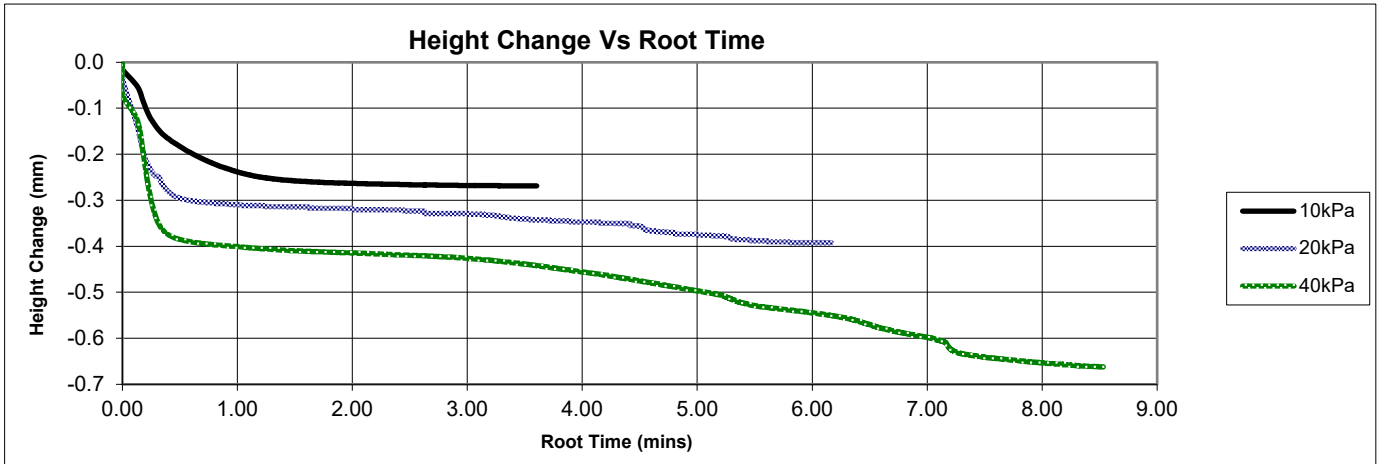
Shearing stage

		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	2.23	1.01	1.53		
	Shear stress	kPa	17.351	25.933	40.598		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	10.0	-
ϕ'	degrees	37.5	-

Residual Strength		Regression	Manual
c'_R	kPa	-	-
ϕ'_R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-8
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : TP47, K1102360, 3.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP47, K1102360, 3.00m
Designation (d/D) : Not Supplied
Description : Brown slightly clayey fine to coarse SAND and GRAVEL / CRUSHED ROCK.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

The results contained in this test certificate relate to the sample(s) as received
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This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 14/12/2023



Certificate No :

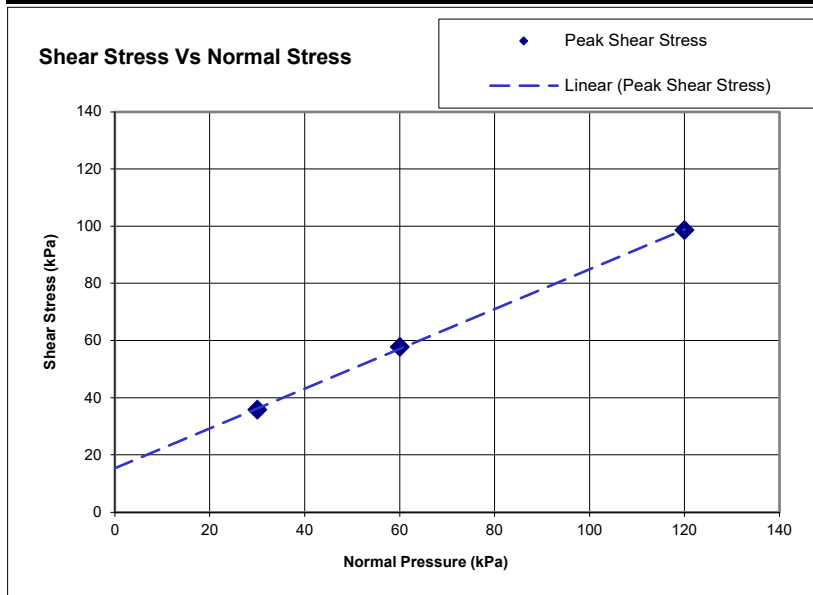
23/1202 - 03-8

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	12.4	12.5	12.3		
	Bulk Density	Mg/m ³	2.07	2.08	2.06		
	Dry Density	Mg/m ³	1.84	1.85	1.84		
	Voids Ratio		0.440	0.435	0.443		
	Degree of Saturation	%	75	76	74		
Consol	Consolidation / Normal Stress	kPa	30	60	120		
	Change in height	mm	0.54	0.64	1.08		
	Voids ratio		0.406	0.395	0.376		
Final	Voids ratio		0.435	0.413	0.374		
	Water Content	%	12.0	11.9	10.3		
	Saturation	%	73	76	73		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

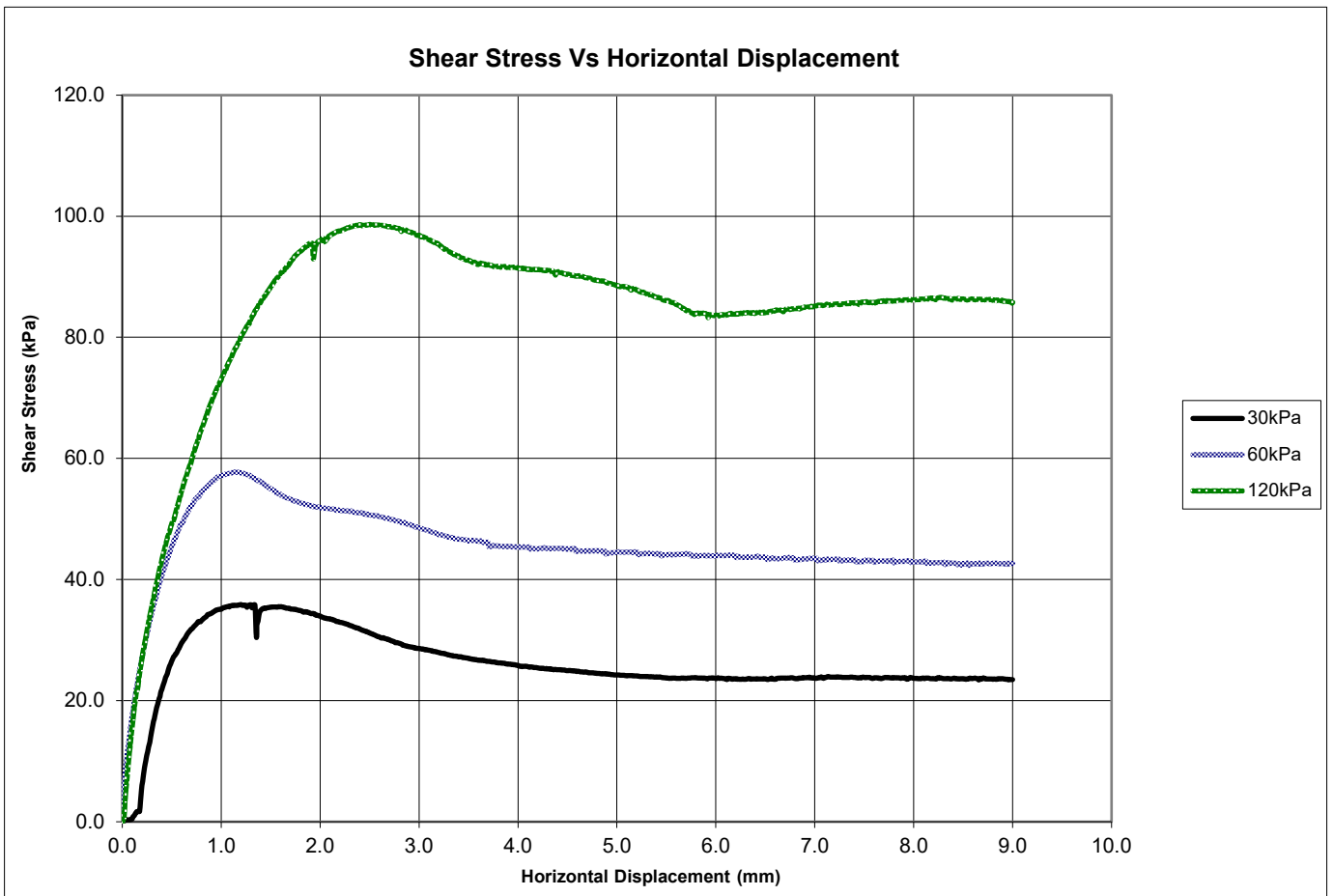
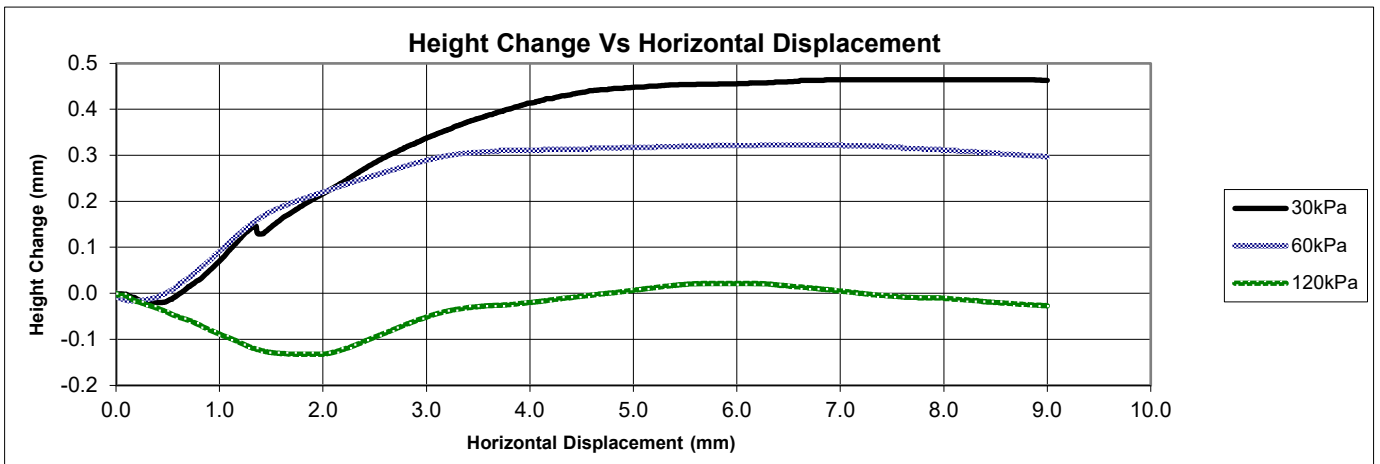
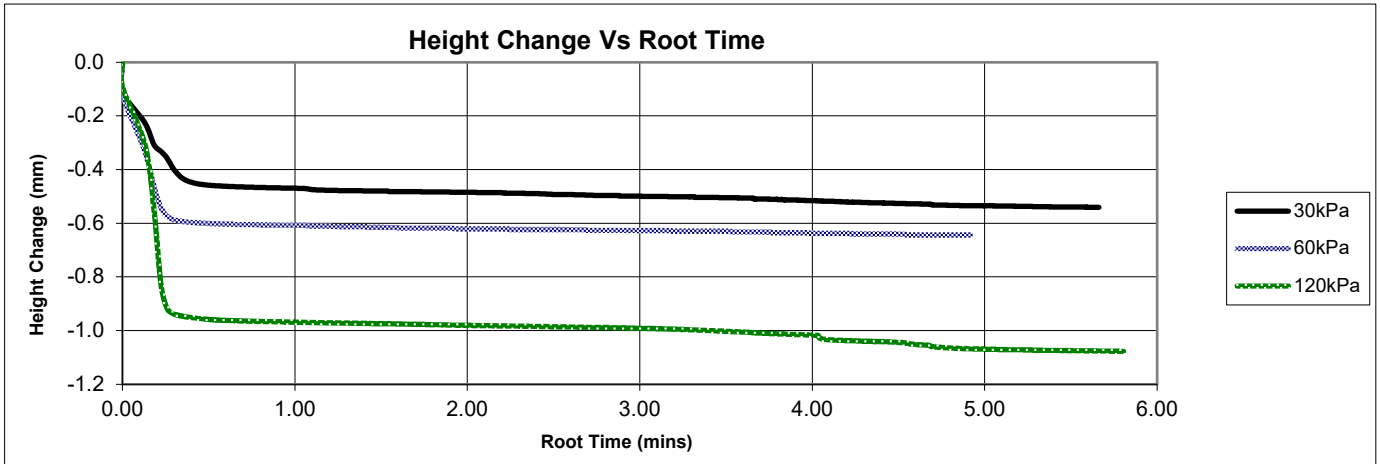
Shearing stage

		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	1.20	1.16	2.50		
	Shear stress	kPa	35.865	57.772	98.645		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	15.5	-
ϕ'	degrees	35.0	-

Residual Strength		Regression	Manual
c'_R	kPa	-	-
ϕ'_R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-9
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : TP48, K1093488, 1.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP48, K1093488, 1.00m
Designation (d/D) : Not Supplied
Description : Brown clayey fine to coarse SAND and GRAVEL / CRUSHED ROCK.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

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This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 14/12/2023



Certificate No :

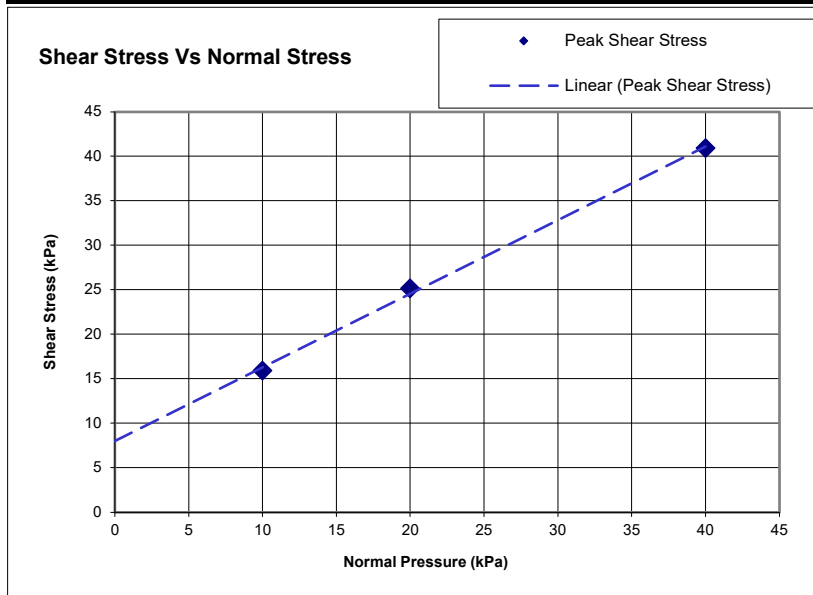
23/1202 - 03-9

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	10.7	10.7	10.6		
	Bulk Density	Mg/m ³	2.10	2.11	2.10		
	Dry Density	Mg/m ³	1.90	1.91	1.90		
	Voids Ratio		0.395	0.388	0.396		
	Degree of Saturation	%	72	73	71		
Consol	Consolidation / Normal Stress	kPa	10	20	40		
	Change in height	mm	0.22	0.53	0.64		
	Voids ratio		0.382	0.356	0.357		
Final	Voids ratio		0.430	0.378	0.376		
	Water Content	%	9.8	9.5	9.2		
	Saturation	%	60	67	65		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

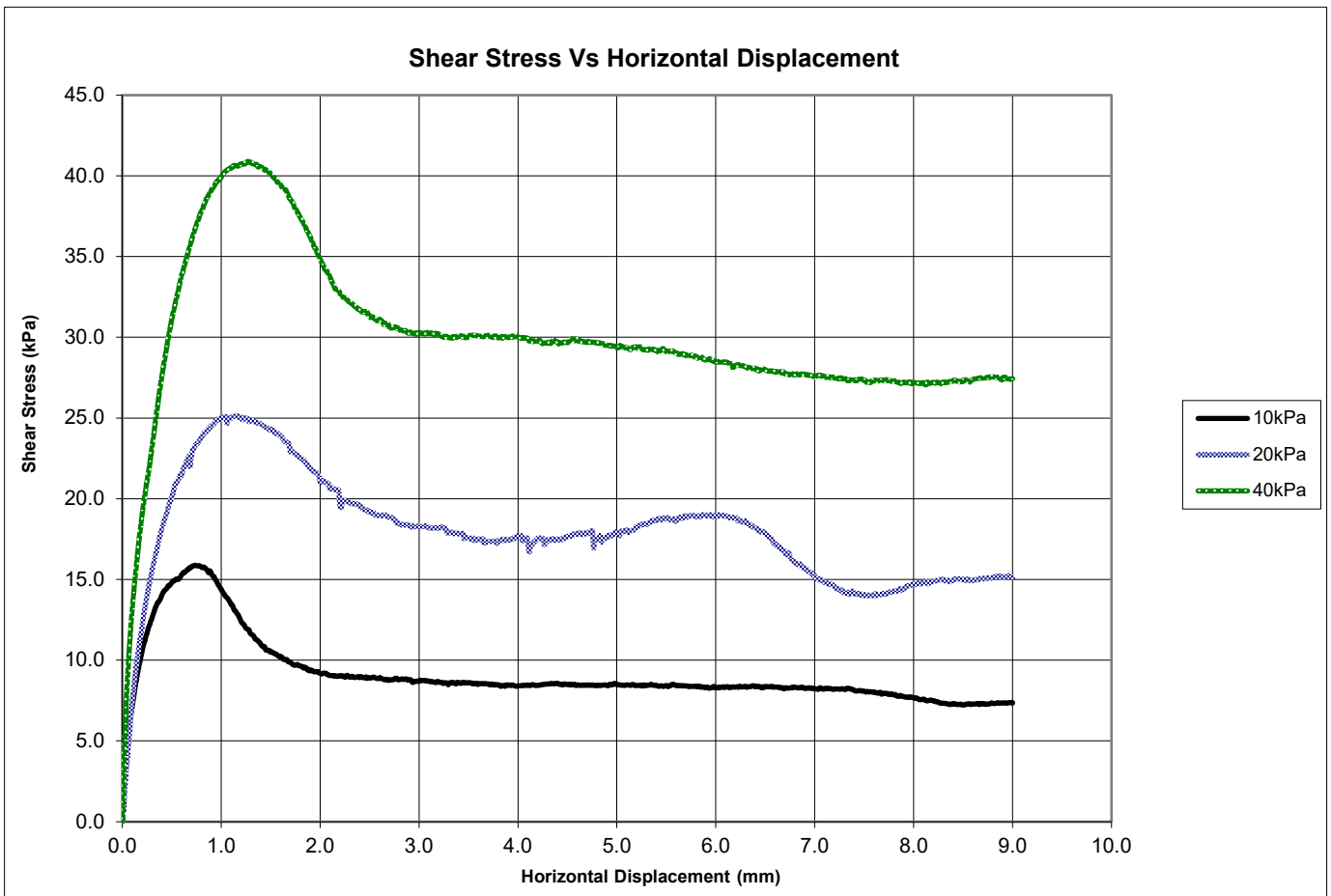
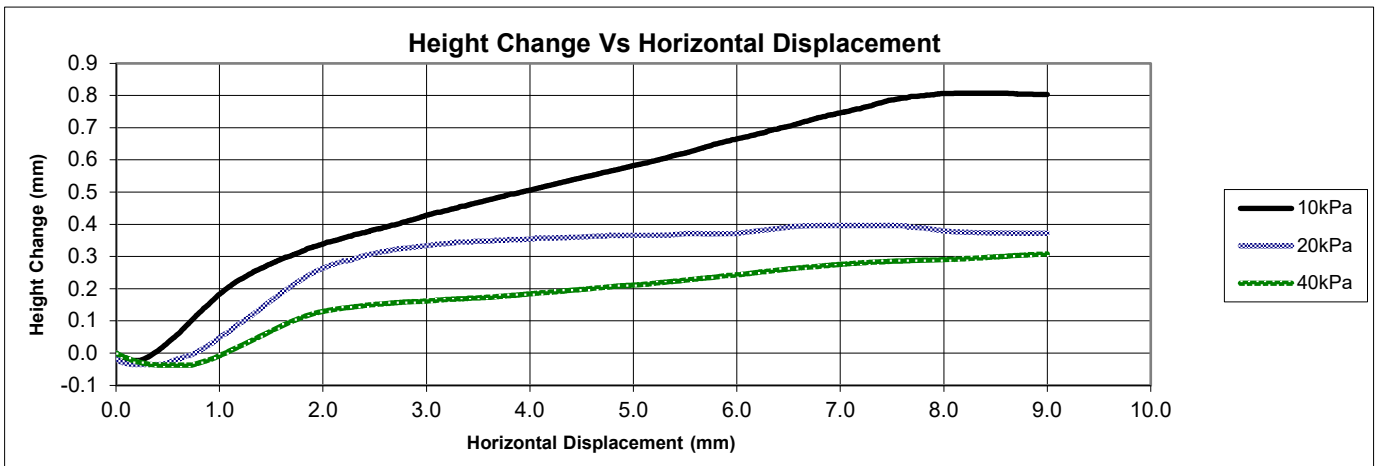
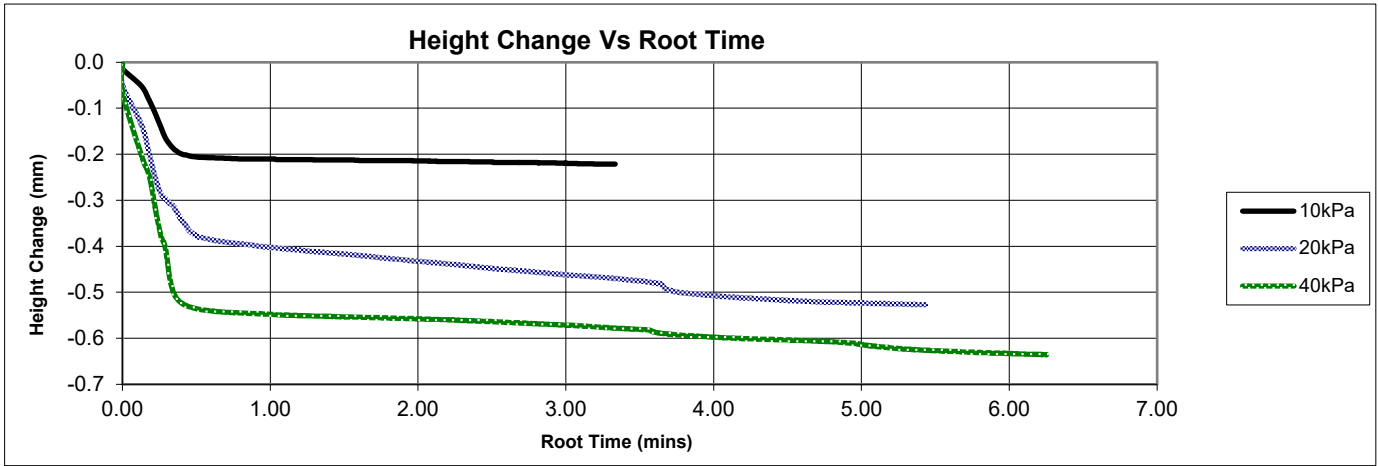
Shearing stage

		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	0.74	1.16	1.27		
	Shear stress	kPa	15.896	25.152	40.897		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					


Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	8.0	-
φ'	degrees	39.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 03-10
To : Jack Ross
Client : **BAM Ritchies Ltd.**
Glasgow Road
Kilsyth
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

**DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR
SMALL SHEARBOX APPARATUS
BS 1377 - 2 : 2022 : CLAUSE 25.2**

Introduction

We refer to a sample taken from New Deer and delivered to our laboratory on 20th November 2023.

Material & Source

Sample Reference : TP52, K1102853, 1.00m
Sampled By : Client
Sampling Certificate : Not Supplied
Location : TP52, K1102853, 1.00m
Designation (d/D) : Not Supplied
Description : Yellowish brown slightly clayey slightly silty fine to coarse SAND and GRAVEL / CRUSHED ROCK.
Date Sampled : Not Supplied
Date Tested : 20th November 2023 Onwards
Source : RGN.330G - New Deer
Test Condition : Dry

Test Results;

As Detailed on Page 2 to 3 inclusive

Comments;

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All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Test Notes

Preparation - <2mm material prepared in accordance with BS EN ISO 17892 - 10 : 2018 : Clause 6.2.5

Approved for Issue



T McLelland (Director)

Date 14/12/2023



Certificate No :

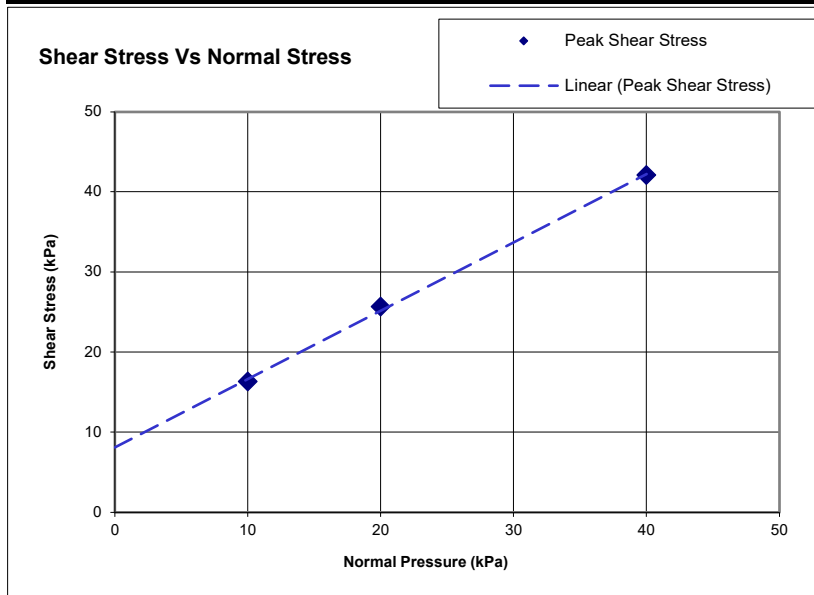
23/1202 - 03-10

Specimen Details

		No.	1	2	3	4	5
Initial	Particle Density (Assumed)	Mg/m ³	2.65	2.65	2.65		
	Length	mm	60.0	60.0	60.0		
	Width	mm	60.1	60.1	60.1		
	Height	mm	23.0	23.0	23.0		
	Water Content	%	9.4	9.4	9.4		
	Bulk Density	Mg/m ³	1.90	1.90	1.89		
	Dry Density	Mg/m ³	1.74	1.74	1.73		
	Voids Ratio		0.524	0.525	0.532		
	Degree of Saturation	%	47	47	47		
Consol	Consolidation / Normal Stress	kPa	10	20	40		
	Change in height	mm	0.18	0.25	0.28		
	Voids ratio		0.512	0.509	0.513		
Final	Voids ratio		0.601	0.575	0.569		
	Water Content	%	8.7	9.0	8.3		
	Saturation	%	38	41	39		
SHW	Optimum Water Content	%	-				
	Maximum Dry Density	Mg/m ³	-				

Shearing stage

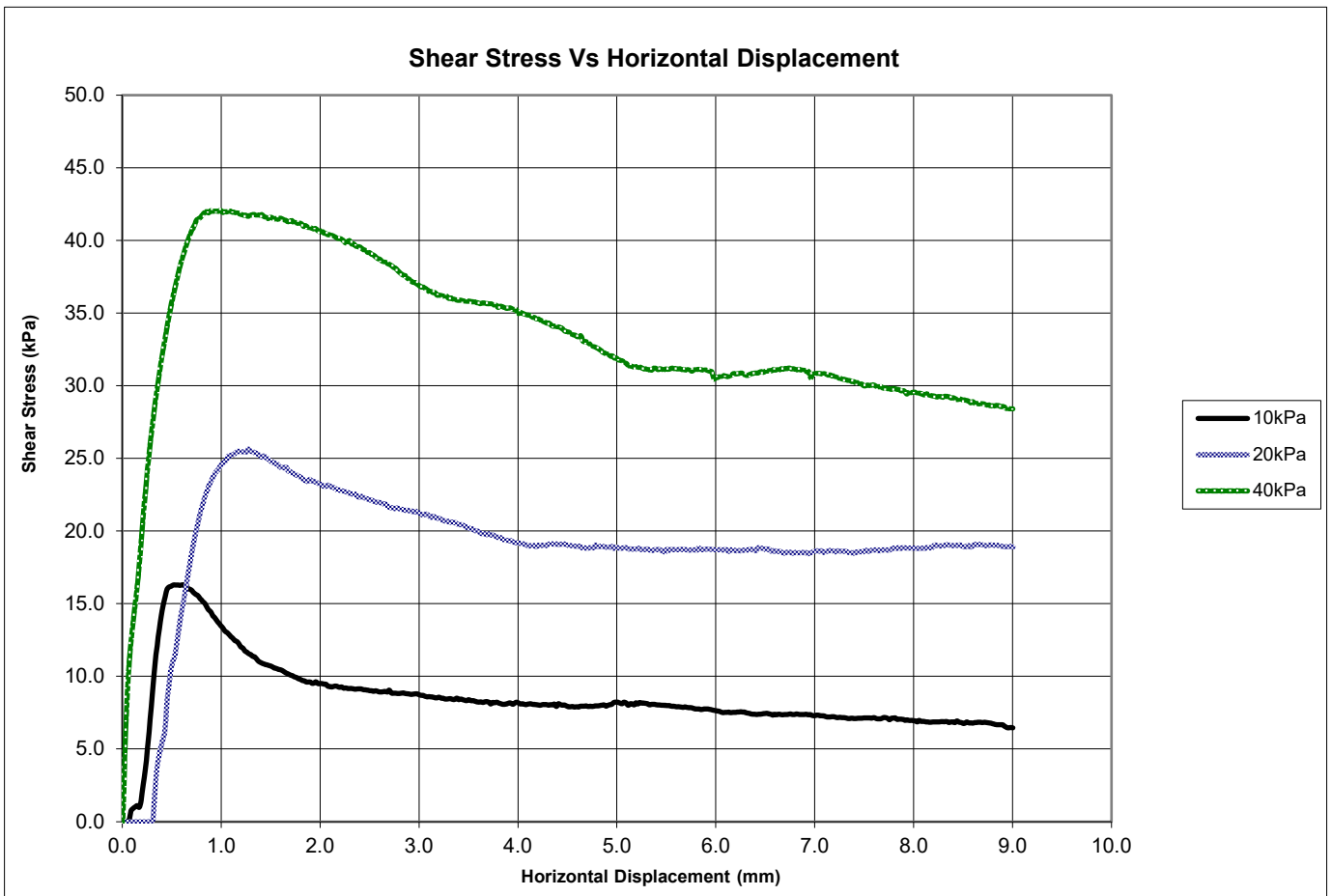
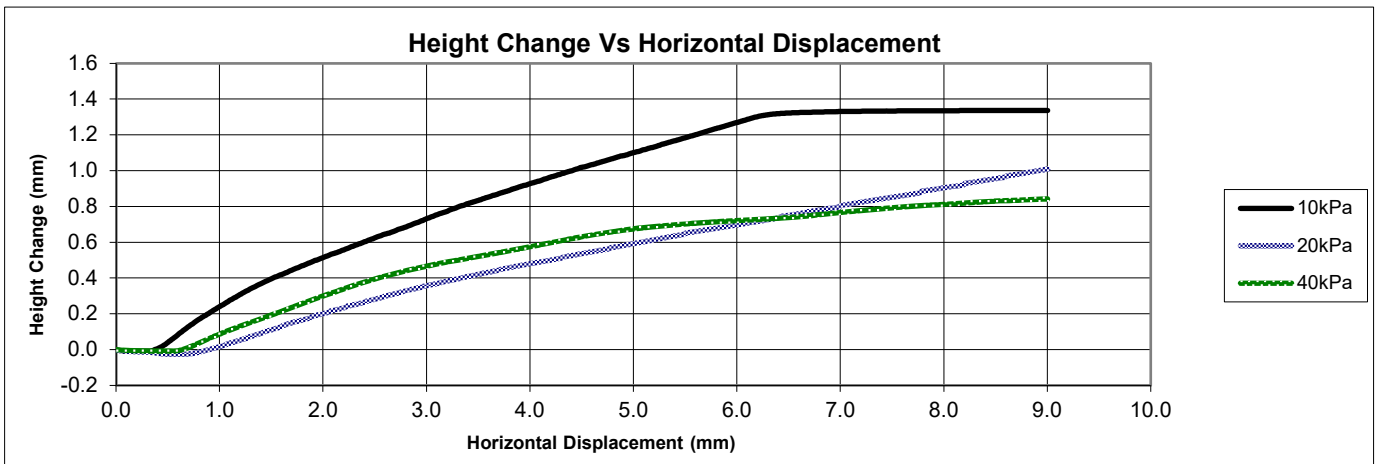
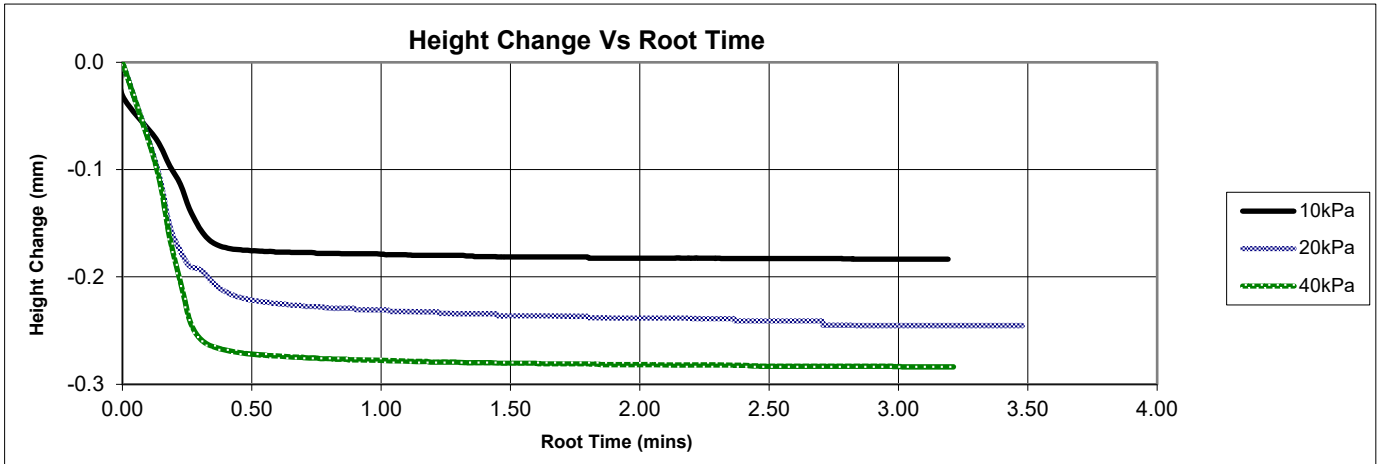
		No.	1	2	3	4	5
Rate of displacement	Peak	mm/min	0.600	0.600	0.600		
	Residual	mm/min					
Peak values	Relative displacement	mm	0.62	1.27	0.99		
	Shear stress	kPa	16.308	25.647	42.084		
Residual values	No. of reversals						
	Final displacement	mm					
	Shear stress	kPa					



Shear Strength Parameters

Peak Strength		Regression	Manual
c'	kPa	8.0	-
φ'	degrees	40.5	-

Residual Strength		Regression	Manual
c' _R	kPa	-	-
φ' _R	degrees	-	-



SAMPLES UNSUITABLE FOR TESTING

New Deer

Client : SSEN-T
Consultant : Tony Gee

Contract No : 330G

The following samples have proved unsuitable for testing.
 Please advise us if any replacement sample(s) are to be tested.

Sample Identification	Test(s) Required	Reason for Unsuitability
BH01 B 1.00 m	3x38mm Triaxials	Sample disturbed(in bag), undisturbed sample required for testing
BH41 B 1.00 m	3x38mm Triaxials	Sample disturbed(in bag), undisturbed sample required for testing
BH43 B 0.50 m	3x38mm Triaxials	Sample disturbed(in bag), undisturbed sample required for testing
HP02 B 0.50 m	3x38mm Triaxials	Sample disturbed(in bag), undisturbed sample required for testing
HP05 B 0.50 m	3x38mm Triaxials	Sample disturbed(in bag), undisturbed sample required for testing
HP07 B 1.00 m	3x38mm Triaxials	Sample disturbed(in bag), undisturbed sample required for testing
TP44A B 3.00 m	3x38mm Triaxials	Sample disturbed(in bag), undisturbed sample required for testing
TP46 B 1.00 m	3x38mm Triaxials	Sample disturbed(in bag), undisturbed sample required for testing

SAMPLES UNSUITABLE FOR TESTING

New Deer

Client : SSEN-T
Consultant : Tony Gee

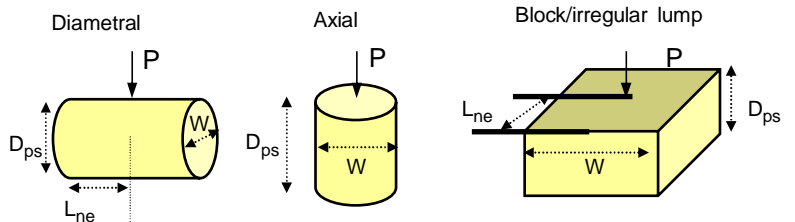
Contract No : 330G

The following samples have proved unsuitable for testing.
 Please advise us if any replacement sample(s) are to be tested.

Sample Identification	Test(s) Required	Reason for Unsuitability
BH23 D 5.00 m	2.5KG Compaction	Insufficient material to carry out test even when using material in same strata
BH22 L 2.40 m	4.5KG Compaction	Insufficient material to carry out test even when using material in same strata
BH14 B 0.50 m	2.5KG Compaction	Insufficient material to carry out test even when using material in same strata
TP45 D 3.00 m	MCV SP	Insufficient material to carry out test even when using material in same strata
TP46 D 3.00 m	MCV SP	Insufficient material to carry out test even when using material in same strata
TP47 D 1.00 m	MCV SP	Insufficient material to carry out test even when using material in same strata
TP47 D 3.00 m	MCV SP	Insufficient material to carry out test even when using material in same strata
TP48 D 1.00 m	MCV SP	Insufficient material to carry out test even when using material in same strata
TP52 D 1.00 m	MCV SP	Insufficient material to carry out test even when using material in same strata

Project No. RGN.330G			Project Name New Deer 2														
Borehole No.	Sample			Specimen		Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index		Remarks
	Depth m	Ref.	Type	Ref.	Depth m	Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa	
BH01	6.15	1234202311081	C	3	6.20	D	L	YES	55.0	100.0	100.0	99.0	0.1	99.5	0.000	0.000	
BH01	6.15	1234202311081	C	4	6.20	A	P	YES		100.0	55.0	54.0	0.1	82.9	0.000	0.000	
BH01	7.20	1234202311082	C	3	7.45	D	L	YES	66.0	100.0	100.0	99.0	0.1	99.5	0.000	0.000	
BH01	7.20	1234202311082	C	4	7.45	A	P	YES		100.0	56.0	55.0	0.1	83.7	0.000	0.000	
BH03	17.70	1234202311084	C	3	18.25	D	L	YES	77.0	80.0	80.0	78.0	46.3	79.0	7.400	9.100	
BH03	17.70	1234202311084	C	4	18.25	A	P	YES		89.0	41.0	39.0	25.0	66.5	5.700	6.400	
BH04	2.70	12342023110811	C	3	2.80	I	L	YES	44.0	88.0	51.0	50.0	0.1	74.8	0.000	0.000	
BH04	2.70	12342023110811	C	4	2.80	I	L	YES	45.0	90.0	55.0	54.0	0.1	78.7	0.000	0.000	
BH04	4.20	12342023110812	C	3	4.50	I	L	YES	50.0	100.0	61.0	60.0	0.1	87.4	0.000	0.000	
BH04	4.20	12342023110812	C	4	4.50	I	L	YES	45.0	90.0	53.0	52.0	0.1	77.2	0.000	0.000	
BH06	11.70	1234202311086	C	3	12.00	I	L	YES	35.0	71.0	40.0	38.0	0.8	58.6	0.200	0.200	
BH06	11.70	1234202311086	C	4	12.00	I	L	YES	32.0	64.0	42.0	40.0	1.1	57.1	0.300	0.400	
BH06	17.70	1234202311088	C	3	18.20	I	L	YES	30.0	60.0	39.0	37.0	2.6	53.2	0.900	0.900	
BH06	17.70	1234202311088	C	4	18.20	I	L	YES	33.0	65.0	40.0	38.0	3.0	56.1	0.900	1.000	
BH10	2.30	12342023110813	C	3	3.00	D	L	YES	50.0	80.0	80.0	79.0	0.3	79.5	0.100	0.100	
BH10	2.30	12342023110813	C	4	3.00	A	P	YES		80.0	47.0	46.0	0.2	68.5	0.100	0.100	
BH10	7.30	12342023110815	C	3	7.80	D	L	YES	66.0	80.0	80.0	79.0	0.4	79.5	0.100	0.100	
BH10	7.30	12342023110815	C	4	7.80	A	P	YES		80.0	44.0	43.0	0.5	66.2	0.100	0.100	
BH12	6.00	12342023110817	C	3	6.65	D	L	YES	54.0	80.0	80.0	78.0	19.9	79.0	3.200	3.900	

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



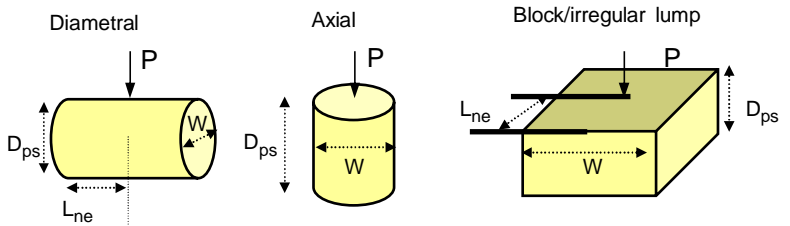
Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise

Detailed legend for test and dimensions, based on ISRM, is shown above.

Size correction factor, $F = (De/50)0.45$ for all tests.

Project No. RGN.330G			Project Name New Deer 2														
Borehole No.	Sample			Specimen		Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index		Remarks
	Depth m	Ref.	Type	Ref.	Depth m	Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa	
BH12	6.00	12342023110817	C	4	6.65	A	P	YES		80.0	44.0	42.0	16.1	65.4	3.800	4.300	
BH18	10.20	12342023110819	C	3	10.45	I	L	YES	33.0	65.0	47.0	45.0	4.1	61.0	1.100	1.200	
BH18	10.20	12342023110819	C	4	10.45	I	L	YES	35.0	70.0	48.0	46.0	5.6	64.0	1.400	1.500	
BH18	14.70	12342023110821	C	3	14.90	I	L	YES	32.0	64.0	40.0	38.0	7.1	55.6	2.300	2.400	
BH18	14.70	12342023110821	C	4	14.90	I	L	YES	33.0	67.0	44.0	42.0	6.0	59.9	1.700	1.800	
BH20	3.70	12342023110822	C	3	4.40	D	L	YES	49.0	80.0	80.0	78.0	1.1	79.0	0.200	0.200	
BH20	3.70	12342023110822	C	4	4.40	A	P	YES		80.0	40.0	38.0	1.8	62.2	0.500	0.500	
BH20	7.70	12342023110824	C	3	8.60	I	L	YES	40.0	80.0	41.0	39.0	4.4	63.0	1.100	1.200	
BH20	7.70	12342023110824	C	4	8.60	I	L	YES	40.0	80.0	44.0	42.0	6.1	65.4	1.400	1.600	
BH22	7.10	12342023110825	C	3	7.20	I	L	YES	30.0	60.0	45.0	43.0	3.4	57.3	1.000	1.100	
BH22	7.10	12342023110825	C	4	7.20	I	L	YES	35.0	71.0	44.0	43.0	4.3	62.3	1.100	1.200	
BH37	4.00	12342023110829	C	1	5.35	I	L	YES	40.0	80.0	44.0	42.0	7.9	65.4	1.900	2.100	
BH37	4.00	12342023110829	C	2	5.35	I	L	YES	35.0	71.0	46.0	44.0	8.8	63.1	2.200	2.500	
BH41	8.00	12342024011515	C	1	9.00	D	L	YES	35.0	80.0	80.0	78.0	20.6	79.0	3.300	4.100	
BH41	8.00	12342024011515	C	2	9.00	A	P	YES		80.0	27.0	25.0	7.2	50.5	2.800	2.800	

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size correction factor, F = (De/50)0.45 for all tests.

LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 23/1202 - 02-1

To : Jack Ross

Client : **BAM Ritchies**
Glasgow Road
Kilsyth
Glasgow
G65 9BL

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

LABORATORY TESTING OF AGGREGATE

Introduction

We refer to samples taken from New Deer and delivered to our laboratory on 08th November 2023.

Material & Source

Sample Reference : See Report Plates
Sampled By : Client
Sampling Certificate : Not Supplied
Location : See Report Plates
Description : Crushed Rock
Date Sampled : Not Supplied
Date Tested : 08th November 2023 Onwards
Source : RGN.330G - New Deer

Test Results


As Detailed On Page 2 to Page 3 inclusive

Comments

The results contained in this report relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Remarks

Approved for Issue


T McLelland (Director)

Date 11/12/2023



BOREHOLE	SAMPLE	DEPTH (m)	SIZE FRACTION (mm)	LOS ANGELES COEFFICIENT
BH06	C	13.20-14.70	10mm to 14mm	34
BH18	C	5.70-7.20	10mm to 14mm	36
BH35	C	8.00-9.50	10mm to 14mm	27

Tested in accordance with BS EN 1097 - 2 : 2020

**SUMMARY OF RESISTANCE TO FRAGMENTATION
BY THE LOS ANGELES TEST METHOD**

BOREHOLE	SAMPLE ID	DEPTH (m)	SIZE FRACTION	TEST SPECIMEN 1 (%)	TEST SPECIMEN 2 (%)	MAGNESIUM SULFATE SOUNDNESS VALUE (%)
BH03	C	10.95-11.70	10mm to 14mm	17.4	17.2	17
BH06	C	19.20-20.00	10mm to 14mm	89.2	89.3	89
BH10	C	13.30-14.80	10mm to 14mm	61.6	62.0	62
BH22	C	4.10-5.60	10mm to 14mm	87.6	88.1	88
BH26	C	6.80-7.80	10mm to 14mm	42.6	43.0	43
BH37	C	5.00-6.00	10mm to 14mm	23.8	24.0	24

Tested in accordance with BS EN 1367 - 2 : 2009

SUMMARY OF MAGNESIUM SULFATE SOUNDNESS TEST RESULTS



SAMPLES UNSUITABLE FOR TESTING

New Deer

Client : SSEN-T
Consultant : Tony Gee

Contract No : 330G

The following samples have proved unsuitable for testing.
 Please advise us if any replacement sample(s) are to be tested.

Sample Identification	Test(s) Required	Reason for Unsuitability
BH01 Core 6.15-7.2 m	UCS	Unable to obtain a specimen with minimum ratio of 2:1, Point Load Test carried out.
BH03 Core 17.7-19.2 m	UCS	Unable to obtain a specimen with minimum ratio of 2:1, Point Load Test carried out.
BH06 Core 17.7-19.2 m	UCS	Unable to obtain a specimen with minimum ratio of 2:1, Point Load Test carried out.
BH04 Core 2.7-4.2 m	UCS	Unable to obtain a specimen with minimum ratio of 2:1, Point Load Test carried out.
BH10 Core 2.3-3.3 m	UCS	Unable to obtain a specimen with minimum ratio of 2:1, Point Load Test carried out.
BH12 Core 6.0-7.5 m	UCS	Unable to obtain a specimen with minimum ratio of 2:1, Point Load Test carried out.
BH18 Core 14.7-15.6 m	UCS	Unable to obtain a specimen with minimum ratio of 2:1, Point Load Test carried out.
BH20 Core 3.7-5.2 m	UCS	Unable to obtain a specimen with minimum ratio of 2:1, Point Load Test carried out.

**APPENDIX 7.2
GEOCHEMICAL TEST RESULTS**



4041



Peter McGinily

BAM Ritchies
Glasgow Road
Kilsyth
G65 9BL

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t: 01236 467000
f: 01236 467030
e: Peter.McGinily@bam.com

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f: 01923237404
e: scotland@i2analytical.com

Analytical Report Number : 23-73555

Project / Site name:	New Deer 2	Samples received on:	07/12/2023
Your job number:	RGN.330G	Samples instructed on/ Analysis started on:	07/12/2023
Your order number:	RIT 38714645	Analysis completed by:	14/12/2023
Report Issue Number:	1	Report issued on:	14/12/2023
Samples Analysed:	10 water samples		

Signed:

Alyssa Brown
Customer Service Advisor
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.



4041



Analytical Report Number: 23-73555
Project / Site name: New Deer 2

Your Order No: RIT 38714645

Lab Sample Number	2903399	2903400	2903401	2903402	2903403
Sample Reference	BH01	BH08	BH10	BH18	BH24
Sample Number	EW	EW	EW	EW	EW
Depth (m)	1.19	6.71	1.05	1.20	4.66
Date Sampled	05/12/2023	05/12/2023	05/12/2023	05/12/2023	05/12/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

	pH Units	N/A	ISO 17025	6.1	7	6.3	6.6	7.3
pH (L099)								
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO4	µg/l	45	ISO 17025	7860	13200	8270	7170	13200
Sulphate as SO4	mg/l	0.045	ISO 17025	7.86	13.2	8.27	7.17	13.2

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10

Speciated PAHs

	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene								
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16

Heavy Metals / Metalloids

Boron (dissolved)	µg/l	10	ISO 17025	< 10	< 10	22	11	15
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.32	< 0.15	< 0.15	0.47	< 0.15
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	0.06	0.22	0.04	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.2	0.4	0.3	2.5	0.3
Copper (dissolved)	µg/l	0.5	ISO 17025	0.9	5.2	9.5	3.9	2.1
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	1.1	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	0.13	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.7	5.5	14	2.9	0.7
Zinc (dissolved)	µg/l	0.5	ISO 17025	16	18	35	30	25

Petroleum Hydrocarbons

TPH1 (C10 - C40) EH_2D_TOTAL_#1_#2	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not Detected



4041



Environmental Science

Analytical Report Number: 23-73555

Project / Site name: New Deer 2

Your Order No: RIT 38714645

Lab Sample Number	2903404	2903405	2903406	2903407	2903408
Sample Reference	BH28	BH31	BH36	BH42	BH46
Sample Number	EW	EW	EW	EW	EW
Depth (m)	3.57	3.20	0.70	0.29	1.74
Date Sampled	05/12/2023	05/12/2023	05/12/2023	05/12/2023	05/12/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

Parameter	Units	Limit of detection	Accreditation Status	2903404	2903405	2903406	2903407	2903408
pH (L099)	pH Units	N/A	ISO 17025	6.7	6.4	6.7	6.3	6.8
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO4	µg/l	45	ISO 17025	11900	9900	12300	29300	9220
Sulphate as SO4	mg/l	0.045	ISO 17025	11.9	9.9	12.3	29.3	9.22

Total Phenols

Parameter	Units	Limit of detection	Accreditation Status	2903404	2903405	2903406	2903407	2903408
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10

Speciated PAHs

Parameter	Units	Limit of detection	Accreditation Status	2903404	2903405	2903406	2903407	2903408
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Parameter	Units	Limit of detection	Accreditation Status	2903404	2903405	2903406	2903407	2903408
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16

Heavy Metals / Metalloids

Parameter	Units	Limit of detection	Accreditation Status	2903404	2903405	2903406	2903407	2903408
Boron (dissolved)	µg/l	10	ISO 17025	13	13	16	< 10	13
Arsenic (dissolved)	µg/l	0.15	ISO 17025	< 0.15	< 0.15	0.3	0.23	0.5
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	0.09	0.21	0.06	0.03
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3	< 0.2	0.5	< 0.2	1.9
Copper (dissolved)	µg/l	0.5	ISO 17025	2.8	10	7.9	3.1	1.7
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	0.7
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	0.06	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	3.2	4.7	42	5.5	2.5
Zinc (dissolved)	µg/l	0.5	ISO 17025	16	21	20	9.7	12

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	2903404	2903405	2903406	2903407	2903408
TPH1 (C10 - C40) EH_2D_TOTAL_#1_#2	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not Detected



4041



Environmental Science

Analytical Report Number : 23-73555
Project / Site name: New Deer 2

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report



Analytical Report Number : 23-73555

Project / Site name: New Deer 2

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH01 EW	None Supplied	W	2903399	c	pH in water	L099-PL	c
BH08 EW	None Supplied	W	2903400	c	pH in water	L099-PL	c
BH10 EW	None Supplied	W	2903401	c	pH in water	L099-PL	c
BH18 EW	None Supplied	W	2903402	c	pH in water	L099-PL	c
BH24 EW	None Supplied	W	2903403	c	pH in water	L099-PL	c
BH28 EW	None Supplied	W	2903404	c	pH in water	L099-PL	c
BH31 EW	None Supplied	W	2903405	c	pH in water	L099-PL	c
BH36 EW	None Supplied	W	2903406	c	pH in water	L099-PL	c
BH42 EW	None Supplied	W	2903407	c	pH in water	L099-PL	c
BH46 EW	None Supplied	W	2903408	c	pH in water	L099-PL	c



Ground Investigation by:

BAM Ritchies (an operating segment of BAM Ventures)

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Tel. 01236 467000
www.bamritchies.co.uk